

Self Certification Test (SCT) II  
Case Specification

Version 2024.06

June 2024

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Revision History

|  |  |  |
| --- | --- | --- |
| Version | Revision Notes | Release Date |
| 2.1 | Initial Release | May 2009 |
| 2.3 | Add chapter for Vlan and EAP. Additional materials to EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL test, also DHCPv6, TCP6, IPv6, IP6Config, IPsecConfig, UDPv6 and MTFTPv6 | June 2010 |
| 2.3 | Mantis  618 content integration  643 Add test case description of Firmware Management Protocol  646 ATA Pass Thru Protocol  699 SetInfo and StringToImage Integration  672 InstallSCT application need to support on NT32  673 New feature request for Verbose function in SCT | Jan. 2011 |
| 2.3.1 C | Mantis  643 Firmware Management Protocol Test Case  710 Match SCT Case Specification 2.3 to UEFI spec 2.3  827 Char issues in Guid format corrected and missed Index appended  832 Some index numbers in spec corrected  835 Guid Format corrections  841 Corrected some duplicated Index/Guid  843 Case Spec refreshed to include new items of UEFI 2.3.1 Spec | Oct. 2011 |
| 2.3.1 C | Mantis 939 Update to align with UEFI Spec 2.3.1 Errata C | Aug. 2012 |
| 2.4 B | Mantis 1295 Update to align with UEFI Spec 2.4 Errata B | Dec. 2014 |
| 2.5 A | Mantis 1733 Update to align with UEFI Spec 2.5 Errata A | Jan. 2017 |
| 2.6 A | Mantis 1807 Update to align with UEFI Spec 2.6 Errata A | June 2017 |
| 2024.04 | Updates for both:  TCG2 Protocol tests from EFI Protocol Specification, Level 00 Revision 00.13, March 30, 2016, Chapter 6  TCG MemoveryOverwriteRequest Control tests from TCG Platform Reset Attack Mitigation Specification, v1.10 Revision 17, January 21, 2019, Chapter 4 | June 2024 |

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# Introduction

## Overview

This document provides detailed information for each assertion in the UEFI SCT fundamental service and protocol tests. This document can be used as a reference on case assertion for UEFI SCT users.

Reference Documents

* UEFI Specification
* -- indicates current and past UEFI specifications, unless specific versions are noted
* UEFI SCT Getting Started
* UEFI SCT User Guide

|  |  |  |  |
| --- | --- | --- | --- |
| 5.26.2.7.71 | 0x732738e8, 0x1ff1, 0x4f3a, 0xa0,0xc8, 0x38,0x81,0x1d,0x15,0x92,0x83 | EFI\_MTFTP4\_PROT  OCOL.ReadFile()  - ReadFile() must return  EFI\_PROTOCOL\_UNREACHABLE when receive an ICMP protocol unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create  a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile  () with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP protocol unreachable packet and the return status should be EFI\_PROTOCOL\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to  destroy the newly created  EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |
| 5.26.2.7.72 | 0xd1c4e1e8, 0x1099, 0x4646, 0xb7,0xc9, 0x64,0x7e, 0x65,0xc3, 0x82,0x30 | EFI\_MTFTP4\_PROT  OCOL.ReadFile()  - ReadFile() must return  EFI\_PORT\_UNREACHABLE when receive an ICMP port unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create  a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile  () with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP port unreachable packet and the return status should be EFI\_PORT\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to  destroy the newly created  EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |

## System Hang

If the system hangs in any of tests, the UEFI SCT framework records a failure assertion in the test report and skips this test after a system restart.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.20.1.1.1 | 0xde687a18, 0x0bbd, 0x4396, 0x85, 0x09, 0x49, 0x8f, 0xf2, 0x32, 0x34, 0xf1 | System hangs or stops.. | The name of the test which causes the system hang can be found in the test report. |

# EFI Compliance Test

## EFI Requirements Test

Reference Document:

*UEFI Specification,* Requirements Section.

Configuration

Configuration is a checkpoint in the EFI Requirements Test. If the you need to check the platform-specific protocols, the related profile needs to be updated.

For the correct formatting of profiles, refer to Appendix section A.1, EFI Requirements Test Profile.

### Required Elements

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.22.1.1.1 | 0xf6a871e3, 0xef8a, 0x420f, 0x82, 0x01, 0x35, 0xb6, 0x1c, 0xe2, 0xe8, 0xdb | EFI-Compliant - EFI System Table must be implemented. | 1. The Signature of EFI System Table should be 0x5453595320494249.  2. The Revision of EFI System Table should be equal to or larger than 0x00020000.  3. The Reserved field in EFI System Table should be 0.  4. The RuntimeServices and BootServices pointers of EFI System Table should not be NULL.  5. The CRC32 of EFI System Table must be correct. |
| 5.22.1.1.2 | 0xaddab6ed, 0x5a17, 0x4327, 0x8f, 0xb1, 0x72, 0x93, 0x3d, 0x1a, 0x7b, 0xba | EFI-Compliant - EFI Boot Services Table must be implemented. | 1. The Signature of EFI Boot Services Table should be 0x56524553544f4f42.  2. The Revision of EFI Boot Services Table should be equal to or larger than 0x00020000.  3. The Reserved field in EFI Boot Services Table should be 0.  4. No function pointers in EFI Boot Services Table should be NULL. |
| 5.22.1.1.3 | 0x13a20958, 0xc860, 0x452f, 0xb9, 0xa2, 0xe6, 0xd9, 0x96, 0x41, 0x92, 0x24 | EFI-Compliant - EFI Runtime Services Table must be implemented. | 1. The Signature of EFI Runtime Services Table should be 0x56524553544e5552.  2. The Revision of EFI Runtime Services Table should be equal to or larger than 0x00020000.  3. The Reserved field in EFI Runtime Services Table should be 0.  4. No function pointers in EFI Runtime Services Table should be NULL. |
| 5.22.1.1.4 | 0xa82f8d56, 0x1476, 0x41f1, 0xba, 0xc4, 0x97, 0x59, 0x79, 0x9f, 0x97, 0xf3 | EFI-Compliant –EFI\_LOADED\_IMAGE\_PROTOCOL must exist. | 1. Call LocateProtocol() to find the LOADED\_IMAGE\_PROTOCOL. The return status should be EFI\_SUCCESS. |
| 5.22.1.1.5 | 0xf61f0f0a, 0x64fe, 0x40a6, 0x9d, 0x7c, 0x07, 0x46, 0xa2, 0x30, 0x24, 0x5f | EFI-Compliant –EFI\_DEVICE\_PATH\_PROTOCOL must exist. | 1. Call LocateProtocol() to find the DEVICE\_PATH\_PROTOCOL. The return status should be EFI\_SUCCESS. |
| 5.22.1.1.6 | 0x02c017d7, 0x1557, 0x47d9, 0xbc, 0xe9, 0x87, 0x18, 0x2d, 0x07, 0x91, 0x0c | EFI-Compliant –EFI\_DECOMPRESS\_PROTOCOL must exist. | 1. Call LocateProtocol() to find the DECOMPRESS\_PROTOCOL. The return status should be EFI\_SUCCESS.  2. No function pointers in DECOMPRESS\_PROTOCOL should be NULL. |
| 5.22.1.1.7 | 0x3a07dc1b, 0x53d1, 0x4fac, 0x88, 0xaf, 0xc7, 0x25, 0x79, 0xeb, 0x07, 0xf2 | UEFI-Compliant-EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL must exist | 1. Call LocateProtocol() to find the EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL, the return status should be EFI\_SUCCESS  2. No function pointer in Device Path Utility protocol should be NULL |
| 5.22.1.1.8 | 0xf6334f9b, 0xb930, 0x4adb, 0xa5, 0x3b, 0x76, 0xfa, 0x7b, 0x4c, 0x27, 0x62 | UEFI-Compliant  The EFI\_GLOBAL\_VARIABLE guid should be used by the globally defined variables only, and the attributes of the variables should be same with the definition in the Specification. | 1. Locate all variables with EFI\_GLOBAL\_VARIABLE guid, check the variable name is in the pre-defined globally variable list.  2. Check the variable attribute. |

### Platform-Specific Elements

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.22.1.2.1 | 0x8f7556c2, 0x4665, 0x4353, 0xa3, 0xaf, 0x9c, 0x00, 0x5a, 0x1e, 0x63, 0xe1 | EFI-Compliant - EFI\_SIMPLE\_ TEXT\_INPUT\_PROTOCOL, EFI\_SIMPLE\_ TEXT\_INPUT\_EX\_PROTOCOL and EFI\_SIMPLE\_TEXT\_OUT\_PROTOCOL must be implemented if a platform includes console devices. | 1. Call LocateProtocol() to find the EFI\_SIMPLE\_ TEXT\_INPUT\_PROTOCOL.  2. Call LocateProtocol() to find the EFI\_SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.  3. Call LocateProtocol() to find the EFI\_SIMPLE\_TEXT\_OUT\_PROTOCOL.  4. If the INI file indicates that the platform includes console devices, the return status in steps 1, 2 and 3 should be EFI\_SUCCESS. If not, the return status in steps 1, 2 and 3 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.2 | 0x72ba0e86, 0x58e5, 0x48dd, 0x85, 0x29, 0x88, 0xc6, 0x83, 0x83, 0x11, 0x8d | UEFI-Compliant - EFI\_GRAPHICS\_OUTPUT\_PROTOCOL, EFI\_EDID\_ACTIVE\_PROTOCOL, EFI\_EDID\_DISCOVERED\_PROTOCOL must be implemented if a platform includes graphical console devices. | 1. Call LocateProtocol() to find the EFI\_GRAPHICS\_OUTPUT\_PROTOCOL  2. Call LocateProtocol() to find the EFI\_EDID\_ACTIVE\_PROTOCOL. ,  3. Call LocateProtocol() to find the EFI\_EDID\_DISCOVERED\_PROTOCOL.  4. If the INI file indicates that the platform includes graphical console devices, the return status in all steps 1, 2 and 3 should be EFI\_SUCCESS.  5. If the INI file doesn’t indicate that the platform includes graphical console devices, the return status in all steps 1, 2 and 3 could be either EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.3 | 0x18670db1, 0x89fb, 0x4de4, 0xb1, 0x0f, 0x89, 0x8e, 0x04, 0x7d, 0x95, 0x2a | UEFI-Compliant –EFI\_SIMPLE\_POINTER\_PROTOCOL must be implemented if a platform includes a pointer device as part of its console support. | 1. Call LocateProtocol() to find the EFI\_SIMPLE\_POINTER\_PROTOCOL.  2. If the INI file indicates that the platform includes a pointer device, the return status in step 1 should be EFI\_SUCCESS.  3. If the INI file doesn’t indicate that the platform includes a pointer device, the return status in step 1 could be either EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.4 | 0xbf38a3fd, 0x58ac, 0x419a, 0xab, 0xc2, 0xc6, 0x0b, 0xae, 0x9c, 0xfe, 0x67 | UEFI-Compliant –EFI\_BLOCK\_IO\_PROTOCOL, EFI\_DISK\_IO\_PROTOCOL, EFI\_SIMPLE\_FILE\_SYSTEM; EFI\_UNICODE\_COLLATION\_PROTOCOL must be implemented if a platform supports booting from a disk. | 1. Call LocateProtocol() to find the EFI\_BLOCK\_IO\_PROTOCOL protocol.  2. Call LocateProtocol() to find the EFI\_DISK\_IO\_PROTOCOL.  3. Call LocateProtocol() to find the EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.  4. Call LocateProtocol() to find the EFI\_UNICODE\_COLLATION\_PROTOCOL.  5. If the INI file indicates that the platform supports booting from a disk, the return status in steps 1, 2, 3, and 4 all should be EFI\_SUCCESS.  6. If the INI file doesn’t indicate that the platform supports booting from a disk, the return status in steps 1, 2, 3, and 4 all should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.5 | 0x98551ae7, 0x5020, 0x4ddd, 0x86, 0x1a, 0xcf, 0xff, 0xb4, 0xd6, 0x03, 0x82 | UEFI-Compliant – EFI\_PXE\_BASE\_CODE\_PROTOCOL must be implemented if a platform supports TFTP-based booting from a network device. And platform must be prepared to produce this protocol on any of EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_PROTOCOL (UNDI),  **EFI\_SIMPLE\_NETWORK\_PROTOCOL**, or the **EFI\_MANAGED\_NETWORK\_PROTOCOL**. If platform supports validating the image received from network device, **SetupMode** equal zero. | 1. Call **LocateProtocol()** to find the **EFI\_PXE\_BASE\_CODE\_PROTOCOL**. 2. Call **LocateProtocol()** to find the **EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_PROTOCOL**, **EFI\_SIMPLE\_NETWORK\_PROTOCOL**, **EFI\_MANAGED\_NETWORK\_PROTOCOL**. 3. If the INI file indicates that the platform supports TFTP-based booting from a network device, the return status in step 1 should be **EFI\_SUCCESS**. And one of the step 2 should be **EFI\_SUCCESS** at least. 4. If the INI file doesn’t indicate that the platform supports TFTP-based booting from a network device, the return status in both step 1 and step 2 step should be **EFI\_SUCCESS** or **EFI\_ERROR**. 5. If the INI file indicates that the platform supports validating the image received from a network device, **SetupMode** equal zero. |
| 5.22.1.2.6 | 0x517bcbeb, 0x4982, 0x4a7e, 0x85, 0x51, 0xca, 0x84, 0x7d, 0xdc, 0x21, 0xc2 | UEFI-Compliant –EFI\_SERIAL\_IO\_PROTOCOL must be implemented if a platform includes a byte stream device. | 1. Call LocateProtocol() to find the EFI\_SERIAL\_IO\_PROTOCOL.  2. If the INI file indicates that the platform includes a byte-stream device, the return status in step 1 should be EFI\_SUCCESS.  3. If the INI file doesn’t indicate that the platform includes a byte-stream device, the return status in step 1 step could be either EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.7 | 0x213a75c9, 0x7f3d, 0x42db, 0xb3, 0x2a, 0x02, 0xdb, 0xd6, 0x98, 0x31, 0x9d | UEFI-Compliant –EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL and EFI\_PCI\_IO\_PROTOCOL must be implemented if a platform includes PCI bus support. | 1. Call LocateProtocol() to find the EFI\_PCI\_ROOT\_BRIDGE\_IO \_PROTOCOL.  2. Call LocateProtocol() to find the EFI\_PCI\_IO\_PROTOCOL.  3. If the INI file indicates that the platform includes PCI bus support, the return status in both steps 1 and 2 should be EFI\_SUCCESS.  4. If the INI file doesn’t indicate that the platform includes PCI bus support, the return status in both steps 1 and 2 steps could be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.8 | 0x0ccd5843, 0x5bb5, 0x4fc2, 0xa7, 0x32, 0xdb, 0x17, 0xc4, 0x14, 0xa4, 0x3d | UEFI-Compliant –EFI\_USB\_HC2\_PROTOCOL and EFI\_USB\_IO\_PROTOCOL must be implemented if a platform includes USB bus support. | 1. Call LocateProtocol() to find the EFI\_USB\_HC2\_PROTOCOL.  2. Call LocateProtocol() to find the EFI\_USB\_IO\_PROTOCOL.  3. If INI file indicates the platform includes USB bus support, the return status in 1 and 2 steps should be both EFI\_SUCCESS.  4. If INI file doesn’t indicate the platform includes USB bus support, the return status in 1 and 2 steps should be both EFI\_SUCCESS or both EFI\_ERROR. |
| 5.22.1.2.9 | 0x2b83418f, 0xe7fb, 0x4528, 0xb6, 0xff, 0xc9, 0xd4, 0x87, 0xae, 0x2e, 0xff | UEFI-Compliant –EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL must be implemented if a platform includes an I/O system that uses SCSI command packets. | 1. Call LocateProtocol() to find the EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.  2. If INI file indicates the platform includes an I/O system that uses SCSI command packets, the return status in 1 step should be EFI\_SUCCESS.  3. If INI file doesn’t indicate the platform includes an I/O system that uses SCSI command packets, the return status in 1 step could be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.10 | 0x3ee22696, 0x0875, 0x46f4, 0x88, 0x84, 0xba, 0x12, 0x4c, 0x7e, 0xaf, 0xf0 | UEFI-Compliant –EFI\_DEBUG\_SUPPORT\_PROTOCOL and EFI\_DEBUG\_PORT\_PROTOCOL must be implemented if a platform supports debugging capabilities. | 1. Call LocateProtocol() to find the EFI\_DEBUG\_SUPPORT\_PROTOCOL.  2. Call LocateProtocol() to find the EFI\_DEBUG\_PORT\_PROTOCOL.  3. If INI file indicates the platform supports debugging capabilities, the return status in 1 and 2 steps should be both EFI\_SUCCESS.  4. If INI file doesn’t indicate the platform supports debugging capabilities, the return status in 1 and 2 steps should be both EFI\_SUCCESS or both EFI\_ERROR. |
| 5.22.1.2.11 | 0x329027ce, 0x406e, 0x48c8, 0x8a, 0xc1, 0xa0, 0x2c, 0x1a, 0x6e, 0x39, 0x83 | UEFI-Compliant –EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL must be implemented if a platform includes the ability to override the default driver. | 1. Call LocateProtocol() to find the EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.  2. If INI file indicates the platform includes the ability to override the default driver, the return status in 1 step should be EFI\_SUCCESS.  3. If INI file doesn’t indicate the platform includes the ability to override the default driver, the return status in 1 step could be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.12 | 0x76a6a1b0, 0x8c53, 0x407d, 0x84, 0x86, 0x9a, 0x6e, 0x63, 0x32, 0xd3, 0xce | UEFI-Compliant – **EFI\_MANAGED\_NETWOR K\_PROTOCOL**, **EFI\_MANAGED\_NETWOR K\_SERVICE\_BINDING\_ PROTOCOL, EFI\_ARP\_PROTOCOL, EFI\_ARP\_SERVICE\_BI NDING\_PROTOCOL, EFI\_DHCP4\_PROTOCOL , EFI\_DHCP4\_SERVICE\_ BINDING\_PROTOCOL, EFI\_TCP4\_PROTOCOL, EFI\_TCP4\_SERVICE\_B INDING\_PROTOCOL, EFI\_IP4\_PROTOCOL, EFI\_IP4\_SERVICE\_BI NDING\_PROTOCOL, EFI\_IP4\_CONFIG2\_PRO TOCOL, EFI\_UDP4\_PROTOCOL, EFI\_UDP4\_SERVICE\_B INDING\_PROTOCOL, EFI\_MTFTP4\_PROTOCO L,** and **EFI\_MTFTP4\_SERVICE \_BINIING\_PROTOCOL** are required for general network application | 1. Call **LocateProtocol()** to find the **EFI\_MANAGED\_NETWORK\_PROTOCOL**, **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL,** **EFI\_ARP\_PROTOCOL, EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL, EFI\_DHCP4\_PROTOCOL, EFI\_DHCP4\_SERVICE\_BINDING\_PROT OCOL, EFI\_TCP4\_PROTOCOL, EFI\_TCP4\_SERVICE\_BINDING\_PROTO COL, EFI\_IP4\_PROTOCOL, EFI\_IP4\_SERVICE\_BINDING\_PROTOC OL, EFI\_IP4\_CONFIG2\_PROTOCOL, EFI\_UDP4\_PROTOCOL, EFI\_UDP4\_SERVICE\_BINDING\_PROTO COL, EFI\_MTFTP4\_PROTOCOL,** and **EFI\_MTFTP4\_SERVICE\_BINIING\_PRO TOCOL** 2. If INI file indicates the platform includes the ability to general network application, the return status for locating all protocols described in step 1 should be **EFI\_SUCCESS** 3. If INI file doesn’t indicate the platform includes the ability for general network application, the return status for locating all protocols described in step 1 could |
| 5.22.1.2.13 | 0x28c068f2, 0xf398, 0x488a, 0xb0, 0x59, 0x53, 0x4e, 0x98, 0x2d, 0x9c, 0x85 | UEFI-Compliant –EFI\_SCSI IO\_PROTOCOL, EFI\_Block IO\_PROTOCOL and EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL must be implemented if a platform supports booting from a SCSI peripheral device. | 1. Call LocateProtocol() to find the EFI\_SCSI IO\_PROTOCOL.  2. Call LocateProtocol() to find the EFI\_Block IO\_PROTOCOL protocol.  3. Call LocateProtocol() to find the EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.  4. If the INI file indicates that the platform supports booting from a network device, the return status in all steps 1, 2 and 3 should be EFI\_SUCCESS.  5. If the INI file doesn’t indicate that the platform supports booting from a network device, the return status in all steps 1, 2 and 3 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.14 | 0x6b7077a6, 0x4b13, 0x4e13, 0x9b, 0x1f, 0x0c, 0x4b, 0x3a, 0x86, 0x69, 0xe2 | UEFI-Compliant – **EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL** and **EFI\_AUTHENTICATION\_INFO\_PROTOCOL** must be implemented if a platform supports booting from a ISCSI peripheral device. | 1. Call **LocateProtocol()** to find the **EFI\_ISCSI\_INITIATOR\_NAME\_PROTO COL** and **EFI\_AUTHENTICATION\_INFO\_PROTOCOL**. 2. If the INI file indicates that the platform supports booting from a iSCSI peripheral, the return status in both steps 1 should be **EFI\_SUCCESS**. 3. If the INI file doesn’t indicate that the platform supports booting from iSCSI peripheral, the return status in steps 1 should be **EFI\_SUCCESS** or **EFI\_ERROR**. |
| 5.22.1.2.15 | 0x4c82eb2d, 0xc785, 0x410c, 0x95, 0xd1, 0xae, 0x27, 0x12, 0x21, 0x44, 0xc8 | UEFI Compliant –UEFI V6 General Network Driver Dhcp6SB, Tcp6SB, Ip6SB, Udp6SB, Ip6Config, Vlan must exist if a platform supports V6 network stack | 1. Call LocateProtocol() to find the V6 network stack.  2. If the INI file indicates that the platform supports v6 stack  , the return status in step 1 should be EFI\_SUCCESS.  3. If the INI file doesn’t indicate that the platform supports v6 network stack, the return status in steps1 should be EFI\_SUCCESSor EFI\_ERROR. |
| 5.22.1.2.16 | 0x1d0a2f2a, 0x924, 0x4b8c, 0x9f, 0xc7, 0xb1, 0x85, 0xcc, 0x22, 0xe1, 0x18 | UEFI Compliant –UEFI EBC interpreter must exist if a platform supports EBC image | 1. Call **LocateProtocol()** to find the **EFI\_EBC\_PROTOCOL**.  2. If the INI file indicates that the platform supports EBC image  , the return status in step 1 should be **EFI\_SUCCESS**.  3. If the INI file doesn’t indicate that the platform supports EBC image, the return status in step 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.17 | 0xb7cd2d76, 0xea43, 0x4013, 0xb7, 0xd1, 0x59, 0xeb, 0x2e, 0xc9,  0xbf, 0x1b | UEFI Compliant –UEFI HiiDatabase, HiiString, HiiConfigRouting, HiiConfigAccess must be existed if the platform supports HII. If it supports bitmapped fonts, then HiiFont must exist also. | 1. Call LocateProtocol() to find HiiDatabase, HiiString, HiiConfigRouting, HiiConfigAccess.  2. If the INI file indicates that the platform supports HII all return statuses in step 1 should be EFI\_SUCCESS.  3. If the INI file doesn’t indicate that the platform supports HII, the return status in step1 should be EFI\_SUCCESS or EFI\_ERROR.  4. If step 2 is true, and the INI file indicates the platform support bitmapped font, call LocateProtocol() to find HiiFont, and the return status should EFI\_SUCCESS. |
| 5.22.1.2.18 | 0x5aea7246, 0xbcf9,  0x4ba4, 0x81, 0xd2, 0x83, 0x2c, 0x98, 0x41, 0x46, 0xf3 | UEFI-Compliant –  EFI\_NVM\_EXPRESS \_PASS\_THRU\_PROTOCOL must be implemented if a platform includes an NVM Express controller | 1. Call LocateProtocol() to find the EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. 2. If the INI file indicates that the platform  includes an NVM Express controller, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate that the platform includes an NVM Express controller, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.19 | 0x5cb0cdb5, 0xac80, 0x4983, 0xb7, 0x10, 0x4b, 0xb, 0xf0, 0x19, 0x15, 0x63 | UEFI Compliant –  EFI\_BLOCK\_IO\_PROTOCOL must be existed if the platform supports booting from a block-oriented NVM Express controller. EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL may be required. | 1. Call LocateProtocol() to find EFI\_BLOCK\_IO\_PROTOCOL. 2. If the INI file indicates that the platform supports  booting from a block-oriented NVM Express controller, all return statuses in step 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate that the platform supports booting from a block-oriented NVM Express controller, the return status in step1 should be EFI\_SUCCESS or EFI\_ERROR. 4. If step 2 is true, and the INI file indicates the platform support EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL, call LocateProtocol() to find it, and the return status should be EFI\_SUCCESS. |
| 5.22.1.2.20 | 0x563f654f, 0xaba8, 0x4539, 0x80, 0x4b, 0x50, 0x63, 0x5, 0x7, 0x26, 0x23 | UEFI-Compliant –  EFI\_ATA\_PASS\_THRU\_PROTOCOL must be implemented if a platform  includes an I/O subsystem that utilizes ATA command packets. | 1. Call LocateProtocol() to find the EFI\_ATA\_PASS\_THRU\_PROTOCOL. 2. If the INI file indicates that the platform includes an I/O subsystem that utilizes ATA command packets, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate that the platform includes an I/O subsystem that utilizes ATA command packets, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.21 | 0x2e6d1733, 0x6d39, 0x49ab, 0xa8, 0x86, 0x1b, 0x6d, 0xe4, 0x45, 0x66, 0xa8 | UEFI Compliant –  EFI\_DNS4\_PROTOCOL, EFI\_DNS4\_SERVICE\_BINDING\_PROTOCOL must be existed if the platform supports DNS for IPv4 stack. | 1. Call LocateProtocol() to find the EFI\_DNS4\_PROTOCOL and EFI\_DNS4\_SERVICE\_BINDING\_PROTOCOL. 2. If the INI file indicates that the platform supports DNS for IPv4 stack, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.22 | 0xe02a6ef3, 0x4b70, 0x40ec, 0xaa, 0x23, 0x50, 0xb7, 0xb9, 0x72, 0xb0, 0x65 | UEFI Compliant –  EFI\_DNS6\_PROTOCOL, EFI\_DNS6\_SERVICE\_BINDING\_PROTOCOL must be existed if the platform supports DNS for IPv6 stack. | 1. Call LocateProtocol() to find the EFI\_DNS6\_PROTOCOL and EFI\_DNS6\_SERVICE\_BINDING\_PROTOCOL. 2. If the INI file indicates that the platform supports DNS for IPv6 stack, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.23 | 0xcb6f7b77, 0xb15, 0x43f7, 0xa9, 0x5b, 0x8c, 0x7f, 0x9f, 0xd7, 0xb, 0x21 | UEFI Compliant – EFI\_TLS\_PROTOCOL, EFI\_TLS\_SERVICE\_BINDING\_PROTOCOL, EFI\_TLS\_CONFIGURATION\_PROTOCOL must be existed if the platform supports TLS feature. | 1. Call LocateProtocol() to find the EFI\_TLS\_PROTOCOL, EFI\_TLS\_SERVICE\_BINDING\_PROTOCOL and EFI\_TLS\_CONFIGURATION\_PROTOCOL. 2. If the INI file indicates that the platform supports TLS feature, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.24 | 0x77fddb95, 0x5969, 0x4fb4, 0xa2, 0x18, 0x5c, 0xc, 0x76, 0xb, 0x5, 0x64 | UEFI Compliant –  EFI\_HTTP\_PROTOCOL, EFI\_HTTP\_SERVICE\_BINDING\_PROTOCOL, EFI\_HTTP\_UTILITIES\_PROTOCOL must be existed if the platform includes the ability to perform a HTTP-based boot from a network device. | 1. Call LocateProtocol() to find the EFI\_HTTP\_PROTOCOL, EFI\_HTTP\_SERVICE\_BINDING\_PROTOCOL and EFI\_HTTP\_ UTILITIES\_PROTOCOL. 2. If the INI file indicates that the platform includes the ability to perform a HTTP-based boot from a network device, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.25 | 0xf0dc12  fa, 0x3c4b, 0x43f7, 0xa6, 0x9e, 0xa5, 0xbe, 0x6f, 0xcc, 0x90, 0xa1 | UEFI Compliant –  EFI\_EAP\_PROTOCOL, EFI\_EAP\_CONFIGURATION\_PROTOCOL, EFI\_EAP\_MANAGEMENT2\_PROTOCOL must be existed if the platform includes the ability to perform a wireless boot from a network device with EAP feature, and if this platform provides a standalone wireless EAP driver. | 1. Call LocateProtocol() to find the EFI\_EAP\_PROTOCOL, EFI\_EAP\_CONFIGURATION\_PROTOCOL and EFI\_EAP\_MANAGEMENT2\_PROTOCOL. 2. If the INI file indicates that the platform includes the ability to perform a wireless boot from a network device with EAP feature, and if this platform provides a standalone wireless EAP driver, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |
| 5.22.1.2.26 | 0x87e50392, 0xf5a2, 0x42b8, 0x81, 0x12, 0x68, 0xbe, 0xc9, 0x2, 0xb9, 0xbc | UEFI Compliant –  EFI\_BLUETOOTH\_HC\_PROTOCOL, EFI\_  BLUETOOTH\_IO\_PROTOCOL, EFI\_BLUETOOTH\_CONFIG\_PROTOCOL must be existed if the platform supports classic Bluetooth. | 1. Call LocateProtocol() to find the UEFI Compliant –UEFI EFI\_BLUETOOTH\_HC\_PROTOCOL, EFI\_BLUETOOTH\_IO\_PROTOCOL and EFI\_BLUETOOTH\_CONFIG\_PROTOCOL. 2. If the INI file indicates that the platform supports classic Bluetooth, the return status in steps 1 should be EFI\_SUCCESS. 3. If the INI file doesn’t indicate this capability, the return status in steps 1 should be EFI\_SUCCESS or EFI\_ERROR. |

# Services Boot Services

## Event, Timer, and Task Priority Services Test

Reference Document:

*UEFI Specification*, Event, Timer, and Task Priority Services Section.

* Event, Timer, and Task Priority Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| CreateEvent() | Boot | Creates a general-purpose event structure. |
| CloseEvent()t | Boot | Closes and frees an event structure. |
| SignalEvent() | Boot | Signals an event. |
| WaitForEvent()  |  |  |  |  | | --- | --- | --- | --- | | Number | GUID | Assertion | Test Description | | 5.1.1.4.1 | 0x8dfd27a6, 0xa43c, 0x4443, 0x92, 0x2a, 0x34, 0x3a, 0x36, 0xee, 0xb9, 0x80 | BS.WaitForEvent – WaitForEvent() returns EFI\_UNSUPPORTED from an invalid TPL. | 1. Call CreateEvent() with all valid parameters.  2. Call RaiseTPL() to a TPL higher than TPL\_APPLICATION.  3. Call WaitForEvent() with the created event. The return status must be EFI\_UNSUPPORTED, and the notification function should not be invoked.  4. Call CloseEvent() with the created event. | | 5.1.1.4.2 | 0xe38e1362, 0xbf34, 0x4947, 0xa4, 0xf5, 0x39, 0xce, 0xa9, 0x3a, 0xcb, 0x0d | BS.WaitForEvent – WaitForEvent() returns EFI\_INVALID\_PARAMETER with an event of type EVT\_NOTIFY\_SIGNAL. | 1. Call CreateEvent() with the type EVT\_NOTIFY\_SIGNAL.  2. Call WaitForEvent() with the created event. The return status must be EFI\_INVALID\_PARAMETER, and the return index must be the index of the created event.  3. Call CloseEvent() with the created event. | | 5.1.1.4.3 | 0xe1e27d6e, 0x1130, 0x475b, 0xb0, 0xaf, 0xa0, 0xa8, 0x10, 0x48, 0xb2, 0xba | BS.WaitForEvent – WaitForEvent() returns EFI\_INVALID\_PARAMETER with a NumberOfEvents value of 0. | 1. Call WaitForEvent() with a NumberOfEvents value of 0. The return status must be EFI\_INVALID\_PARAMETER. | | 5.1.1.4.4 | 0x65657374, 0xc1a4, 0x424d, 0xb5, 0xa6, 0x85, 0x03, 0xf5, 0xb9, 0x75, 0x8d | BS.WaitForEvent – WaitForEvent() gets the correct index with a signaled event. | 1. Call CreateEvent() with all valid parameters to create a list of events.  2. Call SignalEvent() with one of created events.  3. Call WaitForEvent() with the list of events. The return status must be EFI\_SUCCESS, and the output index must be the index of the signaled event.  4. Call CloseEvent() with each created event. | | 5.1.1.4.5 | 0x129c34d4, 0x1045, 0x4fd2, 0x80, 0x57, 0x92, 0x14, 0x1d, 0x63, 0xb8, 0xdc | BS.WaitForEvent – WaitForEvent() gets the correct index with an un-signaled event. | 1. Call CreateEvent() and SetTimer() to create a timer to signal the event created in the next step.  2. Call CreateEvent() with all valid parameters.  3. Call WaitForEvent() with the created event. The return status must be EFI\_SUCCESS, and the output index must be the index of the event signaled by the timer.  4. Call CloseEvent() with each created event. | | Boot | Stops execution until an event is signaled. |
| CheckEvent() | Boot | Checks whether an event is in the signaled state. |
| SetTimer() | Boot | Sets an event to be signaled at a particular time. |
| RaiseTPL() | Boot | Raises the task priority level. |
| RestoreTPL() | Boot | Restores/lowers the task priority level. |
| CreateEventEx() | Boot | Creates an event in a group. |

### CreateEvent()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.1.1 | 0xa2a285eb, 0x1c60, 0x42d2, 0xa3, 0x2c, 0x74, 0x61, 0x5f, 0x1f, 0x76, 0x50 | BS.CreateEvent – CreateEvent() returns EFI\_INVALID\_PARAMETER with invalid event type. | 1. Call CreateEvent() with invalid event type. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.1.1.2 | 0xbd6d4465, 0xaee3, 0x4a07, 0x84, 0x70, 0x2a, 0xba, 0x24, 0x7b, 0xc8, 0x65 | BS.CreateEvent – CreateEvent() returns EFI\_INVALID\_PARAMETER with invalid notify TPL. | 1. Call CreateEvent() with invalid notification function TPLs. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.1.1.3 | 0x587ecd61, 0x0af3, 0x442d, 0xb9, 0xa5, 0x0a, 0xdd, 0x02, 0x57, 0x5b, 0x7b | BS.CreateEvent – CreateEvent() returns EFI\_INVALID\_PARAMETER with an Event value of NULL. | 1. Call CreateEvent() with an Event value of NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.1.1.4 | 0xef317ade, 0x8668, 0x456f, 0xbe, 0xd9, 0x76, 0x60, 0x56, 0x67, 0x2d, 0xff | BS.CreateEvent – CreateEvent() returns EFI\_SUCCESS with all valid parameters. | 1. Call CreateEvent() with all valid parameters. The return status must be EFI\_SUCCESS.  2. Call CloseEvent() with the created event. |
| 5.1.1.1.5 | 0x8759ef89, 0xbc76, 0x4fc1, 0xb8, 0x64, 0x91, 0x9d, 0x33, 0xa9, 0xb3, 0x91 | BS.CreateEvent – The events created by CreateEvent() are invoked in order of each specified notifyTPL. | 1. Call CreateEvent() to create events with different notification TPLs.  2. Call RaiseTPL() to the highest TPL.  3. Call SignalEvent() with each created event.  4. Call RestoreTPL() to the original TPL. The notification functions of the created event must be invoked in order of each specified notification TPL.  5. Call CloseEvent() with each created event. |
| 5.1.1.1.6 | 0xd4d37597, 0x6367,0x4f9d, 0xad, 0xac, 0x0f, 0xab, 0xe5, 0xb8, 0x3f, 0x2e | BS.CreateEvent - Create event with NotifyFunction being NULL and Type is EFI\_EVENT\_NOTIFY\_WAIT or EFI\_EVENT\_NOTIFY\_SIGNAL. | Call CreateEvent() with NotifyFunction being NULL and EventType is EFI\_EVENT\_NOTIFY\_WAIT or EFI\_EVENT\_NOTIFY\_SIGNAL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.1.1.7 | 0x48342406, 0xf478, 0x409e, 0x85, 0xa2, 0xca, 0x65, 0xad, 0xa6, 0xcd, 0xb8 | BS.CreateEvent - Create event with neither EVENT\_NOTIFY\_WAIT nor EVENT\_NOTIFY\_SIGNAL event types and unsupported notify TPLs | Call CreateEvent with neither EVENT\_NOTIFY\_WAIT nor EVENT\_NOTIFY\_SIGNAL event type and unsupported notify TPLs. The return status should be EFI\_SUCCESS. |

### 

### CloseEvent()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.2.1 | 0xa4f5922e, 0x26f8, 0x4591, 0xbb, 0x2e, 0xba, 0xf8, 0xdc, 0xc1, 0xcd, 0x93 | BS.CloseEvent – CloseEvents() returns EFI\_SUCCESS with all valid parameters. | 1. Call CreateEvent() with all valid parameters.  2. Call RaiseTPL() to the highest TPL.  3. Call SignalEvent() with the created event.  4. Call CloseEvent() with all valid parameters. The return status must be EFI\_SUCCESS.  5. Call RestoreTPL() to the original TPL. The notification function should not be invoked. |

### SignalEvent()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.3.1 | 0x397ab206, 0x7270, 0x484d, 0x8b, 0x2c, 0xd9, 0x0a, 0xeb, 0xe5, 0xad, 0x90 | BS.SignalEvent – SignalEvent() returns EFI\_SUCCESS with all valid parameters. | 1. Call CreateEvent() with all valid parameters.  2. Call RaiseTPL() to a TPL lower than the notifification TPL.  3. Call SignalEvent() with the created event X times. The notification function will be invoked X times.  4. Call RaiseTPL() to a TPL higher than the notification TPL.  5. Call SignalEvent() with the created event X times.  6. Call RestoreTPL() to the original TPL. The notification function will be invoked once.  7. Call CloseEvent() with the created event. |

### WaitForEvent()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.4.1 | 0x8dfd27a6, 0xa43c, 0x4443, 0x92, 0x2a, 0x34, 0x3a, 0x36, 0xee, 0xb9, 0x80 | BS.WaitForEvent – WaitForEvent() returns EFI\_UNSUPPORTED from an invalid TPL. | 1. Call CreateEvent() with all valid parameters.  2. Call RaiseTPL() to a TPL higher than TPL\_APPLICATION.  3. Call WaitForEvent() with the created event. The return status must be EFI\_UNSUPPORTED, and the notification function should not be invoked.  4. Call CloseEvent() with the created event. |
| 5.1.1.4.2 | 0xe38e1362, 0xbf34, 0x4947, 0xa4, 0xf5, 0x39, 0xce, 0xa9, 0x3a, 0xcb, 0x0d | BS.WaitForEvent – WaitForEvent() returns EFI\_INVALID\_PARAMETER with an event of type EVT\_NOTIFY\_SIGNAL. | 1. Call CreateEvent() with the type EVT\_NOTIFY\_SIGNAL.  2. Call WaitForEvent() with the created event. The return status must be EFI\_INVALID\_PARAMETER, and the return index must be the index of the created event.  3. Call CloseEvent() with the created event. |
| 5.1.1.4.3 | 0xe1e27d6e, 0x1130, 0x475b, 0xb0, 0xaf, 0xa0, 0xa8, 0x10, 0x48, 0xb2, 0xba | BS.WaitForEvent – WaitForEvent() returns EFI\_INVALID\_PARAMETER with a NumberOfEvents value of 0. | 1. Call WaitForEvent() with a NumberOfEvents value of 0. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.1.4.4 | 0x65657374, 0xc1a4, 0x424d, 0xb5, 0xa6, 0x85, 0x03, 0xf5, 0xb9, 0x75, 0x8d | BS.WaitForEvent – WaitForEvent() gets the correct index with a signaled event. | 1. Call CreateEvent() with all valid parameters to create a list of events.  2. Call SignalEvent() with one of created events.  3. Call WaitForEvent() with the list of events. The return status must be EFI\_SUCCESS, and the output index must be the index of the signaled event.  4. Call CloseEvent() with each created event. |
| 5.1.1.4.5 | 0x129c34d4, 0x1045, 0x4fd2, 0x80, 0x57, 0x92, 0x14, 0x1d, 0x63, 0xb8, 0xdc | BS.WaitForEvent – WaitForEvent() gets the correct index with an un-signaled event. | 1. Call CreateEvent() and SetTimer() to create a timer to signal the event created in the next step.  2. Call CreateEvent() with all valid parameters.  3. Call WaitForEvent() with the created event. The return status must be EFI\_SUCCESS, and the output index must be the index of the event signaled by the timer.  4. Call CloseEvent() with each created event. |

### CheckEvent()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.5.1 | 0xe69c54f3, 0x5a97, 0x4e09, 0x8f, 0x4b, 0xf3, 0x0f, 0xf1, 0x96, 0x4e, 0x0d | BS.CheckEvent – CheckEvent() returns EFI\_INVALID\_PARAMETER with an event of type EVT\_NOTIFY\_SIGNAL. | 1. Call CreateEvent() with the type EVT\_NOTIFY\_SIGNAL.  2. Call CheckEvent() with the created event. The return status must be EFI\_INVALID\_PARAMETER.  3. Call CloseEvent() with the created event. |
| 5.1.1.5.2 | 0x3cb51863, 0x1181, 0x49e5, 0x82, 0xa6, 0x66, 0x70, 0x90, 0x08, 0x81, 0x69 | BS.CheckEvent – CheckEvent() returns EFI\_NOT\_READY with an event that does not have the notification function. | 1. Call CreateEvent() without the notification function.  2. Call CheckEvent() with the created event. The return status must be EFI\_NOT\_READY.  3. Call CloseEvent() with the created event. |
| 5.1.1.5.3 | 0x4e9aa877, 0x2672, 0x4f8c, 0xba, 0x3c, 0xc0, 0x2f, 0x49, 0xa6, 0x89, 0x11 | BS.CheckEvent – CheckEvent() returns EFI\_NOT\_READY with an event that has a notification function that does not signal itself. | 1. Call CreateEvent() with a notification function that does not signal itself.  2. Call CheckEvent() with the created event. The return status must be EFI\_NOT\_READY.  3. Call CloseEvent() with the created event. |
| 5.1.1.5.4 | 0x060234f5, 0xa84a, 0x4dd7, 0xad, 0x5b, 0x64, 0x99, 0x62, 0x50, 0xf2, 0x16 | BS.CheckEvent – CheckEvent() returns EFI\_SUCCESS with a signaled event. | 1. Call CreateEvent() with all valid parameters.  2. Call SignalEvent() with the created event.  3. Call CheckEvent() with the signaled event. The return status must be EFI\_SUCCESS, and the notification function must not be invoked.  4. Call CloseEvent() with the created event. |
| 5.1.1.5.5 | 0xfa181d1b, 0x9fda, 0x4405, 0xb3, 0xb0, 0xf3, 0xfe, 0xdd, 0x30, 0x3e, 0xbe | BS.CheckEvent – CheckEvent() returns EFI\_SUCCESS with an event that has a notification function that signals itself. | 1. Call CreateEvent() with a notification function that signals itself.  2. Call CheckEvent() with the created event. The return status must be EFI\_SUCCESS, and the notification function must be invoked.  3. Call CloseEvent() with the created event. |

### SetTimer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.6.1 | 0x80bbd29e, 0x0c5b, 0x4f5b, 0xa2, 0x46, 0xdb, 0xea, 0xde, 0xf1, 0x59, 0x9c | BS.SetTimer – SetTimer() returns EFI\_INVALID\_PARAMETER with an event that does not include EVT\_TIMER. | 1. Call CreateEvent() without including the type EVT\_TIMER.  2. Call SetTimer() with the created event. The return status must be EFI\_INVALID\_PARAMETER.  3. Call CloseEvent() with the created event. |
| 5.1.1.6.2 | 0x16418244, 0x71a4, 0x4e4d, 0x86, 0x62, 0x43, 0xff, 0xf1, 0xac, 0x5e, 0xd7 | BS.SetTimer – SetTimer() returns EFI\_INVALID\_PARAMETER with an invalid timer type. | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with an invalid timer type. The return status must be EFI\_INVALID\_PARAMETER.  3. Call CloseEvent() with the created event. |
| 5.1.1.6.3 | 0x918f9f6c, 0x5072, 0x41a6, 0x95, 0xec, 0x81, 0x84, 0xaf, 0x57, 0x4e, 0xd1 | BS.SetTimer – SetTimer() with the type TimerRelative; the notification function will be invoked once. | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with the type TimerRelative. The return status must be EFI\_SUCCESS, and the notification function will be invoked once.  3. Call CloseEvent() with the created event. |
| 5.1.1.6.4 | 0x989ba6bc, 0x08eb, 0x4e98, 0xae, 0xa6, 0x9f, 0xe8, 0xe8, 0x73, 0x74, 0xa8 | BS.SetTimer – SetTimer() with the type TimerRelative; the notification function will be invoked more than once. | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with the type TimerRelative. The return status must be EFI\_SUCCESS, and the notification function will be invoked more than once.  3. Call CloseEvent() with the created event. |
| 5.1.1.6.5 | 0xbd333dd3, 0x62b2, 0x46eb, 0xbb, 0x4a, 0xa6, 0xb7, 0xb3, 0xde, 0xe2, 0x5f | BS.SetTimer – SetTimer() with type of TimerCancel; the notification function will not be invoked. | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with the type TimerCancel. The return status must be EFI\_SUCCESS, and the notification function will not be invoked.  3. Call CloseEvent() with the created event. |
| 5.1.1.6.6 | 0xdea3cb68, 0xdc79, 0x4b91, 0x91, 0x34, 0x64, 0xfb, 0x3e, 0xa2, 0x92, 0x03 | BS.SetTimer – The notification function will be invoked correctly after the timer type is changed by SetTimer(). | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with the type TimerRelative.  3. Call SetTimer() with the type TimerRelative. The return status must be EFI\_SUCCESS, and the notification function will be invoked once.  4. Call CloseEvent() with the created event. |
| 5.1.1.6.7 | 0xe866f000, 0xb5e6, 0x4d29, 0xab, 0xdd, 0x5d, 0xbb, 0x11, 0x8d, 0xc2, 0xc0 | BS.SetTimer – SetTimer() returns EFI\_SUCCESS with a TriggerTime of 0. | 1. Call CreateEvent() with all valid parameters.  2. Call SetTimer() with a TriggerTime of 0. The return status must be EFI\_SUCCESS, and the notification function will be invoked immediately.  3. Call CloseEvent() with the created event. |

### RaiseTPL()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.7.1 | 0x94fff736, 0xc5df, 0x40a6, 0xaa, 0x4f, 0x88, 0x1c, 0x38, 0x0f, 0x78, 0x84 | BS.RaiseTPL – RaiseTPL() returns the correct TPL with valid parameters. | 1. Get the original TPL via RaiseTPL() and RestoreTPL().  2. Call RaiseTPL() with all valid TPLs. The return TPL must be the same as the original TPL.  3. Call RaiseTPL() with the highest TPL. The return TPL must be the same as the TPL passed by the previous RaiseTPL().  4. Call RestoreTPL() to the original TPL. |

### 

### RestoreTPL()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.8.1 | 0x08bcd6be, 0x9808, 0x4417, 0x88, 0x3a, 0x5e, 0x54, 0xd3, 0x9f, 0xc3, 0xa8 | BS.RestoreTPL – RestoreTPL() sets the correct TPL with valid parameters. | 1. Get the original TPL via RaiseTPL() and RestoreTPL().  2. Call RaiseTPL() with all valid TPLs.  3. Call RestoreTPL() to the original TPL.  4. Get the current TPL via RaiseTPL() and RestoreTPL(). This TPL must be the same as the original TPL. |

### CreateEventEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.1.9.1 | 0xd68d782c, 0xc59d, 0x4acb, 0x98, 0x33, 0xdc, 0x5c, 0xad, 0x20, 0xfd, 0x38 | BS.CreateEventEx – CreateEventEx() returns EFI\_INVALID\_PARAMETER with all invalid event types. | 1. Call CreateEventEx() with all invalid event types. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.1.9.2 | 0xa74a802f, 0xd632, 0x49f0, 0xa3, 0xde, 0x13, 0xc5, 0x5d, 0x9c, 0x9e, 0x06 | BS.CreateEventEx –CreateEventEx() returns EFI\_INVALID\_PARAMETER with an invalid notification TPL function. | 1. Call CreateEventEx() with the notification TPL function EFI\_TPL\_APPLICATION. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.1.9.3 | 0xff0e6747, 0x80b6, 0x4168, 0xa6, 0x6b, 0x66, 0x94, 0xa7, 0x88, 0x10, 0x59 | BS.CreateEventEx –CreateEventEx() returns EFI\_INVALID\_PARAMETER with an Event value of NULL. | 1. Call CreateEventEx() with an Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.1.9.4 | 0x40f0e21f, 0x2ffe, 0x43ca, 0xa0, 0x25, 0x78, 0x32, 0x83, 0xf1, 0xc3, 0x0b | BS.CreateEventEx –CreateEventEx() returns EFI\_INVALID\_PARAMETER when either EFI\_EVENT\_NOTIFY\_WAIT or EFI\_EVENT\_NOTIFY\_SIGNAL is set and NotifyFunction is NULL. | Call CreateEventEx() with a NotifyTpl value of: EFI\_EVENT\_NOTIFY\_WAIT or EFI\_EVENT\_NOTIFY\_SIGNAL or EFI\_EVENT\_TIMER | EFI\_EVENT\_NOTIFY\_SIGNAL or EFI\_EVENT\_TIMER | EFI\_EVENT\_NOTIFY\_WAIT In addition, a NotifyFunction value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.1.9.5 | 0x3e26a97e, 0xda03, 0x4409, 0x98, 0xa1, 0x93, 0x12, 0xbe, 0xb2, 0x8c, 0x43 | BS.CreateEventEx – Creates an event with valid parameters. Once an event in an event group is signaled, all the events in this group are signaled, and the notification functions are called in the proper order. | 1. Call CreateEventEx() to create three events with notification functions. Among them, Event0 and Event1 are created with NotifyTpl set to EFI\_TPL\_CALL\_BACK and EventGroup set to TestEventGroup1.  Event2 is created with NotifyTpl set to EFI\_TPL\_NOTIFY and EventGroup set to NULL.  2. Call RaiseTPL() to raise the current TPL to TPL\_HIGH\_LEVEL,and call SignalEvent() to signal all the events in the order of Event0,Event2.  3. Call RestoreTPL() to restore the current TPL to the original level. The return status of CreateEventEx() should be EFI\_SUCCESS. After the execution of RestoreTPL(), the notification functions of the 3 events should be invoked in the order of Event2, Event1, Event0. |
| 5.1.1.9.6 | 0xf2eb0902,  0x3192,  0x4026,0x89,  0x2e,0x83,  0xa3,0x5b,  0x43,0x27,  0x9c | BS.CreateEventEx - Creates an event with valid parameters and Check the notification of the EventGroup and the notify order when call InstallConfigurationTable. | 1. Call CreateEventEx() to create 3 events with the same notification function and same event group. Among them, Event0 and Event1 are created with NotifyTpl set to EFI\_TPL\_CALL\_BACK. Event2 is created with NotifyTpl set to EFI\_TPL\_NOTIFY.  2. Call RaiseTPL() to raise the current TPL to EFI\_TPL\_HIGH\_LEVEL. Call InstallConfigurationTable() to signal all events in the same group.  3. Call RestoreTPL() to restore the current TPL to the original level. Close all events and remove the newly installed configuration table. After the execution, the notification function of Event3 should be invoked in first. |
| 5.1.1.9.7 | 0xba3d7e17, 0x7ee1, 0x4a0f, 0xaa, 0x99, 0x3c, 0x49, 0x23, 0x3d, 0x6c, 0x36 | BS.CreateEventEx - Check the notification of the EFI\_EVENT\_GROUP\_MEMORY\_MAP\_CHANGE and the notify order when Memory Allocation Services is called | 1. Call **CreateEventEx()** to create 3 events in **EVT\_NOTIFY\_SIGNAL** type with the same notification function. Event1 and Event2 are **CALLBACK** **TPL** and Event3 is **NOTIFY** **TPL**. They are registered in the **gEfiEventMemoryMapChangeGuid**. 2. Call **RaiseTPL()** to raise the current **TPL** to **EFI\_TPL\_NOTIFY\_LEVEL.** Call **AllocatePages()** to signal all events. 3. Call **RestoreTPL()** to restore the current **TPL** to the original level. Close all events and free the newly allocated pages. After the execution, the notification order should be correct. |

## 

## Memory Allocation Services Test

Reference Document:

*UEFI Specification*, Memory Allocation Services Section.

* Memory Allocation Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| AllocatePages() | Boot | Allocates pages of a particular type. |
| FreePages() | Boot | Frees allocated pages. |
| GetMemoryMap() | Boot | Returns the current boot services memory map and memory map key. |
| AllocatePool() | Boot | Allocates a pool of a particular type. |
| FreePool() | Boot | Frees allocated pool. |

### AllocatePages()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.2.1.1 | 0x7c9075d2, 0xcbf1, 0x4b57, 0x86, 0x30, 0xde, 0x34, 0xb9, 0xcc, 0x11, 0x90 | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a Type value of MaxAllocateType | 1. Call AllocatePages() with a Type value of MaxAllocateType. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.2 | 0x224a63b3, 0x1e41, 0x47b7, 0xa8, 0xdc, 0x82, 0x3d, 0xe4, 0x0d, 0x00, 0xd5 | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a Type value of MaxAllocateType + 1. | 1. Call AllocatePages() with a Type value of MaxAllocateType + 1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.3 | 0x6c330112, 0x24cb, 0x48f2, 0x9e, 0x68, 0x6a, 0xcf, 0x80, 0x7b, 0x40, 0xc4 | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a Type value of –1. | 1. Call AllocatePages() with a Type value of –1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.4 | 0x6f5ca3fc, 0x9893, 0x42da, 0xb1, 0x4f, 0x8d, 0x24, 0xf3, 0x49, 0x14, 0x4a | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a MemoryType value of EfiMaxMemoryType. | 1. Call AllocatePages() with a MemoryType value of EfiMaxMemoryType. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.5 | 0x2ca3999f, 0x70a7, 0x4a2a, 0x96, 0x62, 0xf1, 0x42, 0x1a, 0x10, 0x36, 0x89 | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a MemoryType value of EfiMaxMemoryType + 1. | 1. Call AllocatePages() with a MemoryType value of EfiMaxMemoryType + 1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.6 | 0xd26a1cfc, 0x51ef, 0x42c6, 0x99, 0x07, 0x13, 0x72, 0xde, 0xc6, 0xce, 0x80 | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a MemoryType value of 0x6FFFFFFE. | 1. Call AllocatePages() with a MemoryType value of 0x6FFFFFFE. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.7 | 0xee820dab, 0xf589, 0x49e9, 0xbd, 0xec, 0x84, 0x19, 0x75, 0x44, 0x7e, 0xcd | BS.AllocatePages – AllocatePages() returns EFI\_INVALID\_PARAMETER with a MemoryType value of 0x6FFFFFFF. | 1. Call AllocatePages() with a MemoryType value of 0x6FFFFFFF. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.1.8 | 0x9b0c2857, 0x4116, 0x4890, 0xac, 0x8f, 0x61, 0xef, 0x02, 0xbc, 0x2d, 0x75 | BS.AllocatePages – AllocatePages() returns EFI\_OUT\_OF\_RESOURCES with a Pages value of MaxFreePages + 1. | 1. Call GetMemoryMap() to get the memory map. Get the page number of the biggest contiguous free memory.  2. Call AllocatePages() with a Pages value of MaxFreePages + 1. The return status must be EFI\_OUT\_OF\_RESOURCES. |
| 5.1.2.1.9 | 0x382e4ce7, 0x81d9, 0x479b, 0xa5, 0xf5, 0x55, 0x80, 0x8e, 0xe7, 0xb7, 0x06 | BS.AllocatePages – AllocatePages() returns EFI\_NOT\_FOUND with non‑existent memory. | 1. Call GetMemoryMap() to get the memory map. Find a physical address that is not in the range of any memory descriptor.  2. Call AllocatePages() with a Type value of AllocateAddress and Memory containing non‑existent memory. The return status must be EFI\_NOT\_FOUND. |
| 5.1.2.1.10 | 0x69663454, 0x635d, 0x48f8, 0x8e, 0x9a, 0x8b, 0x3f, 0x28, 0xc8, 0x42, 0xc2 | BS.AllocatePages – AllocatePages() returns EFI\_NOT\_FOUND with allocated memory. | 1. Call GetMemoryMap() to get the memory map. Find a physical address that has been allocated.  2. Call AllocatePages() with a Type value of AllocateAddress and Memory containing allocated memory. The return status must be EFI\_NOT\_FOUND. |
| 5.1.2.1.11 | 0x501a28d8, 0x4d4f, 0x4f56, 0x99, 0xa4, 0x45, 0x11, 0xb5, 0xe3, 0x31, 0x9b | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAnyPages at EFI\_TPL\_APPLICATION. | 1. Raise to EFI\_TPL\_APPLICATION via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return status must be EFI\_SUCCESS.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.12 | 0xb7f8a839, 0xc3bf, 0x4967, 0x85, 0x7f, 0x4a, 0x23, 0xe6, 0x1a, 0x52, 0x4c | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAnyPages at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return status must be EFI\_SUCCESS.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.13 | 0x9ba3d098, 0x6457, 0x4287, 0xb7, 0x3c, 0x1c, 0x1a, 0xcb, 0x70, 0xf0, 0x2f | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAnyPages at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return status must be EFI\_SUCCESS.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.14 | 0xfcbf390b, 0xf2d3, 0x47ea, 0xb0, 0x60, 0xca, 0x49, 0xcc, 0xb3, 0x42, 0x75 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAnyPages at EFI\_TPL\_APPLICATION. | 1. Raise to EFI\_TPL\_APPLICATION via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return Memory must be page-aligned.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.15 | 0x24e4d5c2, 0x2295, 0x48d2, 0xa5, 0x4e, 0x35, 0x83, 0xa0, 0xf8, 0x67, 0x67 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAnyPages at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return Memory must be page-aligned.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.16 | 0x41a830a7, 0x88b8, 0x42a5, 0xb9, 0xb6, 0x71, 0xe8, 0x9d, 0x38, 0x2f, 0x95 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAnyPages at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  2. Call AllocatePages() with a Type value of AllocateAnyPages. The return Memory must be page-aligned.  3. Restore to the previous TPL.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.17 | 0x4035dc76, 0xae10, 0x4964, 0x94, 0x06, 0x07, 0x30, 0x68, 0x4c, 0xc3, 0xd7 | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return code must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.18 | 0xa1834910, 0x5c26, 0x4c62, 0x92, 0xa0, 0xad, 0xd0, 0xf4, 0x35, 0x4c, 0x35 | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return code must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.19 | 0xca4d6c22, 0xb382, 0x4546, 0x97, 0xd7, 0x4c, 0x14, 0x72, 0x61, 0xbb, 0x16 | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is / 3. Restore to the previous TPL. The return code must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.20 | 0x3dcb261f, 0x75ec, 0x4384, 0xa1, 0x74, 0x21, 0xff, 0x5c, 0xf1, 0x03, 0x98 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.21 | 0x5f41e4f3, 0x8b1c, 0x4329, 0x97, 0x50, 0xd1, 0x21, 0x89, 0xea, 0x2e, 0x7f | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.22 | 0x7dcdedeb, 0xf204, 0x40c4, 0x8a, 0x84, 0x0f, 0x90, 0x93, 0x90, 0xcf, 0xd0 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.23 | 0xa99d8b50, 0xb10f, 0x4fbb, 0xb7, 0x23, 0x89, 0x54, 0xdf, 0x9f, 0x7e, 0x57 | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be less than or equal to MaxFreeAddress – MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.24 | 0x921d4b59, 0xb5a7, 0x4cff, 0xb1, 0x11, 0x24, 0xd5, 0xdb, 0xdc, 0xda, 0x15 | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be less than or equal to MaxFreeAddress – MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.25 | 0x6a06e702, 0x8564, 0x48d6, 0xbd, 0x05, 0x87, 0xe7, 0x16, 0xc4, 0x25, 0x49 | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY, Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be less than or equal to MaxFreeAddress – MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.26 | 0x97b0a334, 0xe68d, 0x4f6d, 0xb8, 0x63, 0xb5, 0x98, 0x13, 0x01, 0x09, 0x5b | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.27 | 0x41e801c5, 0x9f47, 0x4d2d, 0xb0, 0x11, 0x0c, 0xa0, 0x74, 0x43, 0x57, 0x66 | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.28 | 0xc0f7ee56, 0x8c2f, 0x4bc9, 0x9d, 0xcf, 0x1f, 0x74, 0x36, 0x5e, 0x29, 0xba | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.29 | 0x36b82136, 0xa336, 0x4f34, 0xbb, 0x65, 0xd9, 0xab, 0x57, 0x45, 0xba, 0x24 | BS.AllocatePages – AllocatePages() allocates page-aligned with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.30 | 0x914a008f, 0xfef7, 0x4550, 0x85, 0xf4, 0x81, 0x8d, 0xdb, 0x9c, 0x7e, 0x81 | BS.AllocatePages – AllocatePages() allocates page-aligned with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.31 | 0xe3e584d5, 0x4724, 0x4489, 0xb8, 0xa0, 0x0f, 0x0c, 0x88, 0xbb, 0x4a, 0xb9 | BS.AllocatePages – AllocatePages() allocates page-aligned with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.32 | 0x07042b86, 0xdc99, 0x49a5, 0xa7, 0x99, 0x7a, 0xc8, 0x29, 0xb5, 0xa8, 0xfa | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must less than or equal to MaxFreeAddress – MaxFreePages \* 2 / 3.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.33 | 0x87cb26a9, 0xd9d7, 0x4e94, 0x85, 0x9d, 0x18, 0x75, 0x20, 0x8e, 0xfa, 0x3b | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must less than or equal to MaxFreeAddress – MaxFreePages \* 2 / 3.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.34 | 0x1020847c, 0xcec5, 0x4201, 0x97, 0x39, 0x10, 0xe6, 0xb8, 0x54, 0xfc, 0xea | BS.AllocatePages – AllocatePages() skips the allocated memory with a Type value of AllocateMaxAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the max free memory address and page number.  2. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3.  3. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateMaxAddress and the max free memory address, the required Pages is MaxFreePages / 3. Restore to the previous TPL. The return memory must less than or equal to MaxFreeAddress – MaxFreePages \* 2 / 3.  4. Call FreePages() to free the allocated memory. |
| 5.1.2.1.35 | 0xc660bfb9, 0x0f5a, 0x4379, 0xad, 0x60, 0x94, 0x94, 0x56, 0x10, 0x76, 0xdb | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.36 | 0xed56052c, 0x876e, 0x499d, 0xbd, 0xd0, 0x93, 0x9d, 0xd1, 0x72, 0x00, 0x25 | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.37 | 0x5202b52b, 0x215f, 0x4638, 0x99, 0x32, 0x4a, 0x55, 0x05, 0x84, 0xe9, 0x7d | BS.AllocatePages – AllocatePages() allocates memory with a Type value of AllocateAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.38 | 0x75150eec, 0xcc62, 0x47c7, 0xaf, 0x09, 0x47, 0xb8, 0xaa, 0x3f, 0xdb, 0xee | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.39 | 0xca38bfcb, 0x036f, 0x4f3b, 0x89, 0x21, 0xe7, 0x27, 0x6c, 0x91, 0x45, 0x2e | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.40 | 0xe6e7432c, 0x679d, 0x40da, 0xbd, 0xce, 0xf0, 0xba, 0xb6, 0x9d, 0x21, 0x55 | BS.AllocatePages – AllocatePages() allocates page-aligned memory with a Type value of AllocateAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.41 | 0x26d0d6aa, 0x49ca, 0x434b, 0x8c, 0x2b, 0xa9, 0x0f, 0x31, 0x2e, 0x6f, 0x5a | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateAddress at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be the specified address.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.42 | 0xbd3eaba7, 0x8c6d, 0x420c, 0x84, 0x56, 0x9d, 0x37, 0x61, 0x7c, 0x8e, 0xcb | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateAddress at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be the specified address.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.43 | 0x36f46d2d, 0xe1c6, 0x45e2, 0xaa, 0x46, 0x6e, 0x12, 0x18, 0x11, 0x65, 0xd3 | BS.AllocatePages – AllocatePages() allocates specified memory with a Type value of AllocateAddress at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMap() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address. Restore to the previous TPL. The return memory must be the specified address.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.44 | 0x795de369, 0x3491, 0x44f9, 0x9c, 0x4f, 0xcf, 0x9a, 0x2e, 0x46, 0xf4, 0xbc | BS.AllocatePages – AllocatePages() allocates the front range memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.45 | 0xa1c0ad17, 0x6437, 0x404d, 0xbf, 0x96, 0x68, 0xa5, 0x6e, 0x89, 0x3e, 0xff | BS.AllocatePages – AllocatePages() allocates the front range memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.46 | 0xb06f5d52, 0x3e4c, 0x480a, 0xa9, 0x58, 0x4a, 0x96, 0x25, 0x68, 0x5f, 0xbb | BS.AllocatePages – AllocatePages() allocates the front range memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.47 | 0x314ca190, 0x0b96, 0x4485, 0x80, 0x14, 0xbd, 0x99, 0x06, 0x01, 0x05, 0x45 | BS.AllocatePages – AllocatePages() allocates the front range page-aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.48 | 0xeb6fb13f, 0x175e, 0x454a, 0x88, 0x0b, 0x1d, 0x6d, 0xc1, 0xb1, 0x3b, 0x98 | BS.AllocatePages – AllocatePages() allocates the front range page-aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.49 | 0x3f710c4c, 0x1b2a, 0x4fff, 0x95, 0x23, 0x28, 0x2c, 0x60, 0x89, 0x49, 0x96 | BS.AllocatePages – AllocatePages() allocates the front range page-aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.50 | 0xa95be66c, 0xc41a, 0x46d5, 0x81, 0xfe, 0x4c, 0xa2, 0x0f, 0xf5, 0x61, 0x76 | BS.AllocatePages – AllocatePages() allocates the front range specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.51 | 0x524a404b, 0xf888, 0x4ce0, 0xb5, 0xec, 0xcd, 0xe5, 0x35, 0x5a, 0xc3, 0xc2 | BS.AllocatePages – AllocatePages() allocates the front range specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.52 | 0x5417ba5c, 0x3fdd, 0x47ab, 0xa3, 0xfd, 0x37, 0x11, 0x12, 0xeb, 0x81, 0x60 | BS.AllocatePages – AllocatePages() allocates the front range specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.53 | 0xcc5fe3de, 0x5df7, 0x4430, 0x8e, 0xd6, 0xfb, 0x0f, 0xf3, 0xcf, 0x80, 0xa9 | BS.AllocatePages – AllocatePages() allocates the middle range memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.54 | 0xf2308944, 0xd010, 0x401f, 0x84, 0xa5, 0xb2, 0x6a, 0xe0, 0x95, 0x3f, 0x2c | BS.AllocatePages – AllocatePages() allocates the middle range memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.55 | 0x4ce5e0ba, 0x1830, 0x463e, 0x99, 0xd0, 0x11, 0x60, 0xa9, 0xdf, 0x5e, 0xac | BS.AllocatePages – AllocatePages() allocates the middle range memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.56 | 0x42a635a5, 0x60c6, 0x492a, 0x80, 0x6d, 0x17, 0x58, 0x54, 0x35, 0x48, 0xba | BS.AllocatePages – AllocatePages() allocates the middle range page-aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.57 | 0x2dcc2be2, 0x6474, 0x48c9, 0xba, 0xbc, 0x88, 0xf4, 0xe6, 0x7b, 0xad, 0x9d | BS.AllocatePages – AllocatePages() allocates the middle range page-aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.58 | 0xbe11065a, 0x6b98, 0x4713, 0x8d, 0xc6, 0xd9, 0x4c, 0xb2, 0x42, 0xcd, 0xc7 | BS.AllocatePages – AllocatePages() allocates the middle range page-aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.59 | 0x38c4fb2a, 0xfc38, 0x48dc, 0xa8, 0x71, 0xe9, 0xba, 0x67, 0x5b, 0x5d, 0x67 | BS.AllocatePages – AllocatePages() allocates the middle range specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.60 | 0xb2ce5fd6, 0x6651, 0x4a7e, 0x8a, 0x78, 0x1a, 0x30, 0xf9, 0xfb, 0x37, 0xef | BS.AllocatePages – AllocatePages() allocates the middle range specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.61 | 0x1818d9da, 0x4c0d, 0x4024, 0xaa, 0x2a, 0xd1, 0x64, 0xbb, 0xda, 0x61, 0x0a | BS.AllocatePages – AllocatePages() allocates the middle range specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.62 | 0x3e0a81a9, 0x3670, 0x4239, 0x8c, 0x91, 0x5d, 0x99, 0x61, 0x3d, 0x96, 0x44 | BS.AllocatePages – AllocatePages() allocates the back range memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.63 | 0x34b922f1, 0x69eb, 0x4ebf, 0x96, 0xb8, 0x88, 0xf2, 0x90, 0x8c, 0x78, 0x9d | BS.AllocatePages – AllocatePages() allocates the back range memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.64 | 0x716ed29e, 0xc942, 0x4768, 0x9b, 0xc4, 0x2c, 0xcf, 0x8a, 0x27, 0x7e, 0x52 | BS.AllocatePages – AllocatePages() allocates the back range memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.65 | 0xba6c792f, 0xc50a, 0x41ce, 0x97, 0xfa, 0x72, 0xde, 0x0b, 0xb0, 0x7c, 0xda | BS.AllocatePages – AllocatePages() allocates the back range page-aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.66 | 0x91c452d2, 0x452a, 0x4d7f, 0xbc, 0x7a, 0x9b, 0xc1, 0xb9, 0x00, 0x9b, 0x4e | BS.AllocatePages – AllocatePages() allocates the back range page-aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.67 | 0x4707f413, 0xd4fe, 0x4f6b, 0x83, 0x11, 0x2a, 0x99, 0x3c, 0x66, 0x4f, 0xc7 | BS.AllocatePages – AllocatePages() allocates the back range page-aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.68 | 0x0016743c, 0x47d3, 0x46ef, 0xaa, 0xc6, 0x3b, 0x53, 0x87, 0x27, 0x03, 0xb1 | BS.AllocatePages – AllocatePages() allocates the back range specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages \* 2 / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.69 | 0xcd59e7d8, 0x2f94, 0x43e1, 0xb3, 0x47, 0x56, 0x0f, 0xc9, 0x38, 0x48, 0x9d | BS.AllocatePages – AllocatePages() allocates the back range specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages \* 2 / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.70 | 0x24fb7551, 0xb7cb, 0x44d3, 0xbd, 0xeb, 0x83, 0x9f, 0x42, 0x29, 0x72, 0xc6 | BS.AllocatePages – AllocatePages() allocates the front range specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address + MaxFreePages \* 2 / 3, a required size value of MaxFreePages / 3. Restore to the previous TPL. The return memory must be the MaxFreeAddress + MaxFreePages \* 2 / 3.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.71 | 0xb46677ff, 0x657f, 0x4ac8, 0x8c, 0x22, 0xdd, 0x18, 0xf5, 0x4d, 0x3e, 0x5b | BS.AllocatePages – AllocatePages() allocates 1 page memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.72 | 0x24f43772, 0xb149, 0x4a1a, 0xb0, 0xee, 0x5c, 0x0d, 0x58, 0x62, 0x2c, 0xf4 | BS.AllocatePages – AllocatePages() allocates 1 page memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.73 | 0xda1285ae, 0xd920, 0x4a2b, 0xac, 0x5d, 0x6e, 0x35, 0xc9, 0xcd, 0xa7, 0x37 | BS.AllocatePages – AllocatePages() allocates 1 page memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.74 | 0xe8f44262, 0x8a44, 0x4baa, 0xa3, 0xe6, 0x08, 0x34, 0x63, 0xd5, 0xfb, 0x02 | BS.AllocatePages – AllocatePages() allocates 1 page-aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.75 | 0xfea00605, 0xd3ca, 0x488d, 0xb8, 0xc3, 0xec, 0xd8, 0x2e, 0xe8, 0x13, 0x09 | BS.AllocatePages – AllocatePages() allocates 1 page-aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.76 | 0x25fff7ef, 0x3c3d, 0x428a, 0x84, 0x30, 0x98, 0xed, 0x44, 0xc1, 0x32, 0xe7 | BS.AllocatePages – AllocatePages() allocates 1 page-aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.77 | 0x5551cfc4, 0x69e3, 0x41ee, 0xb5, 0x7f, 0x95, 0x4a, 0x3e, 0xae, 0x41, 0x5a | BS.AllocatePages – AllocatePages() allocates 1 page specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.78 | 0x4207a629, 0x5dab, 0x4ec6, 0x87, 0x1e, 0xd9, 0xf7, 0xb0, 0x73, 0x8b, 0x9a | BS.AllocatePages – AllocatePages() allocates 1 page specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.79 | 0xe1f99cec, 0xa0f6, 0x4faa, 0xb6, 0xd4, 0x59, 0x5b, 0x46, 0x54, 0x6f, 0xe7 | BS.AllocatePages – AllocatePages() allocates 1 page specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.80 | 0x74333bdf, 0x4ae6, 0x4251, 0x86, 0xc8, 0x7e, 0x13, 0xf4, 0x43, 0xef, 0x46 | BS.AllocatePages – AllocatePages() allocates (num – 1) pages memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value ofg AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.81 | 0x7a4005b5, 0xdb06, 0x436b, 0xbe, 0x70, 0xf3, 0x6b, 0x8e, 0x27, 0xac, 0xa0 | BS.AllocatePages – AllocatePages() allocates (num – 1) pages memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.82 | 0xb2942967, 0x5d94, 0x4d0a, 0xb9, 0x00, 0x6e, 0xc2, 0x92, 0x04, 0xac, 0x70 | BS.AllocatePages – AllocatePages() allocates (num – 1) pages memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.83 | 0x9881d7df, 0x6c22, 0x4062, 0xbe, 0x67, 0xda, 0x8c, 0xa5, 0xd5, 0xfa, 0x61 | BS.AllocatePages – AllocatePages() allocates (num – 1) pages aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.84 | 0xed0d3c6f, 0xb9e8, 0x4713, 0xba, 0x6f, 0x04, 0xf2, 0xaa, 0x8a, 0xc5, 0x45 | BS.AllocatePages – AllocatePages() allocates (num – 1) pages aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.85 | 0xaeca503a, 0x4948, 0x4014, 0x85, 0x5c, 0x16, 0xc7, 0xd0, 0x95, 0xfa, 0xbb | BS.AllocatePages – AllocatePages() allocates (num – 1) pages aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.86 | 0xa9edd440, 0x6d31, 0x49c9, 0x84, 0x3e, 0x76, 0x08, 0x3e, 0xdf, 0x12, 0x22 | BS.AllocatePages – AllocatePages() allocates (num –1) pages specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.87 | 0xfb85b1c9, 0x74a8, 0x41cb, 0xac, 0xed, 0x0f, 0xf4, 0x11, 0x1a, 0xf5, 0x2f | BS.AllocatePages – AllocatePages() allocates (num –1) pages specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.88 | 0x1b0d694f, 0x61c6, 0x4d16, 0xae, 0x5d, 0xa7, 0xb1, 0x24, 0x60, 0xed, 0x50 | BS.AllocatePages – AllocatePages() allocates (num –1) pages specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages - 1. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.89 | 0x04ffd118, 0xa284, 0x4dda, 0xb5, 0x8f, 0x63, 0xb6, 0x12, 0xe2, 0xab, 0xe6 | BS.AllocatePages – AllocatePages() allocates num pages memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.90 | 0x78cdeb2f, 0x492b, 0x49b5, 0x83, 0x82, 0x18, 0x63, 0xac, 0xe9, 0xa9, 0xa4 | BS.AllocatePages – AllocatePages() allocates num pages memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.91 | 0x32901e32, 0xa85a, 0x4230, 0x99, 0x14, 0xfa, 0xa6, 0xd4, 0x33, 0xa8, 0x13 | BS.AllocatePages – AllocatePages() allocates num pages memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.92 | 0x89e723c7, 0x0b2f, 0x4751, 0xac, 0xc5, 0xe1, 0xba, 0xa6, 0x28, 0xcd, 0x54 | BS.AllocatePages – AllocatePages() allocates num pages aligned memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.93 | 0xa81cb559, 0xdc0c, 0x4893, 0xbb, 0xbd, 0xa4, 0x30, 0xe4, 0x07, 0x8b, 0xb3 | BS.AllocatePages – AllocatePages() allocates num pages aligned memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.94 | 0x2d655fc1, 0x98c3, 0x405e, 0x9a, 0x62, 0x5b, 0xdb, 0x24, 0xa0, 0xd9, 0xc0 | BS.AllocatePages – AllocatePages() allocates num pages aligned memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be page-aligned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.95 | 0xc1b252ad, 0x2652, 0x4368, 0xb6, 0x75, 0xe4, 0x73, 0x90, 0xef, 0x7a, 0x47 | BS.AllocatePages – AllocatePages() allocates num pages specified memory at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_APPLICATION. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.96 | 0x749fd711, 0x393a, 0x4dee, 0x85, 0xbf, 0xe4, 0xee, 0xf2, 0x69, 0x89, 0xa0 | BS.AllocatePages – AllocatePages() allocates num pages specified memory at EFI\_TPL\_CALLBACK. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_CALLBACK. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.97 | 0x117696f6, 0xb7f9, 0x41c7, 0xa8, 0x5b, 0xb5, 0xf0, 0x55, 0xfd, 0x96, 0x32 | BS.AllocatePages – AllocatePages() allocates num pages specified memory at EFI\_TPL\_NOTIFY. | 1. Call GetMemoryMep() to get the memory map. Find the free memory address and page number.  2. Raise to EFI\_TPL\_NOTIFY. Call AllocatePages() with a Type value of AllocateAddress and the free memory address, a required size value of MaxFreePages. Restore to the previous TPL. The return memory must be the MaxFreeAddress.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.1.98 | 0xa49b9e70, 0x956a, 0x4f29, 0xbb, 0x7f, 0x37, 0x5a, 0xc0, 0xa7, 0x29, 0x30 | BS.AllocatePages -AllocatePages() returns EFI\_INVALID\_PARAMETER with NULL Memory. | 1. Call AllocatePages() with NULL Memory. The return code must be EFI\_INVALID\_PARAMETER |
| 5.1.2.1.99 | 0x2d261231, 0xc694, 0x4dbb, 0x83, 0xd0, 0x1d, 0xc8, 0xd3, 0x89, 0x44, 0x5f | **BS.AllocatePages – AllocatePages()** returns **EFI\_INVALID\_PARAMETER** when *MemoryType* is *EfiPersistentMemory*. | 1. Call AllocatePages() when *MemoryType* is *EfiPersistentMemory*. The return code must be EFI\_INVALID\_PARAMETE R. |

### FreePages()

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| Number | GUID | Assertion | Test Description |
| 5.1.2.2.1 | 0x3c73e240, 0xe73b, 0x4163, 0x93, 0x72, 0x80, 0x50, 0x61, 0x73, 0xc4, 0x35 | BS.FreePages – FreePages() returns EFI\_NOT\_FOUND with non-existent memory. | 1. Call GetMemoryMap() to get the memory map. Find a physical address that is not in the range of any memory descriptor.  2. Call FreePages() with the Memory containing non‑existent memory. The return status must be EFI\_NOT\_FOUND. |
| 5.1.2.2.2 | 0x0a2e4eb5, 0x1197, 0x41eb, 0xa3, 0x89, 0x15, 0xf7, 0x56, 0x3a, 0xf6, 0xf6 | BS.FreePages – FreePages() returns EFI\_NOT\_FOUND with conventional memory. | 1. Call GetMemoryMap() to get the memory map. Find a physical address whose type is EfiConventionalMemory.  2. Call FreePages() with the Memory containing conventional memory. The return status must be EFI\_NOT\_FOUND. |
| 5.1.2.2.3 | 0x42b2869e, 0xe546, 0x4302, 0x83, 0xb3, 0x39, 0xf1, 0xad, 0x8d, 0x0f, 0x85 | BS.FreePages – FreePages() returns EFI\_INVALID\_PARAMETER with non page-aligned memory. | 1. Call FreePages() with the Memory is not a 4KB aligned address. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.2.4 | 0x089cfb08, 0x2990, 0x4f44, 0xb6, 0xa1, 0x4c, 0x73, 0xa5, 0x3e, 0x30, 0xba | BS.FreePages – FreePages() returns EFI\_INVALID\_PARAMETER with a Pages value of 0. | 1. Call AllocatePages() to allocate a block of memory.  2. Call FreePages() with the allocated memory but a Pages value of 0. The return Status code must be EFI\_INVALID\_PARAMETER.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.2.5 | 0xc5484c8d, 0xc84d, 0x485d, 0x8c, 0x22, 0x46, 0xa1, 0x16, 0xc1, 0x44, 0x1d | BS.FreePages – FreePages() frees 1 page at EFI\_TPL\_APPLICATION. | 1. Call AllocatePages() to allocate 1 page memory.  2. Raise to EFI\_TPL\_APPLICATION. Call FreePages() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |
| 5.1.2.2.6 | 0x54166362, 0xcd1f, 0x44d5, 0xb5, 0xf1, 0x73, 0x71, 0xc7, 0x91, 0x2b, 0x58 | BS.FreePages – FreePages() frees 1 page at EFI\_TPL\_CALLBACK. | 1. Call AllocatePages() to allocate 1 page memory.  2. Raise to EFI\_TPL\_CALLBACK. Call FreePages() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |
| 5.1.2.2.7 | 0xa46f5e7b, 0x462d, 0x40e0, 0x99, 0x1a, 0x2d, 0xc6, 0x46, 0xc2, 0x31, 0x24 | BS.FreePages – FreePages() frees 1 page at EFI\_TPL\_NOTIFY. | 1. Call AllocatePages() to allocate 1 page memory.  2. Raise to EFI\_TPL\_NOTIFY. Call FreePages() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |

### GetMemoryMap()

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| Number | GUID | Assertion | Test Description |
| 5.1.2.3.1 | 0x55a9228e, 0x9960, 0x4558, 0x83, 0xb0, 0x99, 0xdc, 0xf0, 0x7c, 0x4f, 0x56 | BS.GetMemoryMap – GetMemoryMap() returns EFI\_INVALID\_PARAMETER with a MemoryMapSize value of NULL. | 1. Call GetMemoryMap() with a MemoryMapSize value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.3.2 | 0x1bc8f675, 0x0cbe, 0x4b7a, 0x96, 0xa4, 0x90, 0xc4, 0x19, 0x5a, 0x33, 0x20 | BS.GetMemoryMap – GetMemoryMap() returns EFI\_INVALID\_PARAMETER with a MemoryMap value of NULL. | 1. Call GetMemoryMap() with a MemoryMap value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.3.3 | 0x8bf2760e, 0x99c8, 0x4c48, 0x96, 0x0c, 0x20, 0x58, 0xf0, 0xa7, 0x51, 0xb0 | BS.GetMemoryMap – GetMemoryMap() returns EFI\_INVALID\_PARAMETER with a MapKey value of NULL. | 1. Call GetMemoryMap() with a MapKey value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.3.4 | 0x6b854a8c, 0x6fb3, 0x4dbc, 0x9a, 0xc9, 0x10, 0xeb, 0xa6, 0x5e, 0x68, 0x4e | BS.GetMemoryMap – GetMemoryMap() returns EFI\_INVALID\_PARAMETER with a DescriptorSize value of NULL. | 1. Call GetMemoryMap() with a DescriptorSize value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.3.5 | 0xbb16e9b8, 0x2716, 0x42de, 0x9d, 0xe0, 0x2a, 0xd4, 0x69, 0xda, 0x37, 0x91 | BS.GetMemoryMap – GetMemoryMap() returns EFI\_INVALID\_PARAMETER with a DescriptorVersion value of NULL. | 1. Call GetMemoryMap() with a DescriptorVersion value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.3.6 | 0x65130574, 0x7a59, 0x440c, 0x95, 0xc6, 0xc1, 0x9d, 0xdd, 0x2e, 0x48, 0x28 | BS.GetMemoryMap – GetMemoryMap() returns EFI\_BUFFER\_TOO\_SMALL with a MemoryMapSize value of 0. | 1. Call GetMemoryMap() with a MemoryMapSize value of 0. The return code must be EFI\_BUFFER\_TOO\_SMALL. |
| 5.1.2.3.7 | 0x12c75089, 0x90f6, 0x4e4b, 0xbe, 0xae, 0xa2, 0x7c, 0xde, 0x04, 0x10, 0x5c | BS.GetMemoryMap – GetMemoryMap() returns EFI\_BUFFER\_TOO\_SMALL with the MemoryMapSize less than the required. | 1. Call GetMemoryMap() with a MemoryMapSize value of 0. Record the returned MemoryMapSize as the required size.  2. Call GetMemoryMap() with the required size – 1. The return code must be EFI\_BUFFER\_TOO\_SMALL. |
| 5.1.2.3.8 | 0x73225506, 0x9b48, 0x4196, 0x9f, 0x4e, 0x77, 0x4a, 0xe7, 0xfc, 0x81, 0xdf | BS.GetMemoryMap – GetMemoryMap() returns the current memory map at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current memory map must be returned. |
| 5.1.2.3.9 | 0xfb436e4d, 0x7f39, 0x4fdf, 0xbe, 0xf8, 0x5b, 0x4f, 0x66, 0x69, 0x7d, 0x5b | BS.GetMemoryMap – GetMemoryMap() returns the current memory map at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  2. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current memory map must be returned.  3. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.10 | 0x06a3b2b5, 0xfb48, 0x4b13, 0xa3, 0x80, 0x12, 0xcb, 0x9d, 0x7f, 0xdd, 0xfb | BS.GetMemoryMap – GetMemoryMap() returns the current memory map at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  2. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current memory map must be returned.  3. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.11 | 0x53e08693, 0xc268, 0x4b70, 0xa0, 0x20, 0xc7, 0x8c, 0x49, 0xfa, 0xf0, 0x40 | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned. |
| 5.1.2.3.12 | 0x04e010ff, 0x860b, 0x40b1, 0xbe, 0x2c, 0x07, 0xdb, 0xb3, 0xf8, 0x65, 0x0a | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  2. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  3. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.13 | 0x1030be5b, 0x38bd, 0x4131, 0x97, 0x8d, 0x91, 0x98, 0xd6, 0xca, 0xd1, 0x3d | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  2. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  3. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.14 | 0x007f4e8e, 0x0ed3, 0x479e, 0x8f, 0xc7, 0xcb, 0x5d, 0xf2, 0x4d, 0xd3, 0x83 | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after AllocatePages() at EFI\_TPL\_APPLICATION. | 1. Call AllocatePages() to allocate a block of memory.  2. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  3. Call FreePages() to free the allocated memory. |
| 5.1.2.3.15 | 0x15255fb4, 0x7c7b, 0x488a, 0xa8, 0xe5, 0x26, 0xce, 0x95, 0xb1, 0x8b, 0xe2 | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after AllocatePages() at EFI\_TPL\_CALLBACK. | 1. Call AllocatePages() to allocate a block of memory.  2. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  3. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  4. Restore to previous TPL via RestoreTPL().  5. Call FreePages() to free the allocated memory. |
| 5.1.2.3.16 | 0xf069b658, 0x9196, 0x4915, 0x8e, 0x5f, 0xbb, 0xaa, 0x0f, 0x56, 0x1a, 0xa0 | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after AllocatePages() at EFI\_TPL\_NOTIFY. | 1. Call AllocatePages() to allocate a block of memory.  2. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  3. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  4. Restore to previous TPL via RestoreTPL().  5. Call FreePages() to free the allocated memory. |
| 5.1.2.3.17 | 0xe8721bb8, 0xbefa, 0x4839, 0x84, 0x9f, 0xdb, 0xb4, 0xcf, 0x21, 0x38, 0x03 | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after FreePages() at EFI\_TPL\_APPLICATION. | 1. Call AllocatePages() to allocate a block of memory.  2. Call FreePages() to free the allocated memory.  3. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned. |
| 5.1.2.3.18 | 0xc004a412, 0x0487, 0x49d6, 0x93, 0xe6, 0x0d, 0x6e, 0x26, 0xa5, 0x58, 0x8f | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after FreePages() at EFI\_TPL\_CALLBACK. | 1. Call AllocatePages() to allocate a block of memory.  2. Call FreePages() to free the allocated memory.  3. Raise to EFI\_TPL\_CALLBACK via RaiseTPL().  4. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  5. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.19 | 0x5c536f96, 0x7a27, 0x4425, 0xba, 0x91, 0xe1, 0x10, 0x22, 0x7a, 0x07, 0xed | BS.GetMemoryMap – GetMemoryMap() returns the current MapKey after FreePages() at EFI\_TPL\_NOTIFY. | 1. Call AllocatePages() to allocate a block of memory.  2. Call FreePages() to free the allocated memory.  3. Raise to EFI\_TPL\_NOTIFY via RaiseTPL().  4. Call GetMemoryMap() with valid parameters. The return status must be EFI\_SUCCESS and the current MapKey must be returned.  5. Restore to previous TPL via RestoreTPL(). |
| 5.1.2.3.20 | 0xe7fe82f4, 0xc7f5, 0x4181, 0xab, 0x37, 0x20, 0xa1, 0x51, 0xfa, 0x98, 0xe6 | BS.GetMemoryMap – GetMemoryMap() returns different MapKeys after AllocatePages() and FreePages() at EFI\_TPL\_APPLICATION. | 1. Call GetMemoryMap() with valid parameters. Record the return MapKey.  2. Call AllocatePages() to allocate a block of memory.  3. Call GetMemoryMap() with valid parameters. Record the return MapKey. This MapKey must be different from the first one.  4. Call FreePages() to free the allocated memory.  5. Call GetMemoryMap() with valid parameters. This MapKey must be different from the second one. |
| 5.1.2.3.21 | 0x3093039c, 0xdff7, 0x4097, 0x9a, 0x36, 0xd7, 0x96, 0x82, 0x81, 0xc1, 0x46 | BS.GetMemoryMap – GetMemoryMap() returns different MapKeys after AllocatePages() and FreePages() at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK, Call GetMemoryMap() with valid parameters. Restore to previous TPL.. Record the return MapKey.  2. Call AllocatePages() to allocate a block of memory.  3. Raise to EFI\_TPL\_CALLBACK. Call GetMemoryMap() with valid parameters. Restore to previous TPL. Record the return MapKey. This MapKey must be different from the first one.  4. Call FreePages() to free the allocated memory.  5. Raise to EFI\_TPL\_CALLBACK, Call GetMemoryMap() with valid parameters. Restore to previous TPL. This MapKey must be different from the second one. |
| 5.1.2.3.22 | 0x284e0cc8, 0x913a, 0x4e8b, 0xbd, 0x05, 0xb4, 0xc8, 0xe1, 0x95, 0xc3, 0x69 | BS.GetMemoryMap – GetMemoryMap() returns different MapKeys after AllocatePages() and FreePages() at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY, Call GetMemoryMap() with valid parameters. Restore to previous TPL. Record the return MapKey.  2. Call AllocatePages() to allocate a block of memory.  3. Raise to EFI\_TPL\_NOTIFY. Call GetMemoryMap() with valid parameters. Restore to previous TPL. Record the return MapKey. This MapKey must be different from the first one.  4. Call FreePages() to free the allocated memory.  5. Raise to EFI\_TPL\_NOTIFY. Call GetMemoryMap() with valid parameters. Restore to previous TPL. This MapKey must be different from the second one. |

### AllocatePool()

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| Number | GUID | Assertion | Test Description |
| 5.1.2.4.1 | 0x99f47ede, 0x57c9, 0x4892, 0x94, 0x3e, 0xf0, 0xf5, 0x08, 0xb2, 0x3b, 0x91 | BS.AllocatePool – AllocatePool() returns EFI\_INVALID\_PARAMETER with a Type value of EfiMaxMemoryType. | 1. Call AllocatePool() with a Type value of EfiMaxMemoryType. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.4.2 | 0xcff743c0, 0x83e6, 0x4fd2, 0x8d, 0x94, 0x9c, 0x01, 0x7b, 0x3c, 0xdf, 0x45 | BS.AllocatePool – AllocatePool() returns EFI\_INVALID\_PARAMETER with a Type value of EfiMaxMemoryType + 1. | 1. Call AllocatePool() with a Type value of EfiMaxMemoryType + 1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.4.3 | 0xa4c46515, 0x1e87, 0x472c, 0xae, 0xac, 0x0b, 0x91, 0xf8, 0x3a, 0xcb, 0x4c | BS.AllocatePool – AllocatePool() returns EFI\_INVALID\_PARAMETER with a Type value of 0x6FFFFFFE. | 1. Call AllocatePool() with a Type value of 0x6FFFFFFE. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.4.4 | 0xd97381cf, 0xb4d5, 0x483b, 0xa2, 0xe2, 0xdc, 0x7f, 0xb9, 0xfe, 0xe9, 0x1d | BS.AllocatePool – AllocatePool() returns EFI\_INVALID\_PARAMETER with a Type value of 0x6FFFFFFE. | 1. Call AllocatePool() with a Type value of 0x6FFFFFFE. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.4.5 | 0xee50a1e8, 0x5adb, 0x4cba, 0xad, 0x6d, 0xcf, 0x2f, 0x90, 0x05, 0xee, 0xce | BS.AllocatePool – AllocatePool() returns EFI\_OUT\_OF\_RESOURCES with a Size value of MaxFreeMemory + 1. | 1. Call GetMemoryMap() to get the memory map. Get the size of the biggest contiguous free memory.  2. Call AllocatePool() with a Size value of MaxFreeMemory + 1. The return status must be EFI\_OUT\_OF\_RESOURCES. |
| 5.1.2.4.6 | 0xd60b985b, 0xa3b3, 0x4040, 0xad, 0xb6, 0xcd, 0x69, 0x20, 0xe3, 0x8e, 0xc2 | BS.AllocatePool – AllocatePool() allocates memory at EFI\_TPL\_APPLICATION. | 1. Raise to EFI\_TPL\_APPLICATION. Call AllocatePool() to allocate 1 byte memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  2. Call FreePool() to free the allocated memory. |
| 5.1.2.4.7 | 0x2f3a94f3, 0x95ba, 0x4d5c, 0xba, 0xcc, 0x32, 0xa3, 0xe4, 0xe9, 0x7d, 0x9e | BS.AllocatePool – AllocatePool() allocates memory at EFI\_TPL\_CALLBACK. | 1. Raise to EFI\_TPL\_CALLBACK. Call AllocatePool() to allocate 1 byte memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  2. Call FreePool() to free the allocated memory. |
| 5.1.2.4.8 | 0xb6666c18, 0x25c8, 0x4e93, 0x96, 0x00, 0x66, 0x48, 0x90, 0xb3, 0xaf, 0xe8 | BS.AllocatePool – AllocatePool() allocates memory at EFI\_TPL\_NOTIFY. | 1. Raise to EFI\_TPL\_NOTIFY. Call AllocatePool() to allocate 1 byte memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS.  2. Call FreePool() to free the allocated memory. |
| 5.1.2.4.9 | 0xe6ee903a, 0x88a3, 0x4428, 0xb0, 0x05, 0x62, 0x59, 0x43, 0xed, 0x6e, 0x9d | BS.AllocatePool -AllocatePool() returns EFI\_INVALID\_PARAMETER with NULL Buffer. | 1. Call AllocatePool()with NULL Buffer. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.4.10 | 0x41062e36, 0x7401, 0x4b0c, 0xb4, 0xe9, 0xe7, 0xaa, 0x27, 0xcc, 0xa8, 0x8 | **AllocatePool()** returns **EFI\_INVALID\_PARAMETER** when *MemoryType* is *EfiPersistentMemory*. | 1. Call AllocatePool() when *MemoryType* is *EfiPersistentMemory*. The return code must be EFI\_INVALID\_PARAMETER. |

### FreePool()

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| Number | GUID | Assertion | Test Description |
| 5.1.2.5.1 | 0xcb7b4b1c, 0x26a1, 0x4302, 0xbd, 0x71, 0xd3, 0xf9, 0xef, 0x4e, 0x93, 0xb7 | BS.FreePool – FreePool() returns EFI\_INVALID\_PARAMETER with a Buffer value of NULL. | 1. Call FreePool() with a Buffer value of NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.1.2.5.2 | 0xeccf8a71, 0xbd7d, 0x45f3, 0xa3, 0x70, 0xa4, 0x0f, 0xb7, 0x34, 0xac, 0xdc | BS.FreePool – FreePool() frees memory at EFI\_TPL\_APPLICATION. | 1. Call AllocatePool() to allocate 1 byte memory.  2. Raise to EFI\_TPL\_APPLICATION. Call FreePool() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |
| 5.1.2.5.3 | 0x3bd08624, 0x28eb, 0x475b, 0x93, 0xfc, 0x69, 0x56, 0xaf, 0x7c, 0xc0, 0x7b | BS.FreePool – FreePool() frees memory at EFI\_TPL\_CALLBACK. | 1. Call AllocatePool() to allocate 1 byte memory.  2. Raise to EFI\_TPL\_CALLBACK. Call FreePool() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |
| 5.1.2.5.4 | 0xdc1fa4f1, 0x91c5, 0x4edc, 0xa1, 0x00, 0x8a, 0x95, 0x32, 0xb8, 0x89, 0x14 | BS.FreePool – FreePool() frees memory at EFI\_TPL\_NOTIFY. | 1. Call AllocatePool() to allocate 1 byte memory.  2. Raise to EFI\_TPL\_NOTIFY. Call FreePool() to free the allocated memory. Restore to the previous TPL. The return status must be EFI\_SUCCESS. |

## 

## Protocol Handler Services Test

Reference Document:

*UEFI Specification*, Protocol Handler Services Section.

* Protocol Interface Functions

|  |  |  |
| --- | --- | --- |
| Name | Boot | Description |
| InstallProtocolInterface() | Boot | Installs a protocol interface on a device handle. |
| UninstallProtocolInterface() | Boot | Removes a protocol interface from a device handle. |
| ReinstallProtocolInterface() | Boot | Reinstalls a protocol interface on a device handle. |
| RegisterProtocolNotify() | Boot | Registers an event that is to be signaled whenever an interface is installed for a specified protocol. |
| LocateHandle() | Boot | Returns an array of handles that support a specified protocol. |
| HandleProtocol() | Boot | Queries a handle to determine if it supports a specified protocol. |
|  | Boot | Locates all devices on a device path that support a specified protocol and returns the handle to the device that is closest to the path. |
| OpenProtocol() | Boot | Adds elements to the list of agents consuming a protocol interface. |
| CloseProtocol() | Boot | Removes elements from the list of agents consuming a protocol interface. |
| OpenProtocolInformation() | Boot | Retrieve the list of agents that are currently consuming a protocol interface. |
| ConnectController() | Boot | Uses a set of precedence rules to find the best set of drivers to manage a controller. |
| DisconnectController() | Boot | Informs a set of drivers to stop managing a controller. |
| ProtocolsPerHandle() | Boot | Retrieves the list of protocols installed on a handle. The return buffer is automatically allocated. |
| LocateHandleBuffer() | Boot | Retrieves the list of handles from the handle database that meet the search criteria. The return buffer is automatically allocated. |
| LocateProtocol() | Boot | Finds the first handle in the handle database the supports the requested protocol. |
|  | Boot | Installs one or more protocol interfaces onto a handle. |
| **Error! Reference source not found.** | Boot | Uninstalls one or more protocol interfaces from a handle. |

### InstallProtocolInterface()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.1.1 | 0xd9fedaff, 0xc22b, 0x47b7, 0x86, 0xb7, 0x27, 0x0a, 0x50, 0x06, 0x86, 0x22 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with invalid interface type. | 1. Call InstallProtocolInterface(‍) with the interface type other than EFI\_NATIVE\_INTERFACE. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.1.2 | 0x016ba242, 0x367d, 0x4a8d, 0x8f, 0x07, 0x51, 0x7e, 0x34, 0x5c, 0x6b, 0x83 | BS.InstallProtocolInterface – InstallProtolInterface() returns EFI\_INVALID\_PARAMETER with invalid handle. | 1. Call InstallProtocolInterface() with an invalid handle (Handle = NULL or Handle is invalid). Each return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.1.3 | 0xf3b82a36, 0x9dc7, 0x4754, 0xb4, 0x25, 0xa9, 0xda, 0xff, 0x06, 0x94, 0xd8 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with same protocol multiple times. | 1. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  2. Call InstallProtocolInterface() again to try to install TestProtocol1 onto the same handle. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.1.4 | 0xe19b4a73, 0x7652, 0x4bf4, 0x96, 0x11, 0x16, 0xe3, 0x46, 0xe1, 0x83, 0x97 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with Protocol is NULL. | 1. Call InstallProtocolInterface() with a Protocol value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.1.5 | 0xb546a05c, 0x1cb5, 0x4c4f, 0x9e, 0x4d, 0x61, 0x30, 0x8a, 0x4c, 0x0c, 0xc5 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with a new handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.6 | 0x023420e7, 0x5921, 0x4d64, 0xaa, 0xc8, 0x41, 0x70, 0xf2, 0x5d, 0x21, 0x03 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with a new handle at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.7 | 0x04399b4c, 0xd2f8, 0x44fc, 0xa0, 0x9b, 0xf2, 0xb1, 0x86, 0x77, 0x72, 0x4a | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with a new handle at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.8 | 0x3e0c0947, 0x29f8, 0x4097, 0x82, 0x3f, 0xe6, 0x2a, 0x27, 0x45, 0xe0, 0x90 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. A new handle is created. |
| 5.1.3.1.9 | 0x157e0e28, 0xa05f, 0x4a7e, 0x8d, 0xb0, 0xdd, 0xa8, 0x16, 0xf7, 0x2a, 0x1a | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_CALLBACK. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. A new handle is created. |
| 5.1.3.1.10 | 0x16101f58, 0x8faf, 0x4a15, 0x82, 0x98, 0x85, 0x60, 0xad, 0x1e, 0x6c, 0x85 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_NOTIFY. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call. A new handle is created. |
| 5.1.3.1.11 | 0xffd329d5, 0x37bc, 0x44d0, 0x83, 0x74, 0xa7, 0x5e, 0xa6, 0x79, 0xfb, 0x2a | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_APPLICATION. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The new handle should be located. |
| 5.1.3.1.12 | 0xb8798dc8, 0x257f, 0x489e, 0x8c, 0x62, 0x3a, 0xf5, 0xc3, 0x16, 0xb3, 0xf3 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_CALLBACK. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The new handle should be located. |
| 5.1.3.1.13 | 0x284345a7, 0x7041, 0x459d, 0xbd, 0xad, 0xa7, 0xcc, 0x67, 0x81, 0xdb, 0xc2 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_NOTIFY. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The new handle should be located. |
| 5.1.3.1.14 | 0x2327caf0, 0xa5b4, 0x4234, 0x9d, 0x8d, 0x84, 0x38, 0xce, 0xa4, 0x86, 0xb3 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_APPLICATION. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.15 | 0x068d699f, 0xa42a, 0x47d0, 0xbb, 0xa9, 0x27, 0x2e, 0xf3, 0x36, 0x01, 0xfa | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_CALLBACK. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.16 | 0x6e72a454, 0x5650, 0x4d1b, 0x9a, 0x20, 0xc9, 0x9b, 0x26, 0x4c, 0x73, 0xab | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_NOTIFY. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.17 | 0x539a7928, 0xd5a2, 0x400c, 0x91, 0x43, 0xe0, 0xeb, 0xe0, 0xe4, 0xf3, 0x24 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_APPLICATION. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.18 | 0xfe3570b6, 0xa952, 0x4dd0, 0xa5, 0x7d, 0x45, 0x25, 0x4b, 0xde, 0x05, 0x04 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_CALLBACK. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.19 | 0x202e4f04, 0x65b9, 0x4372, 0xb6, 0xf0, 0xc1, 0x54, 0x4b, 0x94, 0xdf, 0x93 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on a new handle at EFI\_TPL\_NOTIFY. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto a new handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.20 | 0x1efb5778, 0xdf04, 0x4b8e, 0xa3, 0xe0, 0x89, 0xee, 0x3b, 0xc0, 0xbf, 0xd6 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with an existing handle at EFI\_TPL\_APPLICATION. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.21 | 0xf66d17da, 0x9701, 0x4bb1, 0x82, 0x3a, 0xdb, 0x3b, 0xce, 0x93, 0xd5, 0x92 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with an existing handle at EFI\_TPL\_CALLBACK. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.22 | 0x244ffd78, 0x895d, 0x4924, 0xb4, 0xd2, 0x03, 0x9d, 0x78, 0x68, 0x6e, 0x47 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with an existing handle at EFI\_TPL\_NOTIFY. | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. The InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.23 | 0x73619777, 0x3376, 0x4217, 0xa0, 0x8b, 0xde, 0x5c, 0x97, 0xb5, 0xf2, 0xd7 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. No new handle is created. |
| 5.1.3.1.24 | 0x23ab54a9, 0x8165, 0x4c3f, 0x92, 0x18, 0xd2, 0x2a, 0xba, 0x3a, 0x09, 0xdc | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. No new handle is created. |
| 5.1.3.1.25 | 0x5bac7cbe, 0x62a2, 0x492d, 0x87, 0xd9, 0xf2, 0xee, 0x46, 0x67, 0x33, 0xba | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call. No new handle is created. |
| 5.1.3.1.26 | 0xa68ce171, 0xd077, 0x460a, 0xae, 0x94, 0x48, 0x4a, 0xfb, 0xa8, 0x4d, 0x3c | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The handle should be located. |
| 5.1.3.1.27 | 0xe8ad2040, 0x0241, 0x43fc, 0x99, 0xb3, 0x38, 0x7d, 0xa6, 0x6d, 0x08, 0x9f | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The handle should be located. |
| 5.1.3.1.28 | 0x6aa0b008, 0xc1ff, 0x4355, 0x98, 0x34, 0xab, 0xf9, 0x4d, 0x7d, 0x4e, 0x0d | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call LocateHandleBuffer() to locate the handle via the protocol. The handle should be located. |
| 5.1.3.1.29 | 0x69a0c9c5, 0xbe97, 0x4a71, 0xaf, 0xb7, 0xa2, 0xf5, 0x10, 0x70, 0x24, 0xf5 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.30 | 0x44c3605a, 0x0396, 0x4023, 0x92, 0xbd, 0x30, 0xab, 0xa5, 0x59, 0x93, 0x05 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.31 | 0x5745edb2, 0x6384, 0x4a6b, 0xbc, 0x71, 0x71, 0x18, 0xfe, 0x0f, 0x8d, 0x48 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocol1 should be located. |
| 5.1.3.1.32 | 0x1333f969, 0x957b, 0x4c96, 0x90, 0xaa, 0x06, 0x75, 0xa1, 0x61, 0x94, 0xaa | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.33 | 0x913cbd44, 0xb381, 0x4f06, 0xbf, 0x94, 0x3d, 0xa5, 0xb0, 0x7f, 0x0d, 0xca | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.34 | 0xf2709409, 0x4c81, 0x4942, 0xa0, 0x62, 0xdd, 0x61, 0x59, 0x63, 0x96, 0x61 | BS.InstallProtocolInterface – InstallProtocolInterface() installs the protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install the TestProtocol1 as type EFI\_NATIVE\_INTERFACE onto an existing handle created by this function call.  2. Call the TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.35 | 0x46858c39, 0x87f2, 0x444d, 0x85, 0x42, 0x48, 0xb3, 0xee, 0x60, 0xdb, 0x05 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.36 | 0x5470301a, 0x0e58, 0x4616, 0xa0, 0xd2, 0xce, 0xa8, 0x5f, 0x6e, 0x0b, 0x18 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.37 | 0xe7417360, 0x2705, 0x4939, 0xa4, 0x86, 0x7c, 0xd9, 0x0d, 0x51, 0x4c, 0xb0 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.38 | 0xde9471cf, 0xf547, 0x4940, 0x95, 0xbb, 0xb9, 0x06, 0x32, 0x54, 0xca, 0xa2 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. 10 new handles are created. |
| 5.1.3.1.39 | 0xce8725eb, 0x40a8, 0x4ce2, 0x86, 0x27, 0x24, 0xe3, 0xd5, 0xfe, 0x8b, 0x72 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. 10 new handles are created. |
| 5.1.3.1.40 | 0x735826c6, 0xa2b3, 0x457b, 0x88, 0x82, 0x39, 0x38, 0xcb, 0xbf, 0xf7, 0xad | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles. 10 new handles are created. |
| 5.1.3.1.41 | 0x4f7b61e8, 0x0777, 0x479c, 0xb3, 0x7d, 0x5b, 0xab, 0xa8, 0x2a, 0x17, 0x6c | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() to locate the handle via the protocol. 10 handles should be located. |
| 5.1.3.1.42 | 0xed0a8a40, 0x641f, 0x4abf, 0x9c, 0x0a, 0xae, 0xa0, 0x0e, 0xee, 0xde, 0xfb | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() to locate the handle via the protocol. 10 handles should be located. |
| 5.1.3.1.43 | 0x3e48a299, 0x11a8, 0x4f73, 0xb6, 0xe1, 0x40, 0x65, 0xf1, 0x8e, 0x68, 0x34 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() to locate the handle via the protocol. 10 handles should be located. |
| 5.1.3.1.44 | 0x2e596f06, 0x336a, 0x49a7, 0x88, 0x0e, 0x60, 0xd3, 0x68, 0x5a, 0x95, 0xa4 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call HandleProtocol() to locate the protocol via each handle. The TestProtocol1 should be located. |
| 5.1.3.1.45 | 0x63a6ea07, 0xcd46, 0x40c8, 0x8a, 0x02, 0xb3, 0x36, 0xf9, 0x7d, 0x39, 0x33 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call HandleProtocol() to locate the protocol via each handle. The TestProtocol1 should be located. |
| 5.1.3.1.46 | 0x6096eff1, 0x21f0, 0x43cd, 0xb0, 0x8d, 0x88, 0xff, 0x3a, 0xd3, 0x9c, 0x28 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call HandleProtocol() to locate the protocol via each handle. The TestProtocol1 should be located. |
| 5.1.3.1.47 | 0xd778b920, 0xe42b, 0x4901, 0xbc, 0x2c, 0x78, 0xea, 0x91, 0xb7, 0x91, 0xe5 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call each TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.48 | 0xf65a7dde, 0x7e46, 0x47aa, 0x9c, 0x88, 0x99, 0x5b, 0x69, 0x31, 0x24, 0x8b | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call each TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.49 | 0x06334e00, 0x03d2, 0x4406, 0x83, 0xb9, 0x66, 0x53, 0xb3, 0x41, 0x8a, 0x93 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with same protocol multiple times at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 10 times to install the TestProtocol1 onto 10 new handles.  2. Call each TestProtocol1’s function. It should be accessed and be executed correctly. |
| 5.1.3.1.50 | 0x4f229f4e, 0x64dc, 0x4a88, 0xb7, 0x77, 0xd2, 0x8d, 0xdf, 0x33, 0xac, 0x39 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.51 | 0x38deb65c, 0xf4db, 0x40c8, 0x9d, 0xea, 0xc0, 0xdf, 0xf9, 0xcc, 0x7a, 0x73 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.52 | 0x341714e5, 0xa4ce, 0x4f4a, 0x94, 0x54, 0x7b, 0xde, 0x9a, 0xb2, 0x14, 0x58 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. Each InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.53 | 0x1eb05a66, 0x3ded, 0x440e, 0xa6, 0xcf, 0x72, 0x05, 0x62, 0x21, 0x48, 0xe0 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. The new handle should be created. |
| 5.1.3.1.54 | 0x0133559d, 0x4a88, 0x41d0, 0x8b, 0x32, 0x6b, 0x87, 0x24, 0xd0, 0xcc, 0xcb | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. The new handle should be created. |
| 5.1.3.1.55 | 0x16ce2f4e, 0xc303, 0x49f6, 0x89, 0x94, 0x26, 0x19, 0xfd, 0x4b, 0x67, 0xf8 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle. The new handle should be created. |
| 5.1.3.1.56 | 0x280062c1, 0x1685, 0x4307, 0x95, 0xca, 0x12, 0x07, 0x38, 0x2c, 0x0d, 0xa0 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call LocateHandleBuffer() to locate the handle via each protocol. The new handles should be located. |
| 5.1.3.1.57 | 0x3b119ca5, 0x8c66, 0x4158, 0xb6, 0x8c, 0xb9, 0x43, 0x81, 0x97, 0x77, 0xdc | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call LocateHandleBuffer() to locate the handle via each protocol.The new handles should be located. |
| 5.1.3.1.58 | 0x57b88782, 0x960e, 0x4aaf, 0xbf, 0xef, 0xc9, 0xbf, 0xf1, 0xe0, 0x9c, 0x6d | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call LocateHandleBuffer() to locate the handle via each protocol. The new handles should be located. |
| 5.1.3.1.59 | 0x6b85ed1e, 0x287d, 0x46d2, 0xa0, 0x36, 0x7c, 0x53, 0xfa, 0x24, 0xab, 0x75 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call HandleProtocol() to locate the protocol via the handle. All protocols should be located. |
| 5.1.3.1.60 | 0x71f094cd, 0x53fd, 0x4ff7, 0x95, 0xd7, 0x1b, 0x8e, 0x97, 0x26, 0x92, 0xb0 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call HandleProtocol() to locate the protocol via the handle. All protocols should be located. |
| 5.1.3.1.61 | 0x064740c2, 0xccce, 0x45f5, 0xbb, 0x37, 0xd4, 0xd0, 0xe1, 0x66, 0x8d, 0x8c | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with multiple protocols at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() 5 times to install TestProtocol1, TestProtocol2, TestProtocol3, TestProtocol4, and TestProtocol5 onto one new handle.  2. Call HandleProtocol() to locate the protocol via the handle. All protocols should be located. |
| 5.1.3.1.62 | 0x2f94a7ec, 0x4d30, 0x4572, 0xbc, 0x3b, 0x87, 0xc9, 0x26, 0x99, 0x53, 0x8d | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.63 | 0x382cee61, 0xb25c, 0x43a1, 0xb2, 0xde, 0x07, 0x27, 0x37, 0xc6, 0x79, 0xf5 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.64 | 0xc58b2515, 0xe066, 0x4a2f, 0x97, 0x5c, 0x7f, 0x80, 0x00, 0x73, 0x3e, 0xf3 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.1.65 | 0x1b223dc2, 0x5d17, 0x40e1, 0x93, 0x99, 0x3c, 0x45, 0xf0, 0xe4, 0xf8, 0x88 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. The new handle should be created. |
| 5.1.3.1.66 | 0x6b039e16, 0x5420, 0x4520, 0x85, 0x25, 0xb9, 0xbd, 0x5a, 0x3c, 0x22, 0x66 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. The new handle should be created. |
| 5.1.3.1.67 | 0x763a4629, 0x18ec, 0x41b3, 0x9f, 0xa6, 0x4a, 0xc6, 0x4e, 0x44, 0x8b, 0x49 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle. The new handle should be created. |
| 5.1.3.1.68 | 0xa366c643, 0xeac3, 0x4994, 0xbe, 0xe5, 0x6c, 0x6f, 0xf5, 0xb8, 0x3f, 0x5e | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call LocateHandleBuffer() to locate the handle via the protocol.The new handles should be located. |
| 5.1.3.1.69 | 0xaf59a8ed, 0x144b, 0x48b5, 0x88, 0x0f, 0xa2, 0x20, 0x0a, 0xf0, 0x4a, 0xcd | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call LocateHandleBuffer() to locate the handle via the protocol.The new handles should be located. |
| 5.1.3.1.70 | 0xfec89489, 0x0c0d, 0x493b, 0xa5, 0x4d, 0x94, 0xf7, 0x15, 0x04, 0xe9, 0x32 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call LocateHandleBuffer() to locate the handle via the protocol.The new handles should be located. |
| 5.1.3.1.71 | 0xa94c8ad5, 0xc578, 0x45f6, 0x9d, 0x5c, 0xcb, 0x15, 0x62, 0x65, 0xe6, 0x72 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocolNoInterface1 should be located. |
| 5.1.3.1.72 | 0xfccbcf28, 0xc207, 0x440a, 0xbb, 0xa0, 0x0e, 0x43, 0xc4, 0xc1, 0xb4, 0xa0 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocolNoInterface1 should be located. |
| 5.1.3.1.73 | 0x67a70da1, 0x8211, 0x4d76, 0xa0, 0x2c, 0xf8, 0x64, 0xb1, 0x99, 0x92, 0x94 | BS.InstallProtocolInterface – InstallProtocolInterface() returns EFI\_SUCCESS with NULL interface at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install TestProtocolNoInterface1 to a new handle.  2. Call HandleProtocol() to locate the protocol via the handle. The TestProtocolNoInterface1 should be located. |

### UninstallProtocolInterface()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.2.1 | 0x9646236e, 0x0603, 0x488e, 0x91, 0x16, 0x83, 0x4f, 0x76, 0xfa, 0x06, 0x5c | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with Protocol is NULL | 1. Call UninstallProtocolInterface() with the protocol GUID value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.2.2 | 0x3647da0d, 0x50a1, 0x4800, 0xbe, 0x24, 0xc1, 0xb5, 0x84, 0x20, 0xcf, 0xf4 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call UninstallProtocolInterface() with an invalid handle (Handle = NULL or Handle is invalid). Each return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.2.3 | 0x696cd520, 0x897e, 0x4e91, 0xa7, 0xd8, 0x3e, 0xfd, 0xa1, 0x83, 0xc1, 0x12 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_NOT\_FOUND with a non‑existent protocol | 1. Call UninstallProtocolInterface() to attempt to uninstall a non‑existent protocol from a handle. The return code must be EFI\_NOT\_FOUND. |
| 5.1.3.2.4 | 0xe41a6aac, 0xa293, 0x499a, 0xbe, 0xb9, 0x40, 0xa2, 0x95, 0x36, 0x72, 0xac | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_NOT\_FOUND with invalid interface | 1. Call UninstallProtocolInterface() to attempt to uninstall a protocol from a handle with an invalid interface. The return code must be EFI\_NOT\_FOUND. |
| 5.1.3.2.5 | 0x3c7352fc, 0xca03, 0x493b, 0x8e, 0x87, 0x89, 0x0d, 0xcd, 0x4d, 0xfa, 0x1a | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.6 | 0xb29effa0, 0xdd3d, 0x4585, 0x80, 0xff, 0xe3, 0x1d, 0xad, 0x9f, 0xa6, 0x4c | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.7 | 0x7625c205, 0x42d3, 0x408b, 0x97, 0x76, 0x87, 0x58, 0xae, 0xdf, 0xa8, 0xce | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.8 | 0xe4b8f72f, 0xd72b, 0x47ce, 0x8f, 0x07, 0x73, 0x5f, 0xad, 0x79, 0xfa, 0xec | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.9 | 0xb92ffcbc, 0x45c0, 0x454e, 0xa5, 0x64, 0xea, 0x4a, 0xd0, 0x35, 0xe2, 0x11 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.10 | 0x7c01d7d3, 0x1ec6, 0x4550, 0x92, 0xbf, 0x58, 0xba, 0xe6, 0x08, 0xd6, 0x41 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.11 | 0x563401ca, 0x9fb4, 0x4ded, 0x88, 0x84, 0xbd, 0x0d, 0xee, 0xb7, 0x77, 0xea | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.12 | 0xa5ffafa1, 0x672e, 0x4c49, 0x9a, 0xb6, 0x93, 0xc3, 0x3f, 0xe4, 0x6f, 0x2e | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.13 | 0x5e71353f, 0x4c05, 0x4205, 0xbe, 0xfa, 0x14, 0xa8, 0x5b, 0xc1, 0xf0, 0xf9 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.14 | 0xac16ea87, 0x9311, 0x4cb0, 0xaa, 0xf5, 0x96, 0x0e, 0x24, 0xd4, 0xa8, 0xf4 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol1 via the handle. The protocol should no longer exist. |
| 5.1.3.2.15 | 0xc805ddbb, 0xbefe, 0x45aa, 0x94, 0x52, 0xb2, 0x48, 0xd8, 0xb9, 0xe4, 0x6e | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol1 via the handle. The protocol should no longer exist. |
| 5.1.3.2.16 | 0x1a828703, 0x32a5, 0x481a, 0x8c, 0xdd, 0x22, 0xb0, 0x20, 0x51, 0xe1, 0x50 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol1 via the handle. The protocol should no longer exist. |
| 5.1.3.2.17 | 0x53756d94, 0xc5c0, 0x47ad, 0x8a, 0x89, 0xa9, 0x86, 0x07, 0xd2, 0x31, 0x8c | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol2 via the handle. The protocol should still exist. |
| 5.1.3.2.18 | 0xbe257dd2, 0xe51d, 0x40be, 0x99, 0x8b, 0xec, 0xbd, 0x09, 0x27, 0x22, 0x96 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol2 via the handle. The protocol should still exist. |
| 5.1.3.2.19 | 0x8c2b696c, 0x87b0, 0x4a82, 0x8b, 0x87, 0x07, 0xfb, 0x0e, 0x89, 0x57, 0x43 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  3. Call HandleProtocol() to locate TestProtocol2 via the handle. The protocol should still exist. |
| 5.1.3.2.20 | 0x1f991bf6, 0x05a2, 0x4858, 0xa4, 0x71, 0x79, 0x2e, 0xf5, 0x0b, 0xab, 0xd9 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.21 | 0x836e62c9, 0x2d3b, 0x4c55, 0xb8, 0xd9, 0x94, 0x3a, 0xee, 0x99, 0xbe, 0x3b | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.22 | 0xe95e5e34, 0x1ee6, 0x4e71, 0xa0, 0x39, 0x6e, 0x61, 0x71, 0x75, 0xb1, 0x3d | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.23 | 0x3acc0c56, 0x0b26, 0x4612, 0x8e, 0xd4, 0x23, 0x01, 0x80, 0xde, 0xa9, 0x86 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should no longer exist. |
| 5.1.3.2.24 | 0x7eb03eb1, 0x9159, 0x4b52, 0x83, 0x6c, 0x60, 0xd1, 0xc6, 0x52, 0x10, 0xe3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should no longer exist. |
| 5.1.3.2.25 | 0x7b201d9e, 0x296a, 0x4a39, 0xa0, 0xfe, 0xed, 0x34, 0xb4, 0x69, 0x3e, 0xdf | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should no longer exist. |
| 5.1.3.2.26 | 0x7dcb87f6, 0x5522, 0x4a4f, 0x8d, 0xe5, 0xfa, 0xc8, 0x0b, 0x5d, 0x03, 0x09 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.27 | 0x49ab9ed1, 0xf041, 0x42d4, 0xbf, 0x48, 0x46, 0x1b, 0x04, 0x78, 0x4c, 0xa8 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.28 | 0x136369f3, 0x766a, 0x4a90, 0xa5, 0xcb, 0x8d, 0xb3, 0x0e, 0x83, 0x71, 0x82 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.29 | 0x28db37d6, 0xdf2d, 0x4fbe, 0x8a, 0x14, 0xbb, 0x06, 0x90, 0xc3, 0x99, 0xfd | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol2. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.30 | 0xcc1b25a6, 0x0268, 0x443f, 0xa0, 0x6f, 0xd8, 0x4c, 0x79, 0x28, 0xdd, 0x4c | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol2. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.31 | 0x1259358c, 0xf63b, 0x4f87, 0xa7, 0x3f, 0x5b, 0x46, 0x34, 0xa5, 0x7f, 0x53 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls all non-opened protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocol1 and TestProtocol2 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocol2. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.32 | 0x901ab829, 0xeec3, 0x4560, 0xb4, 0xa0, 0x68, 0x85, 0x77, 0x4a, 0x82, 0xa1 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.33 | 0x99f7dd6a, 0xa50d, 0x4849, 0xb0, 0x44, 0xcb, 0xe9, 0xa6, 0x94, 0xb6, 0xde | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.34 | 0xf0de7d9f, 0x858b, 0x4cb3, 0x81, 0xa0, 0xfe, 0xa6, 0xa3, 0x8f, 0xad, 0xd7 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.35 | 0xee7df286, 0x3936, 0x4122, 0x88, 0x88, 0x45, 0x9a, 0x9c, 0x84, 0x81, 0x73 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.36 | 0x23f14ed9, 0xffe9, 0x440c, 0xb3, 0xf5, 0x62, 0x44, 0xd1, 0x6d, 0xcc, 0x91 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.37 | 0xdbf315df, 0x30cf, 0x4814, 0x84, 0xa6, 0x07, 0x16, 0x59, 0x4a, 0x18, 0xca | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.38 | 0x5ccc9c7c, 0xbbad, 0x4faa, 0xa1, 0x98, 0x45, 0x1d, 0xfb, 0x4c, 0xd1, 0xbb | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.39 | 0x95ead6e8, 0x5e59, 0x47ca, 0x8d, 0xb4, 0x10, 0x4d, 0x2a, 0x36, 0x19, 0xf3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.40 | 0x77e117af, 0x92ee, 0x48db, 0x9c, 0x32, 0xf2, 0xf6, 0xb4, 0x63, 0x2a, 0xcc | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.41 | 0xcb7b8fcd, 0xd0dd, 0x4d78, 0xa9, 0x6c, 0xc7, 0x52, 0xf1, 0x93, 0x21, 0xfd | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.42 | 0x7d01a157, 0x98ea, 0x4120, 0xb0, 0xec, 0xcf, 0x9c, 0xa7, 0x59, 0x2b, 0xf5 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.43 | 0x05a40340, 0xcc89, 0x4162, 0xa2, 0x94, 0xcd, 0xd9, 0x97, 0x86, 0x1d, 0xe3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.44 | 0x3f7d45dd, 0x400e, 0x4b39, 0x94, 0xba, 0xa4, 0x61, 0xa7, 0xb0, 0xbb, 0x1b | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.45 | 0xee9f6130, 0xc1e3, 0x4207, 0x8b, 0x95, 0x7e, 0xa2, 0x5e, 0xf1, 0xa1, 0xa1 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.46 | 0x76b0500e, 0x7f2d, 0x4eac, 0xa6, 0xbc, 0xc0, 0xb9, 0x29, 0x5b, 0xb0, 0x54 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.47 | 0xda2360cc, 0x9a59, 0x485f, 0xb2, 0xc6, 0xeb, 0x00, 0x93, 0xfc, 0x51, 0x30 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.48 | 0x84c0acce, 0xca54, 0x44da, 0x85, 0xd6, 0x40, 0x0a, 0x8c, 0x62, 0xbf, 0x37 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.49 | 0xaa72ce83, 0x0ba4, 0x4f47, 0x9f, 0xb3, 0x5d, 0xb2, 0x35, 0x93, 0x88, 0x5e | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.50 | 0x7c9eede7, 0x9881, 0x42f8, 0x94, 0xa5, 0x53, 0xf7, 0xf2, 0x7f, 0x95, 0xb3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.51 | 0x54c4db30, 0x7115, 0x418b, 0xa4, 0x9e, 0x4c, 0x4d, 0x32, 0xde, 0xa6, 0xf9 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.52 | 0x61d1b5cf, 0x4efe, 0x4b26, 0xaa, 0x3b, 0x35, 0x04, 0x07, 0xa5, 0xb6, 0xd3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.53 | 0xc6b5cfbc, 0x3814, 0x47ff, 0x9a, 0xec, 0x81, 0x91, 0x0b, 0xb0, 0x34, 0x48 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.54 | 0xd18c3a3a, 0x8022, 0x42e6, 0x9c, 0x6b, 0x6d, 0x65, 0x9b, 0x4b, 0xa9, 0xb7 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.55 | 0x7090235f, 0x6049, 0x44c1, 0xaf, 0x6c, 0xdb, 0x7c, 0xee, 0x9b, 0xf5, 0x95 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should no longer exist. |
| 5.1.3.2.56 | 0x8d82ba65, 0x9de9, 0x4081, 0xaf, 0xc2, 0x8f, 0xcb, 0x87, 0x14, 0x20, 0x18 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.57 | 0xf327f4a3, 0xa3b1, 0x453f, 0x8a, 0x32, 0xe3, 0x21, 0x54, 0xfb, 0xbc, 0x5a | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.58 | 0x2d41eabb, 0xd34e, 0x45c6, 0x87, 0xae, 0xbe, 0xdc, 0xb3, 0x21, 0x67, 0x29 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.59 | 0x6b7d19b4, 0x34cc, 0x4595, 0xb3, 0x1e, 0x03, 0xb2, 0x5c, 0x7a, 0xe1, 0x29 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.60 | 0x7a710244, 0xe5d4, 0x46a9, 0x89, 0x19, 0x0e, 0x57, 0x88, 0xd3, 0x3b, 0x0b | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.61 | 0x866401d9, 0x9f44, 0x4af9, 0x8a, 0x45, 0x64, 0x85, 0xe7, 0x7e, 0xb2, 0x6b | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.62 | 0xc5b4e393, 0x052a, 0x4abe, 0xa6, 0x44, 0x63, 0x6e, 0x83, 0xab, 0x98, 0x86 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.63 | 0x4cfacc16, 0x447d, 0x4e8f, 0xae, 0xb9, 0x24, 0x39, 0xfb, 0xbe, 0xd3, 0xe0 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.64 | 0xf9867e6a, 0xec14, 0x43f5, 0x81, 0xab, 0x46, 0xd0, 0x4b, 0x02, 0xd0, 0xdc | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.65 | 0xdb2edcbc, 0x6c27, 0x4d27, 0xae, 0xf0, 0x90, 0x86, 0x73, 0xd3, 0x38, 0x90 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.66 | 0x1af6079a, 0x20b8, 0x470f, 0xba, 0x7b, 0x75, 0x17, 0xf0, 0xd2, 0x77, 0x12 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.67 | 0xb5178b36, 0xa886, 0x427a, 0xa6, 0x6d, 0x8a, 0x9e, 0xa4, 0xf1, 0x37, 0x43 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.68 | 0xe21dae05, 0xad6a, 0x4a49, 0xbc, 0xf0, 0xfb, 0xaa, 0x3a, 0xa3, 0xb4, 0x1c | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.69 | 0x4aca3c71, 0x0a1a, 0x421d, 0xb8, 0x86, 0xcd, 0x8f, 0x20, 0x08, 0x94, 0x58 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.70 | 0xe3622cc4, 0x828e, 0x4dbd, 0xbd, 0xf6, 0x4a, 0x60, 0xb5, 0x79, 0x73, 0x6e | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.71 | 0x7fae8711, 0xf023, 0x4193, 0x9c, 0x6e, 0xab, 0x92, 0x7a, 0x2a, 0x9f, 0x74 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.72 | 0x5b031e9c, 0xcc65, 0x4638, 0xb7, 0x4d, 0xd0, 0x3e, 0x4a, 0xea, 0xd3, 0x22 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.73 | 0x7d0240a7, 0xe3dd, 0x4066, 0x8e, 0x56, 0x15, 0x03, 0xc0, 0x17, 0x9d, 0x22 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.74 | 0x419755bd, 0xdcf7, 0x46fd, 0xb8, 0x82, 0x73, 0x89, 0x3e, 0xb0, 0x13, 0x79 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.75 | 0x049261e7, 0x0fcb, 0x4861, 0x9d, 0x54, 0x0b, 0x08, 0x41, 0x8b, 0x4e, 0x2b | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.76 | 0x8d6d3a66, 0x1778, 0x4b2e, 0xb0, 0x20, 0x6d, 0xa0, 0x5d, 0xa8, 0x14, 0x9d | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.77 | 0x47b3ab81, 0xbdcc, 0x435b, 0xbd, 0xbc, 0x99, 0xf5, 0x79, 0x4a, 0x04, 0xbd | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.78 | 0xe6ffc0cf, 0xf8e4, 0x44db, 0x8c, 0xec, 0x8f, 0x68, 0x9b, 0xf4, 0xf6, 0xfe | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.79 | 0x29b13f82, 0x3ab3, 0x4f47, 0xbe, 0xa5, 0x0a, 0x87, 0xa5, 0x95, 0x2e, 0xc1 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.80 | 0x438a4fbf, 0xd811, 0x4082, 0xad, 0x01, 0xe1, 0x7c, 0x24, 0x03, 0x11, 0x1f | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.81 | 0xcfb6aa7a, 0xb91a, 0x45c1, 0x81, 0x8f, 0xc5, 0x53, 0x0b, 0x01, 0xc0, 0xe5 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.82 | 0x09efb83c, 0x0d16, 0x4a0b, 0xa7, 0x0b, 0xbc, 0x31, 0x64, 0xc8, 0x69, 0xb1 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.83 | 0x9afa33ae, 0x22ea, 0x45f8, 0xba, 0x79, 0x39, 0x14, 0xff, 0x96, 0x2b, 0xf0 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.84 | 0x571996c7, 0x12cc, 0x47b5, 0xbc, 0xab, 0x86, 0xe9, 0x39, 0x92, 0x84, 0xbe | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.85 | 0x8af64391, 0x81c3, 0x436d, 0xa3, 0xbc, 0xbe, 0x5e, 0x87, 0xe4, 0x6a, 0xbb | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.86 | 0x0fdd4f9a, 0xc2ee, 0x4ae4, 0x86, 0x64, 0x33, 0x9b, 0x5b, 0xf5, 0xe7, 0xbe | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.87 | 0x14a00be5, 0x7cd5, 0x4a85, 0x87, 0xd9, 0x26, 0xb5, 0xf9, 0x52, 0xdf, 0x57 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.88 | 0x910a91ef, 0x5905, 0x48fd, 0xa3, 0x2f, 0xfa, 0x7e, 0xa2, 0x89, 0xab, 0xa8 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.89 | 0x9fb2b08f, 0xe896, 0x41f0, 0xb7, 0x91, 0xfe, 0xc8, 0x5f, 0xbd, 0xeb, 0xa1 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.90 | 0x762ef3c2, 0x6b3d, 0x43de, 0xa7, 0x1f, 0x59, 0x2c, 0xaa, 0x86, 0x83, 0xae | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.91 | 0xfd5294e8, 0x55af, 0x4351, 0xa2, 0xab, 0x9f, 0x17, 0x6f, 0xa8, 0x61, 0x92 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.92 | 0xe5c06a77, 0x3cec, 0x441f, 0xaf, 0xf2, 0x8a, 0x8c, 0x48, 0x86, 0x0a, 0x79 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.93 | 0x0f5dc8b8, 0x4a25, 0x4aaf, 0x9e, 0x60, 0xda, 0xd8, 0x77, 0x4d, 0x0b, 0x7f | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.94 | 0xf33a826f, 0x02fd, 0x4a25, 0xbf, 0x1d, 0x4f, 0xa8, 0x8e, 0x66, 0x18, 0x31 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.95 | 0xbe28e107, 0xb5f6, 0x40d4, 0xb0, 0xcf, 0x58, 0xae, 0x87, 0x4d, 0x7f, 0x52 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.96 | 0x5abe9734, 0x3670, 0x4f0f, 0x8e, 0xaa, 0x52, 0x3f, 0x0c, 0xbd, 0xf3, 0xd3 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.97 | 0xbac49627, 0xa912, 0x4d44, 0x84, 0xeb, 0x12, 0x0f, 0xe2, 0xcd, 0x91, 0x78 | BS.UninstallProtocolInterface – UninstallProtocolInterface() returns EFI\_ACCESS\_DENIED to uninstall opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.2.98 | 0x8684158a, 0xf0b6, 0x4d70, 0x8f, 0xf8, 0xa1, 0x62, 0x2e, 0x8e, 0x6a, 0x66 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.99 | 0x30eb72bb, 0x6451, 0x424c, 0xb7, 0x87, 0xad, 0x06, 0x49, 0x68, 0x97, 0x74 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.100 | 0x5167f4ff, 0x1647, 0x402c, 0xa8, 0x4f, 0x83, 0x02, 0x3e, 0x2e, 0x3e, 0x6a | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.2.101 | 0x68190bde, 0x8248, 0x4c88, 0x89, 0x63, 0xaa, 0xb6, 0x32, 0xc3, 0x0f, 0xe6 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.102 | 0xc7a928d3, 0x6fba, 0x40bb, 0xa1, 0xc3, 0x18, 0x2e, 0x83, 0x48, 0x0a, 0x99 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.103 | 0xbc91617f, 0xb732, 0x4464, 0xad, 0xf2, 0xf4, 0x8d, 0x2f, 0x78, 0x4d, 0x75 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call LocateHandleBuffer() to locate the handle via TestProtocol1. The protocol should still exist. |
| 5.1.3.2.104 | 0xee7a01b0, 0x0dee, 0x49a7, 0xa8, 0xd3, 0x53, 0x9c, 0xfe, 0x27, 0xe4, 0x92 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.105 | 0x26c0638e, 0x546c, 0x4729, 0xac, 0x25, 0x37, 0x56, 0xc1, 0x41, 0xb1, 0x79 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.106 | 0x70fad80b, 0x9713, 0x46fd, 0xac, 0xdf, 0x25, 0x6c, 0x6f, 0xd9, 0xe4, 0x08 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls opened BY\_DRIVER|EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER|EXCLUSIVE.  3. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UninstallProtocolInterface() to remove TestProtocol1 from the handle again. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.107 | 0x4621ba9e, 0xbc10, 0x4ff5, 0x99, 0xdc, 0x12, 0x90, 0x89, 0xa1, 0x63, 0x7d | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.108 | 0xb08ae228, 0x749e, 0x4d71, 0xb5, 0xc7, 0x7f, 0xfd, 0x8a, 0x97, 0x09, 0x6a | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.109 | 0x0b87b005, 0x552d, 0x4b7c, 0xb4, 0x9e, 0x05, 0x8d, 0x09, 0x26, 0xdc, 0xff | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.2.110 | 0x5ab7b1eb, 0xdb8c, 0x4b6b, 0x91, 0x78, 0x44, 0xef, 0x7b, 0x3c, 0xe0, 0x02 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The handle should no longer exist. |
| 5.1.3.2.111 | 0x32ee9898, 0x6828, 0x4812, 0x9a, 0x41, 0x6e, 0x09, 0xb4, 0xd0, 0xe5, 0x54 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The handle should no longer exist. |
| 5.1.3.2.112 | 0x483766c8, 0xd28c, 0x4f5f, 0xb2, 0x6f, 0xa6, 0xb0, 0x36, 0xca, 0x0c, 0x36 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle. The handle should no longer exist. |
| 5.1.3.2.113 | 0x07812110, 0xa22d, 0x4993, 0xa6, 0xd1, 0x25, 0x3e, 0x5f, 0x56, 0xa5, 0x56 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocolNoInterface1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.114 | 0x97aaeeb5, 0x49e2, 0x4503, 0x9d, 0x2e, 0x37, 0x60, 0xce, 0x4f, 0x5d, 0x22 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocolNoInterface1. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.2.115 | 0xf08269a6, 0xe921, 0x408a, 0x97, 0xa7, 0xea, 0x6a, 0x60, 0x50, 0x97, 0x28 | BS.UninstallProtocolInterface – UninstallProtocolInterface() uninstalls NULL interface protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto new handle.  2. Call UninstallProtocolInterface() to remove TestProtocolNoInterface1 from the handle.  3. Call LocateHandleBuffer() to locate the handle via TestProtocolNoInterface1. The return code should be EFI\_NOT\_FOUND. |

### ReinstallProtocolInterface()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.3.1 | 0x2b830887, 0x5547, 0x4cfd, 0xb9, 0xf7, 0xb9, 0x1b, 0xf1, 0x48, 0xf5, 0x4c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with Protocol is NULL | 1. Call ReinstallProtocolInterface() with the protocol GUID value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.3.2 | 0xc7aedca3, 0xc600, 0x4fac, 0x84, 0xfa, 0x0c, 0x01, 0x0f, 0xf9, 0x9e, 0x67 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_NOT\_FOUND with invalid old protocol interface | 1. Call ReinstallProtocolInterface() with the old protocol interface that does not point to the protocol interface installed upon current handle. The return code must be EFI\_NOT\_FOUND. |
| 5.1.3.3.3 | 0xf7c8a812, 0x97c8, 0x4283, 0xa7, 0x79, 0x9c, 0x3a, 0x0d, 0xf9, 0x9b, 0x44 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_NOT\_FOUND with a non‑existent protocol | 1. Call ReinstallProtocolInterface() to attempt to install a new protocol that is not currently on the existing handle. The return code must be EFI\_NOT\_FOUND. |
| 5.1.3.3.4 | 0x38e08d98, 0x7868, 0x4182, 0xb5, 0x61, 0xb5, 0x5d, 0x18, 0x70, 0xaa, 0x97 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call ReinstallProtocolInterface() with an invalid handle (Handle is NULL or Handle is not valid). Each return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.3.5 | 0xe201db4d, 0x86bc, 0x470c, 0xa6, 0x6d, 0x78, 0xf7, 0x38, 0x72, 0xb0, 0x90 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with same interface at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.6 | 0x40f531de, 0xe658, 0x4db5, 0xb4, 0xc6, 0x1a, 0xe6, 0x23, 0xbf, 0xb6, 0xc0 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with same interface at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.7 | 0x8e5fc1b6, 0xdad5, 0x45bd, 0x8d, 0x21, 0x0a, 0xd9, 0xef, 0x14, 0x17, 0x01 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with same interface at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.8 | 0x1f14d26c, 0x42a5, 0x49ff, 0x9e, 0xe2, 0x9f, 0x09, 0x58, 0xd2, 0x01, 0x10 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.9 | 0x113905d2, 0x997b, 0x487b, 0xb2, 0x61, 0x1f, 0xcc, 0x50, 0x82, 0xc0, 0x3b | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.10 | 0x7763db01, 0x78e5, 0x478a, 0xbf, 0xbb, 0xe7, 0xe2, 0xf1, 0xa4, 0xe3, 0xf6 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.11 | 0x27cf47b1, 0xfff0, 0x41ce, 0xa0, 0x34, 0x9c, 0xde, 0x2c, 0xdf, 0x60, 0xa1 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The protocol interface should be really updated. |
| 5.1.3.3.12 | 0x5d49efba, 0x9476, 0x4912, 0xa5, 0xf4, 0x36, 0xb6, 0x5d, 0x5f, 0xca, 0x2e | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The protocol interface should be really updated. |
| 5.1.3.3.13 | 0xa18b9681, 0x284b, 0x416f, 0xaa, 0x60, 0x85, 0xb4, 0x45, 0x7b, 0x5e, 0x29 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls same interface at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface = old interface. The protocol interface should be really updated. |
| 5.1.3.3.14 | 0x8e0e04cb, 0xe2c6, 0x40b4, 0x98, 0x11, 0x3e, 0x3f, 0x31, 0x18, 0x78, 0x0d | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with different interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.15 | 0x3c358ff2, 0x01fe, 0x45d2, 0x82, 0xf7, 0xe3, 0x01, 0x81, 0x9e, 0xa9, 0xa2 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with different interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.16 | 0x39f8a385, 0xfb98, 0x409b, 0xb9, 0x64, 0x27, 0xce, 0x2d, 0x8a, 0x97, 0x64 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with different interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.17 | 0x283aa2e7, 0xc3e1, 0x4c51, 0x91, 0x30, 0x25, 0x8e, 0x3f, 0x23, 0xc2, 0x76 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.18 | 0xa7015b15, 0xcf81, 0x4e00, 0x8f, 0x37, 0xeb, 0xaa, 0xde, 0xac, 0xaa, 0x85 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.19 | 0xebdf5d21, 0x83f8, 0x4ba5, 0xa2, 0x9b, 0x6c, 0x6b, 0x0b, 0x46, 0xf6, 0xc3 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.20 | 0xdb9916f1, 0x58b4, 0x494f, 0x8e, 0x5a, 0x80, 0x8a, 0x6e, 0x8c, 0x7d, 0x01 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The protocol interface should be really updated. |
| 5.1.3.3.21 | 0xdd723861, 0x1787, 0x48ab, 0xb5, 0xb5, 0xc7, 0xed, 0x9d, 0xa0, 0xb7, 0xa8 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The protocol interface should be really updated. |
| 5.1.3.3.22 | 0xef59b8ea, 0x5b3f, 0x471b, 0xa2, 0x5a, 0x22, 0xb7, 0x27, 0x34, 0x22, 0xda | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls different interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call ReinstallProtocolInterface() with the new interface != old interface. The protocol interface should be really updated. |
| 5.1.3.3.23 | 0xb9309d48, 0xe467, 0x4836, 0x84, 0x97, 0x97, 0xdd, 0x58, 0x32, 0xc3, 0xff | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.24 | 0x1c319111, 0x6aaf, 0x4a88, 0xa5, 0x62, 0xe3, 0xc9, 0xa9, 0xc8, 0x35, 0xf0 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.25 | 0xed702361, 0x93d1, 0x4482, 0xb8, 0xf8, 0xb0, 0xcd, 0xc7, 0xc5, 0x5f, 0xe8 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.26 | 0x0e8e9149, 0x41de, 0x4a21, 0xa5, 0x6d, 0xbb, 0xa1, 0x24, 0xfe, 0x26, 0xba | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.27 | 0xae28eef8, 0xa415, 0x47bf, 0x87, 0x88, 0xe9, 0x3d, 0xad, 0xc4, 0x34, 0x20 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.28 | 0x78893f3f, 0xb402, 0x45a5, 0x91, 0xd8, 0xc6, 0x5f, 0x67, 0xe7, 0xdc, 0xb4 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.29 | 0x9ddcb93c, 0xec9a, 0x4185, 0x84, 0xbe, 0xe6, 0xa3, 0xa5, 0x17, 0x09, 0x97 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.30 | 0x06638a28, 0x9534, 0x4e35, 0x9c, 0x20, 0x97, 0xd0, 0xd3, 0x8b, 0x5f, 0x09 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.31 | 0xeca41895, 0x43c3, 0x4f3b, 0xa7, 0x31, 0x85, 0x63, 0xdd, 0x3a, 0xeb, 0xcd | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.32 | 0x2c70bdd0, 0xb541, 0x4f03, 0xa5, 0x86, 0xb3, 0x1c, 0x7e, 0x47, 0xe2, 0xa0 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.33 | 0xb02d6997, 0xba31, 0x4ea3, 0xaf, 0x25, 0x45, 0x1a, 0x4b, 0x05, 0x92, 0x4c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.34 | 0x7559ac82, 0xecc5, 0x460f, 0xa2, 0xf5, 0x75, 0x3a, 0x1f, 0xce, 0x0c, 0x97 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.35 | 0xcf6c7824, 0x510d, 0x4547, 0xae, 0x31, 0x76, 0xe5, 0xdb, 0x18, 0x2f, 0x5a | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.36 | 0x2812b788, 0xc622, 0x4aa2, 0x90, 0x5d, 0xa6, 0xb5, 0x29, 0xde, 0x31, 0x43 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.37 | 0xeceb799c, 0xd852, 0x4f4f, 0xa3, 0x9f, 0x7e, 0x47, 0x30, 0x4b, 0xf6, 0x24 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.38 | 0x7f61a831, 0x357d, 0x4664, 0x8e, 0x26, 0xb3, 0xc5, 0x9d, 0xfb, 0x56, 0x3c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.39 | 0x87a27695, 0xd5c9, 0x4712, 0x9f, 0x7b, 0xd6, 0x00, 0x45, 0xb6, 0x77, 0xaa | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.40 | 0x6056c396, 0x56a8, 0x4dbe, 0xbc, 0xd1, 0x00, 0x05, 0x3a, 0xa1, 0xd5, 0x04 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.41 | 0x5e835916, 0x0850, 0x4380, 0xa9, 0x2c, 0x88, 0x24, 0x7c, 0x13, 0x67, 0x3a | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.42 | 0xbc384cce, 0x25e7, 0x4ab4, 0x9b, 0x92, 0x8d, 0xd6, 0xca, 0xe2, 0x6a, 0x29 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.43 | 0xe8bfcebf, 0x4a8e, 0x4b76, 0xb6, 0xe9, 0xf4, 0xc2, 0x28, 0x72, 0x1a, 0x5b | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.44 | 0x0e0fc183, 0xaf09, 0x418d, 0x93, 0xf6, 0x17, 0x72, 0x80, 0xf9, 0x0d, 0x67 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.45 | 0x477f42d0, 0x5755, 0x4907, 0xa4, 0xe9, 0x49, 0x2e, 0x12, 0x47, 0x11, 0xeb | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.46 | 0xa05dfd9c, 0x4c54, 0x43b1, 0xbf, 0x78, 0x32, 0x27, 0x4a, 0x67, 0x28, 0x5a | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The new interface pointer should equal the address of the old interface. |
| 5.1.3.3.47 | 0x9537f350, 0xa519, 0x4272, 0xbf, 0xe6, 0x97, 0x0e, 0xe1, 0xf2, 0x95, 0x87 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.48 | 0x1d00d8e3, 0xe6a3, 0x46ee, 0xa3, 0x4e, 0x5f, 0xe2, 0xf7, 0x23, 0xf3, 0xf8 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.49 | 0x9ab51ea3, 0xbe65, 0x44c7, 0xbe, 0x31, 0x2b, 0xc8, 0xea, 0x6d, 0x23, 0xa9 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface was really updated. |
| 5.1.3.3.50 | 0xffaacc85, 0x9e40, 0x433b, 0xbc, 0x21, 0xe2, 0xae, 0xad, 0x5f, 0xa9, 0x15 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.51 | 0xa8354a22, 0x115e, 0x4a3d, 0xb7, 0x39, 0xa3, 0x78, 0x64, 0xf8, 0x0b, 0xa2 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.52 | 0x0af4e34f, 0x8af0, 0x485f, 0x91, 0x9d, 0x2d, 0xe9, 0x2e, 0x30, 0xee, 0x3d | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.53 | 0xf757a668, 0x07e6, 0x4744, 0xa3, 0x2a, 0x79, 0x0b, 0xe9, 0x16, 0xa2, 0xad | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.54 | 0x5c504893, 0x0ab2, 0x4282, 0xba, 0x26, 0x12, 0xe6, 0xbd, 0x26, 0xa1, 0xb3 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.55 | 0xc06e1bcd, 0x10a7, 0x4d16, 0xaa, 0x74, 0x2a, 0xaf, 0x34, 0xef, 0x9d, 0xca | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.56 | 0x83410d83, 0x5a33, 0x4f8b, 0x89, 0xee, 0x93, 0x84, 0x3a, 0xf0, 0xfc, 0xd2 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.57 | 0x5c89d64f, 0x479e, 0x403a, 0xb8, 0xcd, 0xc2, 0x3a, 0x38, 0xad, 0x39, 0xe1 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.58 | 0x02216a3f, 0xa63f, 0x4844, 0x9d, 0x57, 0x87, 0x59, 0xcc, 0x0e, 0xbc, 0x9e | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.59 | 0x4e466e37, 0xd264, 0x455c, 0xb2, 0x37, 0x4b, 0x8a, 0x52, 0x98, 0x6e, 0xe6 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.60 | 0xd8ae4f16, 0x1a15, 0x4e23, 0xa1, 0xb3, 0xb2, 0xbc, 0x14, 0x00, 0x17, 0x11 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.61 | 0xf1743d0d, 0x7d64, 0x433a, 0x90, 0xd9, 0x75, 0x06, 0xbc, 0x2d, 0xf9, 0xe6 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.62 | 0x9152e17f, 0x7d25, 0x4b84, 0xaa, 0x1c, 0xd0, 0x9e, 0x4d, 0x99, 0x7d, 0x7c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.63 | 0x557ed71a, 0x83db, 0x476f, 0xb4, 0x02, 0x5e, 0xec, 0x8d, 0x89, 0xf0, 0xd8 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.64 | 0x6b425b04, 0xf68c, 0x44e7, 0xbe, 0x5d, 0x8b, 0xea, 0x39, 0x78, 0xc7, 0x45 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.65 | 0x0b55c435, 0xed26, 0x459c, 0xa5, 0x36, 0x70, 0xf4, 0x51, 0x18, 0xe8, 0x93 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.66 | 0x1fd7feef, 0xd9a4, 0x46dc, 0x94, 0x97, 0x4a, 0xff, 0x06, 0x0b, 0xca, 0x84 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.67 | 0x60c75742, 0x8c58, 0x40e2, 0x88, 0xb4, 0x0d, 0x7d, 0x4c, 0x81, 0x25, 0xe6 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.68 | 0x335d503c, 0x1624, 0x4d44, 0x84, 0x22, 0x94, 0x74, 0xb3, 0xcd, 0xb7, 0xb2 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.69 | 0xb5c308fb, 0x8ea7, 0x428e, 0xa7, 0x62, 0x1e, 0x70, 0x9d, 0x90, 0x10, 0x74 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.70 | 0xd05e98dd, 0x157e, 0x49db, 0xbf, 0xd9, 0x43, 0x25, 0x5b, 0x91, 0x5c, 0x53 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.71 | 0x18e2625f, 0x1066, 0x4467, 0x9f, 0x8c, 0xa1, 0x84, 0xa7, 0x46, 0xaa, 0x43 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.72 | 0x6797c7e3, 0xbddd, 0x4519, 0x85, 0x1e, 0x6c, 0x81, 0x71, 0xba, 0xbe, 0x52 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.73 | 0x37bfec5b, 0x8899, 0x48b2, 0x9e, 0x3d, 0x6c, 0x48, 0x74, 0x80, 0xfd, 0x00 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.74 | 0x4f15dee5, 0x6319, 0x431b, 0xb4, 0x2c, 0x7c, 0x88, 0x36, 0x35, 0x4b, 0x1c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.75 | 0x9478a613, 0x8521, 0x4832, 0xa3, 0x74, 0xfc, 0x5d, 0xe9, 0xaa, 0x0b, 0xa1 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.76 | 0x109a1695, 0xaf0a, 0x43a7, 0xad, 0xb5, 0x7d, 0x50, 0x9b, 0x85, 0xff, 0xd3 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.77 | 0xcf4bb456, 0x29fe, 0x4e46, 0x9b, 0x38, 0x09, 0x73, 0x93, 0x9a, 0xa9, 0x2a | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.78 | 0x71890aa7, 0xa7e5, 0x454c, 0xb6, 0xc3, 0x69, 0xb1, 0x1d, 0x7d, 0xac, 0x55 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.79 | 0x5ae4c26a, 0xcbed, 0x4aa2, 0x9f, 0x52, 0x47, 0x78, 0x60, 0xd3, 0x13, 0xcc | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.3.80 | 0xcfc17ae1, 0x8cc8, 0x4e46, 0xaa, 0x91, 0xf6, 0xaa, 0x6a, 0xe0, 0x10, 0x76 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.81 | 0x7cd52d24, 0xd8b9, 0x458a, 0xa7, 0x0b, 0x35, 0x3c, 0x34, 0xbe, 0xa0, 0x3f | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.82 | 0x1e43e41e, 0x0119, 0x4ab5, 0x81, 0x3f, 0x99, 0xe3, 0xcc, 0x20, 0x79, 0xd7 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol. The protocol interface should not be updated. |
| 5.1.3.3.83 | 0xee9a742a, 0xc536, 0x47c1, 0x8c, 0x36, 0x79, 0x2a, 0x97, 0x36, 0x77, 0x61 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.84 | 0x29b926e6, 0x8279, 0x44ca, 0x97, 0x26, 0xf1, 0xd6, 0x54, 0xbf, 0xe1, 0x83 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.85 | 0x5c1a7657, 0x40ad, 0x473c, 0xaf, 0xf5, 0xd1, 0x4a, 0xcd, 0xdf, 0xf3, 0xad | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call ReinstallProtocolInterface() to reinstall the protocol.  4. Call CloseProtocol() to close TestProtocol1.  5. Call ReinstallProtocolInterface() to reinstall the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.86 | 0xb83b3c39, 0x6e9d, 0x4289, 0xa2, 0x42, 0x14, 0x2d, 0xda, 0x62, 0x0b, 0xe1 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.87 | 0x77dc0aed, 0x6f4a, 0x45a4, 0xaa, 0x99, 0x29, 0xaf, 0x10, 0xc8, 0x4d, 0xf5 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.88 | 0xf97d5424, 0xa904, 0x40f2, 0x8a, 0xc8, 0x23, 0xa8, 0xac, 0xca, 0xc2, 0xad | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.89 | 0xf3cb0a58, 0x4682, 0x425d, 0x91, 0xfd, 0x7a, 0x10, 0xe4, 0xa0, 0xf3, 0x50 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to non-NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.90 | 0x7ed1d007, 0x7f32, 0x493a, 0xb0, 0xc9, 0xba, 0xce, 0xdc, 0x2d, 0xdd, 0xed | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to non-NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.91 | 0x48c64365, 0x01dd, 0x41c6, 0x93, 0x6e, 0x28, 0xea, 0x1d, 0xde, 0x0c, 0x1f | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with NULL to non-NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.92 | 0xa22e15c8, 0xe151, 0x4b84, 0xa0, 0x6b, 0x7f, 0x99, 0x28, 0x7f, 0xff, 0x64 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with NULL interface to non-NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The TestProtocol1’s interface should be NULL. |
| 5.1.3.3.93 | 0xc9da7aef, 0x77e0, 0x44d4, 0xbd, 0xa8, 0x6e, 0xd6, 0xad, 0x3a, 0xf3, 0xfd | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with NULL interface to non-NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The TestProtocol1’s interface should be NULL. |
| 5.1.3.3.94 | 0xa6f419a6, 0xcf35, 0x40ea, 0x80, 0x9c, 0x19, 0xe7, 0xcf, 0x8e, 0xcb, 0x95 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with NULL interface to non-NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 with a non-NULL interface onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with NULL interface. The TestProtocol1’s interface should be NULL. |
| 5.1.3.3.95 | 0x6926fa2f, 0xf78c, 0x454a, 0x91, 0x85, 0x56, 0x7b, 0x93, 0x8d, 0x17, 0x29 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with non-NULL to NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.96 | 0x0d00253b, 0x00d7, 0x429a, 0xba, 0x56, 0x7f, 0x91, 0x84, 0x77, 0xd8, 0xba | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with non-NULL to NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.97 | 0x799c3528, 0x4d2e, 0x4329, 0xa6, 0x9b, 0xce, 0x5c, 0x42, 0xf8, 0x3e, 0x00 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() returns EFI\_SUCCESS with non-NULL to NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The return code should be EFI\_SUCCESS. |
| 5.1.3.3.98 | 0x339ae67e, 0xdc65, 0x4411, 0xb6, 0x11, 0x5d, 0xfc, 0xd5, 0xcb, 0x70, 0x06 | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.99 | 0x75c6076f, 0xf57b, 0x4892, 0xaf, 0xa7, 0x1c, 0xa5, 0x51, 0x04, 0x36, 0x2a | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.100 | 0x03ad7b51, 0x36c3, 0x4bf9, 0x91, 0x18, 0x2c, 0x50, 0xe7, 0x1d, 0x36, 0x1d | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The new interface pointer should equal the address of the new interface. |
| 5.1.3.3.101 | 0x0f91c7bb, 0x0e0b, 0x426a, 0x8b, 0x6b, 0xe5, 0x7f, 0x12, 0xb9, 0xa8, 0x5c | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The protocol interface was really updated. |
| 5.1.3.3.102 | 0x254d9491, 0x1249, 0x4abd, 0xa6, 0x72, 0x5d, 0xfa, 0x68, 0xd9, 0x58, 0x6f | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The protocol interface was really updated. |
| 5.1.3.3.103 | 0x662e7cb3, 0x297b, 0x4d97, 0x81, 0x6d, 0xc7, 0x61, 0x74, 0xad, 0x72, 0xee | BS.ReinstallProtocolInterface – ReinstallProtocolInterface() reinstalls with non-NULL interface to NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 onto a new handle.  2. Call ReinstallProtocolInterface() to reinstall the protocol with non-NULL interface. The protocol interface was really updated. |

### RegisterProtocolNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.4.1 | 0x4bce9d1a, 0xffae, 0x4809, 0x82, 0xae, 0xf6, 0x6e, 0x10, 0xeb, 0x59, 0x74 | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with valid event at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event listed. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.2 | 0x11b76c1d, 0xdba6, 0x4535, 0x94, 0xe0, 0xf3, 0x9d, 0xcf, 0x86, 0x24, 0xd7 | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with valid event at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event listed. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.3 | 0x1390658d, 0x9c5e, 0x4af6, 0x9d, 0x9e, 0xe9, 0x19, 0xf3, 0x80, 0xa9, 0x71 | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with valid event at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event listed. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.4 | 0x47249e03, 0x836b, 0x4c44, 0xad, 0xe5, 0x4a, 0x0f, 0x79, 0xdd, 0x60, 0x99 | BS.RegisterProtocolNotify – RegisterProtocolNotify() gets the registration key with valid event at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event listed. After each calling, a registration key should be returned. |
| 5.1.3.4.5 | 0xbd50e782, 0xaa2b, 0x4f5f, 0x85, 0x69, 0x12, 0x3d, 0x4f, 0x81, 0x7b, 0x78 | BS.RegisterProtocolNotify – RegisterProtocolNotify() gets the registration key with valid event at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event listed. After each calling, a registration key should be returned. |
| 5.1.3.4.6 | 0x434968fe, 0x0a2f, 0x4806, 0x94, 0x7a, 0xc6, 0x69, 0x4f, 0x8f, 0x5a, 0x57 | BS.RegisterProtocolNotify – RegisterProtocolNotify() gets the registration key with valid event at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event listed. After each calling, a registration key should be returned. |
| 5.1.3.4.7 | 0x18a14727, 0x39f9, 0x4dce, 0xa2, 0xf2, 0xaf, 0x82, 0x56, 0x29, 0x67, 0x6d | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with protocol at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.8 | 0x94bc9e2d, 0x048b, 0x4c76, 0xaf, 0xe3, 0xfe, 0x93, 0x96, 0xe1, 0xef, 0x3d | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with protocol at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.9 | 0xdd09bb3a, 0x7e6b, 0x441d, 0xb3, 0xce, 0xa6, 0x98, 0x78, 0x16, 0xce, 0x9b | BS.RegisterProtocolNotify – RegisterProtocolNotify() returns EFI\_SUCCESS with protocol at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. Each return code should be EFI\_SUCCESS. |
| 5.1.3.4.10 | 0x11cca836, 0x9ff0, 0x481b, 0x84, 0x03, 0x8e, 0xe2, 0x72, 0x52, 0x57, 0xb2 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return colde should be EFI\_SUCCESS. |
| 5.1.3.4.11 | 0xdcb04d09, 0xfd98, 0x495e, 0xaa, 0x14, 0x4c, 0x16, 0xae, 0xe5, 0x81, 0xcc | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return colde should be EFI\_SUCCESS. |
| 5.1.3.4.12 | 0xe8708024, 0x8a28, 0x4fac, 0xa5, 0x86, 0x80, 0xaf, 0xa1, 0x26, 0x55, 0x33 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return colde should be EFI\_SUCCESS. |
| 5.1.3.4.13 | 0xd0587022, 0x05e4, 0x4127, 0x98, 0x2f, 0x83, 0xe6, 0x84, 0x9e, 0xb1, 0x50 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.4.14 | 0x43a33e3d, 0x48d1, 0x4ea2, 0x82, 0x3c, 0xf9, 0xb5, 0x5a, 0xbe, 0x3f, 0xdc | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.4.15 | 0xb55fd245, 0xfd96, 0x4dc7, 0x9f, 0xa6, 0x97, 0xf1, 0x84, 0x7e, 0x8c, 0x4e | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.4.16 | 0x4864b70d, 0x5573, 0x4ac7, 0x86, 0xd7, 0xb2, 0x0d, 0xcb, 0x9e, 0x06, 0x4c | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.17 | 0x52c7b2b1, 0x828c, 0x4e1c, 0x95, 0xa7, 0xb9, 0x96, 0xc8, 0xcf, 0x08, 0x02 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.18 | 0xe9c27a4d, 0x17ec, 0x4edd, 0x9c, 0xe0, 0x75, 0x0b, 0x7d, 0x41, 0xf6, 0x70 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.19 | 0x86f38f07, 0x185a, 0x498a, 0x9b, 0x66, 0xf9, 0xe0, 0x5c, 0xc4, 0x18, 0xd7 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked again, and the total invocation time for each function is twice. |
| 5.1.3.4.20 | 0x9b7d258e, 0xd87f, 0x4a91, 0xb5, 0x73, 0xeb, 0x06, 0x92, 0x7f, 0xbd, 0x3b | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked again, and the total invocation time for each function is twice. |
| 5.1.3.4.21 | 0x1906999e, 0x7c7e, 0x4a3e, 0x96, 0x44, 0x0a, 0x25, 0xd5, 0xd9, 0x50, 0x53 | BS.RegisterProtocolNotify – RegisterProtocolNotify() registers the notify function with protocol at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked again, and the total invocation time for each function is twice. |
| 5.1.3.4.22 | 0x90068144, 0xc425, 0x47d3, 0x89, 0x72, 0xb5, 0xab, 0xf1, 0x2c, 0x82, 0x7a | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. The return code should be EFI\_SUCCESS |
| 5.1.3.4.23 | 0x9ef7d002, 0x2ea2, 0x486d, 0xbf, 0xad, 0x25, 0x43, 0x5c, 0x43, 0xf7, 0x2a | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. The return code should be EFI\_SUCCESS |
| 5.1.3.4.24 | 0xa81be45d, 0x7534, 0x43a3, 0xb9, 0xf1, 0x60, 0x4f, 0x01, 0x87, 0xfb, 0x62 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1. The return code should be EFI\_SUCCESS |
| 5.1.3.4.25 | 0xb2d4b97e, 0xee48, 0x40f7, 0xb3, 0x49, 0xac, 0x1b, 0x0f, 0x8c, 0xc3, 0x92 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.26 | 0x5263bb06, 0x8ae4, 0x46c4, 0xb0, 0xee, 0x4b, 0xd8, 0x88, 0x41, 0xe7, 0x85 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.27 | 0xa39497a5, 0x7a70, 0x43e1, 0x80, 0x86, 0x8b, 0x8d, 0x89, 0xe7, 0xf3, 0xed | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.28 | 0xfc11a5e8, 0x3b22, 0x4e75, 0xbb, 0xb0, 0xc3, 0x3b, 0x1c, 0x57, 0xfd, 0xa5 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() should be EFI\_SUCCESS. |
| 5.1.3.4.29 | 0x5b9b80ae, 0x9d2f, 0x4506, 0x86, 0xc7, 0x0b, 0xa9, 0x30, 0x85, 0x27, 0xcf | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() should be EFI\_SUCCESS. |
| 5.1.3.4.30 | 0x5ec22e94, 0xcce7, 0x4448, 0x86, 0xad, 0xe3, 0xe0, 0x11, 0xf9, 0x2d, 0xdc | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() should be EFI\_SUCCESS. |
| 5.1.3.4.31 | 0xdca77cf4, 0x72d4, 0x4762, 0x8f, 0x7d, 0x27, 0xe5, 0xdd, 0x2a, 0x73, 0x31 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.32 | 0xc0ca4f13, 0xf662, 0x4f2b, 0xb6, 0x68, 0xbe, 0x7c, 0x5a, 0xfc, 0x51, 0x1a | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.33 | 0x30abe85d, 0x2093, 0x4405, 0xb3, 0x48, 0x9f, 0x7f, 0xa1, 0xda, 0x71, 0xe2 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.4.34 | 0xfb8dcf11, 0xf107, 0x4bee, 0xa3, 0x2e, 0xb4, 0xb5, 0xe9, 0x86, 0x22, 0x2b | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() is EFI\_SUCCESS. |
| 5.1.3.4.35 | 0x6a48a665, 0xf22a, 0x4014, 0xaf, 0x11, 0x78, 0x72, 0x97, 0x5a, 0x13, 0x20 | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() is EFI\_SUCCESS. |
| 5.1.3.4.36 | 0x292a3e09, 0x6e51, 0x4025, 0xb5, 0xb4, 0xf9, 0x46, 0x9a, 0x4b, 0x39, 0x4e | BS.RegisterProtocolNotify – LocateHandleBuffer() with registration key at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() with each event registered for TestProtocol1.  2. Call InstallProtocolInterface() to install TestProtocol1.  3. Call ReinstallProtocolInterface() to reinstall TestProtocol1. All events notify functions should be invoked, and the return code of LocateHandleBuffer() is EFI\_SUCCESS. |
| 5.1.3.4.37 | 0x8922622c, 0x2b5a, 0x4438, 0x92, 0x31, 0xda, 0x35, 0x85, 0xac, 0x83, 0x0c | BS.RegisterProtocolNotify - ConsistencyTestCheckpoint3 | Call RegisterProtocolNotify() with a Protocol Guid being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.4.38 | 0x51761a02, 0xdd1f, 0x4d8a, 0x95, 0xa6, 0x38, 0xb6, 0x0e, 0x1d, 0xdb, 0xf5 | BS.RegisterProtocolNotify - ConsistencyTestCheckpoint3 | Call RegisterProtocolNotify() with a Event being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.4.39 | 0xdf8f26aa, 0xdf96, 0x4700, 0xbc, 0xbb, 0x6a, 0x3c, 0x98, 0x8c, 0xfd, 0x97 | BS.RegisterProtocolNotify - ConsistencyTestCheckpoint3 | Call RegisterProtocolNotify() with the Registration being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.4.40 | 0xc74cea76, 0xac9a, 0x4a43, 0x80, 0xa6, 0xb5, 0xe3, 0xe3, 0x85, 0x45, 0xe7 | BS.RegisterProtocolNotify -  Events that have been registered for protocol interface notification can be unregistered by calling **CloseEvent()**. | .1. Call CreateEvent() to create Event1 with EVT\_NOTIFY\_SIGNAL and CALLBACK TPL, create Event2 with EVT\_NOTIFY\_SIGNAL and NOTIFY TPL. They are registered with RegisterProtocolNotify() with the specified protocol. 2. Call CloseEvent() to close Event1 and Event2. 3. Call InstallProtocolInterface() to install the specified protocol.  4. The two Events should not be signaled. |
| 5.1.3.4.41 | 0xd642220c, 0x6d31, 0x4676, 0x96, 0xf0, 0xb0, 0x55, 0x1c, 0xdc, 0xa2, 0xf2 | **BS.RegisterProtocolNotify -** Events that have been registered for protocol interface notification can be unregistered by calling **CloseEvent()**. | 5. Call ReInstallProtocolInterface() to install the specified protocol.  6. The two Events should not be signaled. |

### LocateHandle()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.5.1 | 0x52d5cdec, 0xf9cf, 0x4a48, 0x86, 0x4b, 0x87, 0x9e, 0x92, 0xe5, 0x1a, 0x3b | BS.LocateHandle – LocateHandle() returns EFI\_INVALID\_PARAMETER with invalid search type | 1. Call LocateHandle() with search type other than AllHandles, ByRegisterNotify and ByProtocol. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.5.2 | 0x6cad11b3, 0x9ea5, 0x4d60, 0xb0, 0x6c, 0xaf, 0xf3, 0xfd, 0xef, 0x90, 0x8d | BS.LocateHandle – LocateHandle() returns EFI\_INVALID\_PARAMETER with SearchKey is NULL when searching ByRegisterNotify | 1. Call LocateHandle() with search type ByRegisterNotify, but the SearchKey is NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.5.3 | 0x3b59cad8, 0x4c97, 0x49b2, 0xbb, 0xfa, 0x9f, 0x15, 0x6a, 0x3e, 0x7f, 0x44 | BS.LocateHandle – LocateHandle() returns EFI\_NOT\_FOUND with a never installed protocol | 1. Call LocateHandle() to locate the handles for a never installed protocol. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.4 | 0x40a82fe1, 0x7c20, 0x4307, 0xa4, 0x3b, 0xfa, 0x6e, 0x21, 0x16, 0x2c, 0xdb | BS.LocateHandle – LocateHandle() returns EFI\_BUFFER\_TOO\_SMALLEFI\_BUFFER\_TOO\_SMALL with Buffer size is 0 | 1. Call LocateHandle() to locate all handles with 0 length handle buffer. The return code should be EFI\_BUFFER\_TOO\_SMALLEFI\_BUFFER\_TOO\_SMALL. |
| 5.1.3.5.5 | 0xa66db8d1, 0x6ea7, 0x40c2, 0x99, 0x8c, 0xd3, 0xc6, 0xc8, 0xff, 0x33, 0xe6 | BS.LocateHandle – LocateHandles() sets the required buffer size with Buffer size is 0 | 1. Call LocateHandle() to locate all handles with 0 length handle buffer. The buffer size is updated to the size of the buffer needed to obtain the handle array. |
| 5.1.3.5.6 | 0x11449d53, 0xa735, 0x45b2, 0xa7, 0x81, 0xb6, 0x0f, 0x22, 0x73, 0x46, 0x0f | BS.LocateHandle – LocateHandle() returns EFI\_BUFFER\_TOO\_SMALLEFI\_BUFFER\_TOO\_SMALL with Buffer size less than the required. | 1. Call LocateHandle() to locate all handles with the required buffer size – 1 length handle buffer. The return code should be EFI\_BUFFER\_TOO\_SMALLEFI\_BUFFER\_TOO\_SMALL. |
| 5.1.3.5.7 | 0xf7d46144, 0x290c, 0x48da, 0xad, 0x11, 0xca, 0x67, 0x8e, 0xa5, 0xab, 0x1b | BS.LocateHandle – LocateHandle() sets the required buffer size with Buffer size less than the required. | 1. Call LocateHandle() to locate all handles with the required buffer size – 1 length handle buffer. The buffer size is updated to the size of the buffer needed to obtain the handle array. |
| 5.1.3.5.8 | 0x69eec7bb, 0x55d6, 0x475f, 0xbc, 0x57, 0x2e, 0xaf, 0xe4, 0x8c, 0x52, 0x0f | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of AllHandles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.9 | 0xb8cd32a7, 0x7a94, 0x4c75, 0xbc, 0x8a, 0x2b, 0x72, 0xec, 0xb5, 0xe8, 0x62 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of AllHandles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.10 | 0xfdea67c6, 0x6cb8, 0x4d0f, 0xa5, 0x5c, 0xfe, 0xd3, 0x73, 0xac, 0x18, 0xd1 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of AllHandles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.11 | 0x25ee90ed, 0x3cf6, 0x4c1c, 0xa3, 0xad, 0x82, 0x33, 0xaf, 0x05, 0x0b, 0x77 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.12 | 0x0129241e, 0x0b63, 0x47ba, 0x9d, 0xd5, 0xdc, 0xb5, 0x8a, 0x4e, 0x62, 0x60 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.13 | 0xdc3cff6a, 0x86d2, 0x4dc4, 0x85, 0x25, 0x06, 0x81, 0x81, 0xb3, 0xe6, 0x87 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.14 | 0x3c3e2f8f, 0xe33f, 0x4ef1, 0x99, 0xa7, 0xb2, 0x37, 0xf2, 0xea, 0x2c, 0xab | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.15 | 0x48dc0c46, 0x053a, 0x4314, 0xa9, 0xa3, 0x34, 0x4c, 0xe2, 0xc8, 0x57, 0xec | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.16 | 0xd5de5eaa, 0x71ab, 0x4caf, 0xb7, 0xe0, 0x4a, 0x87, 0x10, 0x65, 0xbb, 0x55 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.17 | 0xd7fa21f2, 0xbe25, 0x4696, 0x87, 0x55, 0xef, 0xa8, 0x50, 0x30, 0xc8, 0x78 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.5.18 | 0xa82151e4, 0x5b2a, 0x475b, 0xa5, 0xe0, 0x6a, 0x75, 0x9c, 0xed, 0x22, 0x93 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.5.19 | 0xf3787309, 0xb7c9, 0x418b, 0xb3, 0xa5, 0x28, 0x42, 0x61, 0xc5, 0x17, 0xf6 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.5.20 | 0x096eaa87, 0x17c3, 0x43c1, 0x82, 0x00, 0x8d, 0xfd, 0x93, 0x45, 0xee, 0xe5 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.21 | 0xf67331e1, 0x7881, 0x47b5, 0xa5, 0xc6, 0xd9, 0x0d, 0xa0, 0x52, 0x45, 0xd3 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.22 | 0xfc881982, 0x3387, 0x4aae, 0x98, 0xd8, 0x31, 0x78, 0xf6, 0xee, 0x66, 0x5d | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.23 | 0xa03b492d, 0x40a3, 0x4726, 0xb5, 0xb9, 0x82, 0x84, 0x2b, 0xae, 0x77, 0x56 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.24 | 0xa47869b0, 0x45f2, 0x47c3, 0xb0, 0xa3, 0xac, 0x53, 0xee, 0xe4, 0x94, 0x1f | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.25 | 0x34127434, 0x40c5, 0x4f9e, 0xb1, 0x45, 0x5b, 0x7f, 0x3f, 0x88, 0x6a, 0x8f | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.26 | 0x598cd1aa, 0xe3d2, 0x4cae, 0x9e, 0x44, 0xa1, 0x9d, 0xbc, 0x72, 0xed, 0x89 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.5.27 | 0x487d12ed, 0xdc96, 0x41a1, 0x8c, 0xc1, 0xc6, 0xe3, 0x74, 0x54, 0x6a, 0xd7 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.5.28 | 0xd76dedf9, 0xe98e, 0x473b, 0x87, 0xa1, 0x76, 0x62, 0x56, 0x84, 0x46, 0x85 | BS.LocateHandle – LocateHandle() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandle() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.5.29 | 0x278161f9, 0xbfdc, 0x4627, 0xb1, 0x1e, 0x7c, 0x64, 0x55, 0x92, 0x73, 0xfd | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.30 | 0x4f61b8d3, 0xb78d, 0x42f7, 0x8c, 0x47, 0xab, 0x66, 0x0f, 0x93, 0x87, 0x6b | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.31 | 0x05c8a6c6, 0x0629, 0x46a5, 0x86, 0x72, 0xfc, 0xd5, 0x8a, 0x24, 0xa1, 0xdf | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.32 | 0xe971ed0a, 0xe0ea, 0x48db, 0xae, 0x13, 0x53, 0x2e, 0xda, 0xd6, 0xbc, 0xc7 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.33 | 0x9022c21e, 0x153d, 0x443d, 0xa5, 0x6a, 0x72, 0x3c, 0x02, 0xae, 0x5b, 0x7d | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.34 | 0xa24c8d25, 0x8b4a, 0x4e65, 0x9a, 0x91, 0x3f, 0x8b, 0x72, 0x60, 0x42, 0x90 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.35 | 0x023ac3c9, 0x3305, 0x45d4, 0xa0, 0x20, 0x74, 0x71, 0x33, 0xf3, 0x66, 0xc1 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.36 | 0x18ab1f0c, 0x6972, 0x436d, 0x9d, 0x7b, 0xea, 0x35, 0x13, 0xaa, 0x09, 0x19 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.37 | 0xf4bd2b49, 0xa409, 0x42d8, 0xa1, 0xe6, 0xe9, 0xdd, 0x0e, 0x1d, 0xca, 0x0e | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.38 | 0xd913ed57, 0xd7d9, 0x4108, 0x92, 0x66, 0x71, 0x10, 0x28, 0x1f, 0xd5, 0x9a | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be the new created handle. |
| 5.1.3.5.39 | 0xbf1d6210, 0x96e2, 0x4417, 0xb7, 0xe9, 0x9f, 0xba, 0x62, 0x20, 0x32, 0xe0 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be the new created handle. |
| 5.1.3.5.40 | 0x05f0c339, 0xce7e, 0x4e51, 0xb7, 0xbe, 0xd6, 0x2d, 0xbe, 0x34, 0x04, 0x27 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be the new created handle. |
| 5.1.3.5.41 | 0x7a7b904c, 0x600a, 0x41d0, 0xb0, 0x19, 0x06, 0x5d, 0xee, 0x14, 0x3d, 0xf8 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.42 | 0x94b01d4c, 0x149f, 0x4750, 0xa3, 0x61, 0x37, 0x6c, 0xcd, 0xf6, 0x2f, 0xcf | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.43 | 0x9eb4e947, 0xdac3, 0x4b24, 0xa1, 0xd3, 0x6f, 0x5a, 0xb0, 0x02, 0x09, 0x10 | BS.LocateHandle – LocateHandle() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto 10 new handles.  3. Call LocateHandle() 10 times via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.44 | 0xe42ce5bb, 0x0c74, 0x4fde, 0x99, 0x71, 0xcc, 0xfe, 0x1d, 0x21, 0x0d, 0xb3 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.5.45 | 0x8b4d0f9e, 0x80a0, 0x451a, 0x88, 0x04, 0x86, 0x22, 0x04, 0x51, 0xfa, 0xce | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.5.46 | 0x9eb47d37, 0xc0c1, 0x48a3, 0x85, 0x2c, 0x26, 0xad, 0x0e, 0x33, 0xe6, 0x55 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.5.47 | 0x1f8ec2e8, 0x5597, 0x4c45, 0xb5, 0x50, 0xf9, 0x31, 0xc8, 0x2f, 0x0b, 0x50 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.48 | 0xcd2fd544, 0x58ea, 0x4bef, 0x9c, 0xd0, 0xa4, 0x6b, 0xfc, 0x43, 0xc9, 0xf2 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.49 | 0xe72afb35, 0xd416, 0x4dcc, 0x9a, 0x87, 0x9b, 0x29, 0x64, 0xb9, 0x04, 0x6e | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByProtocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.50 | 0x5437505f, 0x064f, 0x4b19, 0x97, 0x06, 0xba, 0xbe, 0x19, 0x3e, 0xa8, 0xcc | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.5.51 | 0x50aa234f, 0x9140, 0x4016, 0x83, 0x2f, 0x53, 0xb6, 0xd4, 0x60, 0x40, 0x91 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.5.52 | 0x35dfcf9e, 0xfae6, 0x4715, 0x81, 0x85, 0xff, 0xa3, 0x4a, 0xda, 0x2f, 0x14 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.5.53 | 0x342ed823, 0x9e57, 0x46bd, 0x9f, 0x9f, 0x8b, 0x08, 0x64, 0x75, 0x50, 0x05 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.5.54 | 0xa151beda, 0x5e43, 0x46c7, 0x9d, 0xa6, 0xf0, 0xcb, 0x59, 0x2a, 0x0f, 0x03 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.5.55 | 0xedf89e16, 0x81cf, 0x4202, 0x88, 0x95, 0xab, 0x94, 0xaa, 0x4e, 0xe6, 0x47 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.5.56 | 0xd96a0071, 0x3e0c, 0x4ad5, 0xbd, 0x2a, 0x8c, 0x2a, 0x19, 0x01, 0xa6, 0x31 | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |
| 5.1.3.5.57 | 0x902adedd, 0x58cc, 0x4f3d, 0x95, 0x9b, 0x7e, 0x4d, 0xcb, 0x60, 0xea, 0x2d | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |
| 5.1.3.5.58 | 0x98d1053f, 0xb223, 0x48d2, 0x82, 0x5a, 0x73, 0xc8, 0x85, 0x35, 0x2a, 0xfb | BS.LocateHandle – LocateHandle() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandle() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |
| 5.1.3.5.59 | 0x552ccd79, 0x14bd, 0x45d0, 0x8a, 0x0f, 0x86, 0xb0, 0x30, 0x85, 0xb2, 0x63 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.60 | 0xf9b1720f, 0x6916, 0x41a1, 0x86, 0xd0, 0x2f, 0x79, 0x28, 0xad, 0x2b, 0x80 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.61 | 0x7043b8ef, 0x7bd5, 0x4ecc, 0x95, 0x1e, 0xde, 0x3f, 0x6f, 0xcf, 0xbd, 0x17 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.62 | 0x28a0256f, 0x95a3, 0x4050, 0x87, 0x9d, 0x99, 0xd2, 0x29, 0xbb, 0xcc, 0x95 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.63 | 0x46f1b43a, 0x1943, 0x401c, 0x95, 0xce, 0xe0, 0x0a, 0x8e, 0x84, 0xd9, 0x73 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.64 | 0x05219d9d, 0x0e3b, 0x4336, 0xba, 0x98, 0x04, 0xc9, 0xb5, 0xbe, 0x12, 0xa7 | BS.LocateHandle – LocateHandle() returns EFI\_SUCCESS with a Type value of ByRegisterNotify at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.65 | 0xe1f78301, 0x0106, 0x4088, 0xa9, 0x4c, 0x4c, 0x25, 0x14, 0x98, 0xa4, 0x5a | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.66 | 0x11e8389a, 0x3d37, 0x48d0, 0xa1, 0x50, 0xf9, 0x05, 0x03, 0x49, 0x90, 0xca | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.67 | 0xa5ed261d, 0x73aa, 0x4ef0, 0x8f, 0x3c, 0xbe, 0x2e, 0xae, 0xe2, 0xcc, 0xe9 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.68 | 0x849585d5, 0x1f53, 0x450c, 0x81, 0x70, 0xb1, 0x70, 0xbd, 0x29, 0x5b, 0x1c | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.69 | 0x2932e563, 0xe4dd, 0x4ea8, 0xb0, 0xfa, 0xb1, 0x6a, 0x34, 0x4d, 0x9b, 0x74 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.70 | 0xc415861b, 0xb3f3, 0x44dd, 0xbd, 0x40, 0xad, 0xda, 0x37, 0x54, 0x01, 0xb6 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.71 | 0x2a646138, 0x4526, 0x484a, 0x81, 0xb6, 0x2e, 0x27, 0xd1, 0xe2, 0xb2, 0xf0 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.72 | 0xad4cd436, 0x3b5c, 0x491e, 0x96, 0x79, 0xb4, 0x88, 0xea, 0x1f, 0xf8, 0x90 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.73 | 0x8d4d2c27, 0x0cfc, 0x483a, 0xa6, 0xda, 0xce, 0x8b, 0xc5, 0xdc, 0x8f, 0xaf | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.74 | 0x09b908f2, 0x81da, 0x4dbd, 0x9a, 0x1f, 0x5b, 0xa8, 0xca, 0x47, 0x36, 0x32 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle()via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.75 | 0x837de4c2, 0xdd2c, 0x4739, 0xad, 0xdf, 0xa9, 0xef, 0xb4, 0xc8, 0xf0, 0x6a | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type “ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle()via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.76 | 0xfe439c44, 0x1f30, 0x465e, 0x9a, 0x91, 0x3a, 0x06, 0x7d, 0x06, 0xd2, 0x98 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.5.77 | 0xe73f9a4d, 0x3d43, 0x48e8, 0xab, 0xe4, 0x08, 0xc0, 0x64, 0xef, 0xeb, 0x28 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.78 | 0xd4336a63, 0xa8a5, 0x48ff, 0xa4, 0x52, 0x7b, 0x9b, 0x44, 0x24, 0x4e, 0x3a | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.79 | 0xa1d137fa, 0x3270, 0x4d3e, 0x92, 0x0b, 0xd9, 0x3f, 0x31, 0x4f, 0x39, 0x43 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return BufferSize should be the size of (EFI\_HANDLE). |
| 5.1.3.5.80 | 0x4f8f1009, 0xe23f, 0x41e3, 0x82, 0xb7, 0xf0, 0xbb, 0x96, 0x5a, 0xda, 0xca | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.81 | 0x621afecb, 0xd170, 0x4a19, 0x92, 0x3f, 0xa4, 0xf1, 0xd3, 0x8b, 0x0f, 0x81 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.82 | 0x77efed09, 0xb369, 0x40bd, 0x99, 0xa4, 0x27, 0x61, 0xba, 0xb6, 0xbf, 0x1b | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle()via search type ByRegisterNotify. The return handles should be matched. |
| 5.1.3.5.83 | 0xf927d0b9, 0x0d7d, 0x4e89, 0x8f, 0xd7, 0x04, 0x2a, 0x4c, 0xeb, 0xd9, 0xbe | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify.  7. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.84 | 0x9162854c, 0x7516, 0x4a9e, 0xb7, 0x57, 0x04, 0xf6, 0x88, 0x3e, 0x7c, 0x8b | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify.  7. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.5.85 | 0x5c391bcb, 0xcdaf, 0x45c5, 0xab, 0x2d, 0xbb, 0x72, 0x98, 0x01, 0x4c, 0xb6 | BS.LocateHandle – LocateHandle() locates new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandle() via search type ByRegisterNotify.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles again.  6. Call LocateHandle() via search type ByRegisterNotify.  7. Call LocateHandle() again. The return code should be EFI\_NOT\_FOUND. |

### HandleProtocol()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.6.1 | 0xbb124c57, 0x654a, 0x44e2, 0x91, 0x25, 0x9b, 0x65, 0x46, 0xba, 0xc1, 0x10 | BS.HandleProtocol – HandleProtocol() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call HandleProtocol() with invalid handle (Handle = NULL or Handle is invalid). Each return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.6.2 | 0xeb5fc568, 0x67f1, 0x412a, 0xa2, 0xce, 0xe4, 0xad, 0x11, 0xef, 0xbd, 0x27 | BS.HandleProtocol – HandleProtocol() returns EFI\_INVALID\_PARAMETER with NULL protocol | 1. Call HandleProtocol() with NULL protocol GUID. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.6.3 | 0x3257ddd0, 0xe28c, 0x4f2e, 0xac, 0xf3, 0x52, 0x9a, 0x87, 0x38, 0x64, 0x27 | BS.HandleProtocol – HandleProtocol() returns EFI\_INVALID\_PARAMETER with NULL interface | 1. Call HandleProtocol() with NULL interface. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.6.4 | 0x25ece62d, 0x5c0e, 0x4f33, 0x9e, 0x55, 0xe3, 0xbb, 0x12, 0x2d, 0x8d, 0x8f | BS.HandleProtocol – HandleProtocol() returns EFI\_UNSUPPORTED with never installed protocol | 1. Call HandleProtocol() to attempt to retrieve a protocol instance that was never installed on the handle. The return code should be EFI\_UNSUPPORTED. |
| 5.1.3.6.5 | 0x8696c014, 0x6bd7, 0x4a98, 0xa1, 0xdd, 0xeb, 0x07, 0xc0, 0x1a, 0xbd, 0x15 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.6 | 0x752790d2, 0xf46a, 0x4956, 0x9b, 0x78, 0xc0, 0x54, 0x6f, 0x26, 0x44, 0xb5 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.7 | 0x30e46bfd, 0xe3b9, 0x4196, 0x8e, 0xa7, 0xcc, 0xd8, 0xc0, 0x75, 0x93, 0x3f | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.8 | 0xa4b84540, 0xa81c, 0x44f0, 0xb3, 0xbe, 0xae, 0x9c, 0xda, 0xd0, 0x80, 0xbf | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.6.9 | 0x8e0b5eea, 0x8f0b, 0x46e3, 0xa6, 0xa3, 0x20, 0xfa, 0x7c, 0xfa, 0xde, 0x3c | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.6.10 | 0xf58819f0, 0xc0c8, 0x4583, 0xb0, 0x07, 0x67, 0x08, 0x07, 0xc5, 0x71, 0x88 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.6.11 | 0x00c5156d, 0x6b47, 0x441a, 0xb2, 0x97, 0x9b, 0xb0, 0x83, 0x07, 0x42, 0x76 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.12 | 0x0b4e7e97, 0xcb38, 0x48a2, 0xb9, 0x2a, 0x16, 0x1a, 0x93, 0x5f, 0x5b, 0x05 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.13 | 0x0bc2127b, 0xcaf7, 0x4073, 0xa3, 0x9b, 0x42, 0x7b, 0x16, 0x56, 0x82, 0x02 | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.6.14 | 0xd1a554d5, 0x07d0, 0x437b, 0x82, 0xa2, 0xbb, 0xa3, 0x67, 0xc8, 0x58, 0xec | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The new TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.6.15 | 0x8cae93e7, 0x438e, 0x4c9f, 0x99, 0xc7, 0x7c, 0x20, 0x87, 0x25, 0xd8, 0xca | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The new TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.6.16 | 0x7884805e, 0x6660, 0x4e8e, 0xab, 0x32, 0xa6, 0xf5, 0x70, 0xc1, 0x8c, 0xcd | BS.HandleProtocol – HandleProtocol() locates protocol from handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call HandleProtocol() to attempt to retrieve TestProtocol1 from the handle.  3. Reinstall TestProtocol1 onto the handle.  4. Call HandleProtocol() again. The new TestProtocol1’s function should be accessed and executed correctly. |

### LocateDevicePath()

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| Number | GUID | Assertion | Test Description |
| 5.1.3.7.1 | 0x1657bf8a, 0x005e, 0x46c5, 0xa1, 0xb4, 0x93, 0x84, 0x81, 0xa4, 0x3b, 0x6a | BS.LocateDevicePath – LocateDevicePath() returns EFI\_INVALID\_PARAMETER with NULL protocol | 1. Call LocateDevicePath() with protocol GUID pointer be NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.7.2 | 0xef52e7d7, 0x6346, 0x48e0, 0xa6, 0x4c, 0x78, 0x71, 0x87, 0x52, 0x18, 0x8d | BS.LocateDevicePath – LocateDevicePath() returns EFI\_NOT\_FOUND with never installed protocol | 1. Call LocateDevicePath() to search for a handle with a never installed protocol. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.7.3 | 0xd71106c1, 0xfbdb, 0x4ada, 0xbf, 0x69, 0xf1, 0xde, 0x57, 0x2d, 0x29, 0x6a | BS.LocateDevicePath –LocateDevicePath()  returns EFI\_NOT\_FOUNDwith  never installed protocol and a NULL input device. | 1. Call  LocateDevicePath() to search for a handle with a  never installed protocol and a NULL input device  .  The return code should be  EFI\_NOT\_FOUND. |
| 5.1.3.7.4 | 0xbc272c41, 0x030c, 0x443d, 0xaa, 0xbf, 0x90, 0xd4, 0x50, 0x9e, 0xf7, 0xb3 | BS.LocateDevicePath –LocateDevicePath()  returns EFI\_INVALID\_PARAMETER with NULL device path input. | 1. Call  LocateDevicePath()to  search for a handle with NULL device path input. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.7.5 | 0x2a8392aa, 0x7362, 0x4edd, 0xab, 0x52, 0x07, 0xe1, 0x7e, 0x84, 0x93, 0xf3 | BS.LocateDevicePath –LocateDevicePath()  returns EFI\_INVALID\_PARAMETER with NULL device and protocol is already installed on given device path. | 1. Call  LocateDevicePath()to  search for a handle with NULL device and protocol is already installed on given device path. The return code should be  EFI\_INVALID\_PARAMETER. |
| 5.1.3.7.6 | 0x7451c26a, 0x2e5b, 0x438d, 0x92, 0x96, 0x37, 0xe0, 0x52, 0x7e, 0xa5, 0x09 | BS.LocateDevicePath – LocateDevicePath() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_APPLICATION | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.7.7 | 0xebdc8762, 0x84f7, 0x4e04, 0x8b, 0x95, 0x46, 0x33, 0x72, 0xc5, 0xc6, 0x16 | BS.LocateDevicePath – LocateDevicePath() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_CALLBACK | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.7.8 | 0x6b886422, 0x1358, 0x4e40, 0x83, 0x4d, 0xe6, 0x04, 0x66, 0x3f, 0x4a, 0x6c | BS.LocateDevicePath – LocateDevicePath() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_NOTIFY | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.7.9 | 0x67c59d93, 0x28cd, 0x4b71, 0xa9, 0xf0, 0xbc, 0x21, 0xb4, 0x4e, 0xa1, 0xb3 | BS.LocateDevicePath – LocateDevicePath() gets the remaining device path at EFI\_TPL\_APPLICATION | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return device path should be the remaining device path. |
| 5.1.3.7.10 | 0x8427cd13, 0x3f7c, 0x41d2, 0x88, 0x5e, 0xf6, 0x0f, 0x53, 0x01, 0xf1, 0xaf | BS.LocateDevicePath – LocateDevicePath() gets the remaining device path at EFI\_TPL\_CALLBACK | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return device path should be the remaining device path. |
| 5.1.3.7.11 | 0xffe496ea, 0x9207, 0x4ff1, 0x83, 0x19, 0x1c, 0xde, 0x02, 0x5d, 0xda, 0x0c | BS.LocateDevicePath – LocateDevicePath() gets the remaining device path at EFI\_TPL\_NOTIFY | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The return device path should be the remaining device path. |
| 5.1.3.7.12 | 0xf7f49158, 0x91f5, 0x4357, 0xaa, 0x88, 0x6e, 0x76, 0x29, 0x10, 0x65, 0x23 | BS.LocateDevicePath – LocateDevicePath() locates the protocol by device path at EFI\_TPL\_APPLICATION | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The test protocol’s function should be accessed and executed correctly. |
| 5.1.3.7.13 | 0x3349f1a1, 0xb6df, 0x4fac, 0x81, 0xda, 0xe6, 0xa5, 0xb7, 0xb3, 0xf3, 0xa5 | BS.LocateDevicePath – LocateDevicePath() locates the protocol by device path at EFI\_TPL\_CALLBACK | 1. Create 5 device pathses, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The test protocol’s function should be accessed and executed correctly. |
| 5.1.3.7.14 | 0xa3dee53d, 0x11e3, 0x46ec, 0xbb, 0xc6, 0xd6, 0x5e, 0xb5, 0x05, 0xf1, 0xd4 | BS.LocateDevicePath – LocateDevicePath() locates the protocol by device path at EFI\_TPL\_NOTIFY | 1. Create 5 device paths, and each device path is the parent of the follow one.  2. Install each device path and a test protocol onto a new handle.  3. Call LocateDevicePath() to locate each test protocol. The test protocol’s function should be accessed and executed correctly. |

### OpenProtocol()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.8.1 | 0xe04aea6f, 0xc5dd, 0x4d53, 0xbc, 0x7a, 0x94, 0xa3, 0xd8, 0x54, 0x2c, 0x4d | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call OpenProtocol() with invalid handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.2 | 0xd2fba07a, 0xff1f, 0x452e, 0x86, 0x51, 0x5e, 0x88, 0x44, 0x9d, 0xea, 0xc4 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with NULL protocol | 1. Call OpenProtocol() with protocol GUID value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.3 | 0xb4e6dee7, 0x3038, 0x4ff8, 0x87, 0x69, 0xf4, 0x82, 0xe0, 0xc5, 0xd2, 0x0d | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with NULL interface when Attributes is not TEST\_PROTOCOL | 1. Call OpenProtocol() with NULL interface and Attributes does not equal TEST\_PROTOCOL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.4 | 0x0e01e46a, 0x20eb, 0x45dd, 0x84, 0xc3, 0xf9, 0x3e, 0x99, 0x1e, 0xf4, 0x33 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with invalid attributes | 1. Call OpenProtocol() with attributes other than BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, BY\_CHILD\_CONTROLLER, BY\_DRIVER, BY\_DRIVER | EXCLUSIVE, EXCLUSIVE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.5 | 0xdca26772, 0x48b7, 0x4921, 0xa9, 0xb7, 0x7b, 0xf5, 0xd9, 0x29, 0x5d, 0x27 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_CHILD\_CONTROLLER and invalid AgentHandle | 1. Call OpenProtocol() with attributes is BY\_CHILD\_CONTROLLER and AgentHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.6 | 0xc84dd52d, 0xb9eb, 0x42aa, 0x8c, 0x01, 0xea, 0x85, 0xa3, 0x08, 0xc0, 0x72 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_DRIVER and invalid AgentHandle | 1. Call OpenProtocol() with attributes is BY\_DRIVER and AgentHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.7 | 0xe7a8eadd, 0x3874, 0x4f8e, 0xa1, 0x6b, 0x1e, 0xeb, 0x4d, 0x7c, 0xc8, 0xfa | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_DRIVER | EXCLUSIVE and invalid AgentHandle | 1. Call OpenProtocol() with attributes is BY\_DRIVER | EXCLUSIVE and AgentHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.8 | 0x5abda0f9, 0x17a2, 0x40ce, 0x85, 0x62, 0x1a, 0xe7, 0x0a, 0xa1, 0x37, 0xd0 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is EXCLUSIVE and invalid AgentHandle | 1. Call OpenProtocol() with attributes is EXCLUSIVE and AgentHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.9 | 0x822792bd, 0x0a83, 0x426f, 0x9d, 0x6a, 0xd3, 0x52, 0x8b, 0xf4, 0x67, 0x60 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_CHILD\_CONTROLLER and invalid ControllerHandle | 1. Call OpenProtocol() with attributes is BY\_CHILD\_CONTROLLER and ControllerHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.10 | 0x17e1ac28, 0xfcd2, 0x4459, 0xb2, 0xee, 0x3c, 0xca, 0xc5, 0x74, 0xf6, 0x21 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_DRIVER and invalid ControllerHandle | 1. Call OpenProtocol() with attributes is BY\_DRIVER and ControllerHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.11 | 0x7a027e60, 0xd967, 0x4162, 0xb6, 0x99, 0xb9, 0x80, 0xe0, 0xfe, 0xf9, 0xcf | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_DRIVER | EXCLUSIVE and invalid ControllerHandle | 1. Call OpenProtocol() with attributes is BY\_DRIVER | EXCLUSIVE and ControllerHandle is an invalid EFI\_HANDLE. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.12 | 0x357d40b9, 0xa9b0, 0x4462, 0xa4, 0xc7, 0x40, 0xca, 0x18, 0xcb, 0x17, 0x34 | BS.OpenProtocol – OpenProtocol() returns EFI\_INVALID\_PARAMETER with attributes is BY\_CHILD\_CONTROLLER and handle is identical to the ControllerHandle . | 1. Call OpenProtocol() with attributes is BY\_CHILD\_CONTROLLER and Handle is identical to ControllerHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.8.13 | 0x4f733e46, 0xdacb, 0x4f6f, 0x80, 0x2b, 0x05, 0x45, 0x00, 0x3a, 0x6a, 0x64 | BS.OpenProtocol – OpenProtocol() returns EFI\_UNSUPPORTED with never installed protocol | 1. Call OpenProtocol() to attempt to open a never installed protocol on the handle. The return code should be EFI\_UNSUPPORTED. |
| 5.1.3.8.14 | 0xf8b8c1a0, 0xda67, 0x48b6, 0x9c, 0xee, 0xd7, 0xbc, 0x81, 0xc5, 0x3b, 0x74 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is always BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.15 | 0xe24ad52e, 0x6596, 0x4bad, 0x80, 0xdb, 0x05, 0x3b, 0x5b, 0x26, 0x5d, 0xa7 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is  BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.16 | 0x28471b73, 0x3543, 0x4021, 0xa8, 0xe6, 0x66, 0x09, 0x04, 0x0a, 0xce, 0xd9 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.17 | 0x4cd217f8, 0x439e, 0x4c94, 0xa0, 0xad, 0x2a, 0x84, 0x1a, 0xb8, 0x14, 0xdc | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.18 | 0x04f77931, 0x6264, 0x4c07, 0xb2, 0xb7, 0x75, 0x8b, 0x88, 0xb0, 0xd1, 0xd9 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.19 | 0x26405688, 0x8ade, 0x4501, 0xb1, 0xc9, 0x35, 0x9b, 0x27, 0xc4, 0x2d, 0x48 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.20 | 0xc68c7ab9, 0x4f2b, 0x402b, 0xb4, 0x35, 0x4c, 0xa1, 0x58, 0x7d, 0x77, 0xd4 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.21 | 0x729bf68d, 0x281a, 0x41fe, 0x80, 0xc9, 0xfc, 0x2a, 0x80, 0x50, 0x5b, 0xc0 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.22 | 0x659ddd65, 0x0c44, 0x4bbb, 0xad, 0xc8, 0x77, 0x71, 0x48, 0x3f, 0x47, 0xe8 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.23 | 0xdc16b745, 0x528b, 0x4552, 0x80, 0x20, 0xed, 0xaf, 0x54, 0x43, 0xf5, 0x6d | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.24 | 0x4c93f05c, 0x3d94, 0x4f92, 0xae, 0x9b, 0x28, 0x0b, 0xe0, 0x09, 0x32, 0xb2 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.25 | 0xd9871fff, 0xc2aa, 0x445a, 0x9a, 0xd7, 0x92, 0xa8, 0xea, 0x57, 0x14, 0x92 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.26 | 0xb8228793, 0x2c72, 0x4583, 0x8f, 0xa4, 0x7b, 0x09, 0xd1, 0x38, 0x0a, 0xe5 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.27 | 0xc2d6fe86, 0xbc2f, 0x4086, 0xb9, 0x05, 0xe6, 0x14, 0xa8, 0xf6, 0x9b, 0xe7 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.28 | 0x7e1aa146, 0x38bb, 0x421f, 0xb7, 0x4b, 0x2e, 0x1a, 0x8a, 0xbe, 0xdf, 0xc4 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.29 | 0x80e045bd, 0x884d, 0x4bc5, 0x97, 0x57, 0x83, 0x79, 0xc6, 0xd3, 0xf4, 0x51 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.30 | 0x5395226d, 0x3efb, 0x48be, 0xa8, 0x1d, 0x42, 0x6f, 0x5b, 0xac, 0x5a, 0x81 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.31 | 0x39b175d6, 0x6609, 0x4ae5, 0x85, 0x9f, 0x89, 0x73, 0x03, 0x87, 0xf2, 0xa1 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.32 | 0xa344c400, 0x679a, 0x42e3, 0x8b, 0xdc, 0xcc, 0xf6, 0xda, 0x10, 0xdd, 0xad | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER | EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.33 | 0x501ff789, 0x3380, 0x415f, 0xab, 0x29, 0xf1, 0x1c, 0xa3, 0x61, 0x70, 0x63 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER | EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.34 | 0xce6b58c7, 0xd505, 0x489d, 0xb9, 0xfe, 0x11, 0xdd, 0x25, 0x4c, 0xef, 0x69 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() when Attributes is BY\_DRIVER | EXCLUSIVE. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.35 | 0x8ba08878, 0xc464, 0x4749, 0xaf, 0x64, 0xbb, 0xe1, 0x20, 0xa6, 0x28, 0x24 | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.36 | 0xa5abd4d4, 0xeba4, 0x448d, 0x9c, 0xca, 0x99, 0xd7, 0xca, 0x39, 0x9a, 0x1d | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.37 | 0x81c7eb16, 0x6075, 0x4e85, 0xa0, 0xa5, 0x49, 0x7b, 0xc0, 0x0c, 0x24, 0x32 | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.38 | 0x51987dd1, 0xc45a, 0x4389, 0x9a, 0x0d, 0xdc, 0xf2, 0xc6, 0x5c, 0xba, 0x98 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.39 | 0xfceb340e, 0xd583, 0x4b26, 0x8d, 0x1c, 0x2b, 0x0f, 0x22, 0x67, 0xbb, 0xeb | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.40 | 0x1e5a90f9, 0x5fec, 0x4a83, 0xb8, 0xf2, 0x41, 0xa5, 0x8f, 0x1c, 0xba, 0x5e | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.41 | 0x310ad89c, 0x192d, 0x4714, 0xa2, 0x41, 0x00, 0x79, 0xfb, 0x8b, 0x3d, 0xf3 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.42 | 0x66c275cb, 0x39dd, 0x409e, 0xaa, 0xc9, 0x5c, 0x1e, 0xdd, 0xec, 0x3f, 0x34 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.43 | 0xe2e53aa7, 0xe3f5, 0x4afc, 0xbb, 0x70, 0x8a, 0x8a, 0xe0, 0x39, 0xc1, 0xc2 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.44 | 0x6a0534df, 0xf826, 0x46de, 0x9a, 0x0b, 0x2a, 0x58, 0xcc, 0x95, 0x17, 0xc3 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.45 | 0xb2545ee7, 0x63a3, 0x440f, 0x91, 0x28, 0x19, 0xbe, 0xc1, 0xaf, 0x73, 0x52 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.46 | 0xff316241, 0x8d83, 0x4e13, 0x9e, 0x6d, 0x9e, 0x7b, 0xb8, 0x59, 0x79, 0xbf | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.47 | 0x8be67955, 0x31b8, 0x4c1f, 0x99, 0xfe, 0x59, 0x9a, 0x9c, 0xe6, 0xf8, 0xb7 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.48 | 0x84c30135, 0x86fa, 0x43c2, 0xba, 0x33, 0xbe, 0x3a, 0x0d, 0x4f, 0x3b, 0x5a | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.49 | 0x75e90310, 0x22bd, 0x41d3, 0xb4, 0xee, 0x10, 0x28, 0x4d, 0x8f, 0x58, 0xca | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.50 | 0x0e495234, 0x478c, 0x4668, 0x9a, 0x48, 0xd1, 0x8d, 0x76, 0xd3, 0x9f, 0x39 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.51 | 0x5c288d57, 0x93e4, 0x4111, 0x88, 0x5f, 0x88, 0x1f, 0xe9, 0x5d, 0x89, 0x3a | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.52 | 0xd9f3625f, 0x9f31, 0x420d, 0xa8, 0xe8, 0x60, 0xd4, 0x29, 0x09, 0xd2, 0x2f | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.53 | 0x105b44cb, 0x04ad, 0x456d, 0x92, 0x16, 0x77, 0xb6, 0x3e, 0x01, 0x10, 0x50 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.54 | 0xf23c3c33, 0xcbb4, 0x48fc, 0x8c, 0x35, 0xc1, 0x67, 0xb6, 0x93, 0x08, 0x3d | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.55 | 0x7d5271f9, 0xddb0, 0x47d3, 0xa5, 0xb7, 0x27, 0xe1, 0x12, 0xf6, 0xc1, 0xdd | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.56 | 0xc0f8ce0b, 0x77f2, 0x4c39, 0x82, 0x02, 0xaa, 0x58, 0xe2, 0x68, 0xab, 0x9e | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.57 | 0xc2043b13, 0x3827, 0x42b7, 0xb6, 0xa4, 0x67, 0x5b, 0xbb, 0x2e, 0x9e, 0x04 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.58 | 0x4d0b2d09, 0xa55a, 0x41b6, 0x8e, 0x0d, 0x38, 0x3b, 0x2a, 0x69, 0x1c, 0xa4 | BS.OpenProtocol – OpenProtocol() returns EFI\_ACCESS\_DENIED to open a opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol2 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.59 | 0x5768e02b, 0x605c, 0x4d1c, 0xb9, 0xf3, 0x7e, 0xaf, 0x73, 0xd1, 0x2f, 0x38 | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.60 | 0xea96e021, 0xd431, 0x44b8, 0x95, 0xd1, 0xb7, 0xd0, 0x66, 0x12, 0xaa, 0x8d | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.61 | 0xe4f5fba0, 0xaef9, 0x4ff7, 0xa8, 0xbd, 0x6b, 0x0d, 0xb5, 0x7c, 0x52, 0xfb | BS.OpenProtocol – OpenProtocol() returns EFI\_ALREADY\_STARTED to open a opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ 3 onto TestHandle1.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER, TestProtocol2 EXCLUSIVE, TestProtocol3 BY\_DRIVER | EXCLUSIVE.  3. Call OpenProtocol() to open TestProtocol3 BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.8.62 | 0x2aa15ebf, 0x0886, 0x45ec, 0x90, 0x8f, 0xa6, 0x85, 0x35, 0x47, 0xc2, 0x7e | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.63 | 0xbf0c2a4b, 0x3666, 0x4521, 0x96, 0xda, 0xb1, 0x10, 0x8b, 0x5d, 0x13, 0x34 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.64 | 0xaad371a4, 0x9cdd, 0x4821, 0xb5, 0xb0, 0x1e, 0xf5, 0x62, 0x76, 0x71, 0xbe | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.65 | 0xbf1d8fa1, 0x16d4, 0x4812, 0x99, 0x10, 0x12, 0x7a, 0x3c, 0xf4, 0x57, 0x1a | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.66 | 0x7846f5d2, 0xd936, 0x486b, 0x9a, 0x94, 0x87, 0xce, 0x23, 0xc3, 0x30, 0x19 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.67 | 0xde91d40a, 0xe684, 0x4eb1, 0x9b, 0xf4, 0x40, 0x8c, 0x04, 0x53, 0x8f, 0xcc | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.68 | 0xc9460f7e, 0x2ac7, 0x4fef, 0x90, 0x50, 0xb4, 0x84, 0x36, 0x47, 0xae, 0x70 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.69 | 0x16d40f9b, 0x97dc, 0x4fa9, 0xbb, 0x0b, 0x02, 0xf5, 0xae, 0x72, 0x13, 0xa7 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.70 | 0x45c7ab50, 0xb7d2, 0x498f, 0xaa, 0xba, 0x6e, 0xbe, 0xb4, 0xee, 0x6b, 0x7d | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.71 | 0x3aa76227, 0xfaf6, 0x4ca2, 0x99, 0x9a, 0xf2, 0x9a, 0x4b, 0x86, 0xb6, 0x6f | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.72 | 0x346eeba8, 0xae42, 0x4b9d, 0xae, 0x3b, 0xca, 0xd6, 0x39, 0x88, 0xb8, 0xcb | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.73 | 0x1954dbdd, 0xb7f2, 0x485d, 0xb5, 0x22, 0x04, 0xd6, 0x4c, 0x05, 0x8c, 0x5e | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_HANDLE\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.74 | 0x38a71272, 0x8ffb, 0x4fe2, 0xba, 0x27, 0x85, 0x77, 0xfd, 0xf3, 0x25, 0x98 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.75 | 0xb312c5ab, 0xe33a, 0x441c, 0xa2, 0x82, 0xf2, 0xe1, 0xed, 0x5d, 0x8d, 0x25 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.76 | 0x9dfc7f23, 0x27d6, 0x40b9, 0x8f, 0x5e, 0x42, 0x74, 0x7d, 0x8d, 0x8c, 0x48 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.77 | 0x1ee34b41, 0x814f, 0x44ae, 0xb3, 0xcb, 0xe0, 0xf2, 0x65, 0x84, 0x5d, 0x9e | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.78 | 0x09afde5f, 0x30e3, 0x4197, 0x95, 0xa9, 0x01, 0xf3, 0xe9, 0xb2, 0x3f, 0xd8 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.79 | 0x6f3e8ae0, 0x822d, 0x4d41, 0x8a, 0x38, 0x40, 0xb1, 0x9d, 0xb4, 0x4f, 0x89 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.80 | 0xc7a93fd6, 0xb21d, 0x4323, 0xad, 0xd8, 0x3e, 0xbe, 0x0b, 0x9d, 0xf1, 0x7b | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.81 | 0xc7189505, 0x78a7, 0x4a5f, 0x98, 0xdb, 0xbd, 0x28, 0x71, 0x3a, 0x31, 0x94 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.82 | 0xe3fe868d, 0xf1d5, 0x437f, 0x99, 0xef, 0xd5, 0x53, 0x93, 0x8f, 0x5c, 0x64 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.83 | 0xd04e388d, 0x1000, 0x4743, 0x89, 0xca, 0x58, 0x21, 0xfa, 0x17, 0x4f, 0xec | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with GET\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.84 | 0x6bffc888, 0xe5c5, 0x4a4f, 0xb2, 0xfe, 0x81, 0x98, 0xa8, 0x46, 0x0d, 0xc7 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with GET\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.85 | 0xc9061c77, 0x922e, 0x497f, 0xbc, 0xad, 0xad, 0x04, 0x63, 0x15, 0x13, 0x52 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with GET\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with GET\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.86 | 0xcd2818e3, 0x5c5c, 0x4270, 0xad, 0xed, 0xa4, 0x93, 0x9f, 0x91, 0x1c, 0xa5 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.87 | 0xa5ab5a70, 0x518f, 0x4d2d, 0x98, 0xac, 0x0f, 0x92, 0x1e, 0x66, 0xd6, 0x17 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.88 | 0x4a59b76b, 0x6425, 0x45b1, 0xbb, 0x23, 0xd2, 0x32, 0x61, 0xf6, 0xe5, 0x68 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.89 | 0x5f97e881, 0x959b, 0x4c3c, 0x8c, 0x25, 0xe1, 0xb6, 0xb8, 0x48, 0xe2, 0xb2 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.90 | 0x9102ee74, 0x5fa7, 0x4436, 0xae, 0x51, 0xed, 0x15, 0x41, 0x35, 0xfe, 0xc1 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.91 | 0x17f92140, 0x11b9, 0x4c02, 0xb6, 0x49, 0x99, 0x73, 0xb8, 0xf1, 0x8f, 0x6f | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.92 | 0x951ac798, 0x99a7, 0x4174, 0x90, 0x0d, 0x2b, 0xf9, 0x22, 0x66, 0x5e, 0xd5 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.93 | 0x3d285a5e, 0xab3f, 0x47f8, 0xba, 0xbb, 0x32, 0x4b, 0x11, 0xc4, 0xef, 0x86 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.94 | 0x65242c76, 0x9c09, 0x4091, 0x8e, 0xa4, 0x40, 0x80, 0xd5, 0x20, 0xc1, 0x66 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.95 | 0xcc1c71d3, 0xf645, 0x4c25, 0xac, 0xe4, 0x1c, 0x3f, 0x8b, 0x81, 0x12, 0x48 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with TEST\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.96 | 0xa6e784ed, 0x5aeb, 0x4646, 0xb6, 0xaa, 0x4e, 0x03, 0x5f, 0x03, 0xb1, 0x6b | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with TEST\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.97 | 0x075bcbc0, 0xcb18, 0x4965, 0xa1, 0xed, 0x52, 0x25, 0xff, 0xc8, 0x2f, 0x75 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with TEST\_PROTOCOL in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with TEST\_PROTOCOL again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.98 | 0x883dc6fa, 0xc66e, 0x4cf8, 0x82, 0x7f, 0xbe, 0x0c, 0xd5, 0xf4, 0x16, 0x78 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.99 | 0x725c6b49, 0x2163, 0x439b, 0x8d, 0x8f, 0x75, 0x39, 0x33, 0x3a, 0x5a, 0xf3 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.100 | 0x0d82fdf1, 0x76b6, 0x455f, 0x8d, 0x25, 0x04, 0x28, 0xbc, 0xeb, 0x36, 0x6d | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.101 | 0x6d9e17e8, 0xab38, 0x4461, 0xa4, 0x27, 0x16, 0x5a, 0x83, 0xd7, 0x9f, 0x1f | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.102 | 0x526ab525, 0x436c, 0x4b77, 0xa1, 0xce, 0x61, 0x70, 0x7f, 0x3d, 0xfb, 0xe5 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.103 | 0x20527b37, 0x3ae6, 0x4320, 0x80, 0x9f, 0xa5, 0x90, 0x2c, 0x4e, 0xcf, 0x31 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.104 | 0xc12e22ab, 0xc537, 0x4067, 0x88, 0x10, 0xf3, 0xd2, 0x3e, 0x59, 0x24, 0x27 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.105 | 0x48c75a14, 0x089e, 0x4313, 0x92, 0x54, 0xe0, 0xfe, 0x3a, 0x51, 0x7d, 0x2f | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.106 | 0x40072ef9, 0x09c6, 0x4101, 0x99, 0x0d, 0x98, 0x5d, 0x8c, 0x0c, 0x9d, 0x9e | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol2 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.107 | 0xd4402d18, 0x26c7, 0x4591, 0x82, 0xef, 0xe1, 0x00, 0x33, 0x12, 0xca, 0x20 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_CHILD\_CONTROLLER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.108 | 0x8d3e71ad, 0x0445, 0x4c2e, 0x9b, 0x5b, 0x52, 0x4d, 0xa5, 0xc0, 0x30, 0xdb | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_CHILD\_CONTROLLER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.109 | 0x96561ad6, 0xb016, 0x42c8, 0xa5, 0xa7, 0xd1, 0xfa, 0xab, 0xd3, 0x5a, 0xa5 | BS.OpenProtocol – OpenProtocol() returns EFI\_SUCCESS with BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_CHILD\_CONTROLLER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_CHILD\_CONTROLLER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.110 | 0xf556fa41, 0x50f8, 0x4a0e, 0xa6, 0x43, 0xaa, 0x52, 0xb6, 0xb0, 0x16, 0x84 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.111 | 0xb7888f69, 0x56d8, 0x41ba, 0xbe, 0x94, 0xb1, 0x63, 0x21, 0xee, 0xc2, 0xb3 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.112 | 0x694a60ff, 0x47d6, 0x4ab6, 0xa9, 0x3f, 0xa9, 0x1c, 0xbd, 0x4f, 0x71, 0x66 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.113 | 0xd913fa73, 0xf80a, 0x42aa, 0xab, 0x8a, 0xdc, 0x77, 0x1f, 0x80, 0xc0, 0x2f | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.114 | 0x55dd57f8, 0x31dc, 0x4e45, 0xa9, 0x3e, 0xb0, 0x8f, 0x8e, 0x0b, 0x73, 0xb9 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.115 | 0xb5e4107e, 0x3e8d, 0x41f3, 0xb2, 0xb2, 0xaf, 0xe4, 0x7b, 0xf8, 0x75, 0x68 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.116 | 0x0f4ba7fc, 0x8703, 0x4ea7, 0x92, 0xf0, 0x34, 0x0b, 0x72, 0xdd, 0x2b, 0x0f | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.117 | 0x748471d3, 0x378d, 0x4b4d, 0xac, 0xdb, 0x74, 0x3c, 0x1e, 0x80, 0x50, 0x09 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.118 | 0x9273a164, 0x52fe, 0x4348, 0x8d, 0xa2, 0x07, 0x13, 0xe8, 0x42, 0x36, 0xe9 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.119 | 0xccd352ac, 0x3315, 0x46c9, 0xb4, 0x87, 0xa9, 0x58, 0x0d, 0x15, 0x08, 0x31 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.120 | 0x151b69c4, 0xeebf, 0x4894, 0xbc, 0xb5, 0x0b, 0x01, 0x06, 0x63, 0x3d, 0x3b | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.121 | 0xe4281708, 0x4861, 0x4747, 0x97, 0x85, 0xfb, 0xec, 0xee, 0x2d, 0x48, 0x3e | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.122 | 0xe76c2423, 0xd198, 0x4ee6, 0xa2, 0x9a, 0xea, 0x0c, 0xb4, 0xd4, 0x0d, 0x36 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.123 | 0x73b010d1, 0x45f8, 0x4411, 0xae, 0xda, 0x06, 0x51, 0xe2, 0x08, 0x93, 0xf3 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.124 | 0xc33e3bcb, 0x4671, 0x4bfc, 0x90, 0x9f, 0x5e, 0x1f, 0x0f, 0x6c, 0x43, 0x87 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.125 | 0x480fa1d4, 0x05ee, 0x428f, 0xa0, 0xc9, 0xeb, 0x8c, 0xd8, 0x2c, 0x29, 0x58 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.126 | 0x9e46a76b, 0x6fbd, 0x479f, 0xb1, 0x5f, 0x5f, 0x3b, 0xa8, 0xf4, 0x61, 0x81 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.127 | 0xcc798b43, 0x4cd0, 0x44f6, 0x87, 0xa0, 0x1c, 0x31, 0x53, 0x7b, 0xd8, 0x1d | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.128 | 0xd27fef41, 0x2fce, 0x4859, 0xa4, 0x45, 0x07, 0x51, 0x30, 0xfb, 0x5a, 0x10 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.129 | 0xfbff7c54, 0x92cb, 0x477c, 0x80, 0xa6, 0x8f, 0x65, 0x04, 0x3f, 0x74, 0x6b | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.130 | 0x1079d678, 0x1e99, 0x4773, 0xb7, 0x84, 0xfd, 0xd3, 0xec, 0xb1, 0x17, 0x40 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.131 | 0x317cbcd4, 0x25ab, 0x4b66, 0x9b, 0x8c, 0xba, 0x23, 0x37, 0x99, 0x89, 0xe7 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.132 | 0xe7431934, 0x0670, 0x4212, 0x93, 0xc1, 0x7e, 0xa2, 0xcd, 0xa4, 0x37, 0x63 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.133 | 0x2e312df2, 0xfefe, 0x4ae5, 0x9d, 0x69, 0x05, 0x86, 0xfd, 0x52, 0x10, 0x5b | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.134 | 0x9ac02d05, 0xe755, 0x41df, 0x99, 0x3c, 0x50, 0x95, 0x5f, 0x24, 0x93, 0xac | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.135 | 0xce3d9684, 0x87fe, 0x47b0, 0x92, 0xee, 0xee, 0x7b, 0x92, 0x45, 0x76, 0x24 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.136 | 0x3432eee2, 0x767c, 0x4127, 0xb3, 0x1e, 0xdc, 0x3d, 0xe9, 0x46, 0x9b, 0xfb | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.137 | 0xf0aa6cf6, 0x77be, 0x45c8, 0x8c, 0x66, 0x90, 0xfa, 0xb7, 0x2b, 0x2d, 0x27 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.138 | 0xc9eaa206, 0x2ef4, 0x413e, 0xa9, 0xf4, 0x39, 0x6c, 0x25, 0x98, 0x73, 0x71 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.139 | 0x9287f725, 0xd07f, 0x48d8, 0x9f, 0x97, 0x20, 0x67, 0x7c, 0x13, 0x33, 0x15 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.140 | 0x6be45139, 0x977e, 0x4f47, 0x8f, 0x6b, 0x55, 0x76, 0x1a, 0xd6, 0xe9, 0x51 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.141 | 0x3b998efd, 0xdd49, 0x407a, 0x81, 0xbf, 0x2f, 0x09, 0xee, 0xa2, 0xe1, 0x86 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.142 | 0x11c39508, 0xd7de, 0x463f, 0x87, 0x14, 0xee, 0xe7, 0x28, 0xd7, 0x65, 0x67 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The driver should be loaded. |
| 5.1.3.8.143 | 0x5aa89475, 0x844a, 0x4dc9, 0xab, 0x3d, 0xf0, 0x11, 0xd8, 0xff, 0xf1, 0x85 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.144 | 0x15bef96e, 0x8712, 0x4e4c, 0x98, 0x6e, 0xc9, 0x2f, 0x86, 0x95, 0xe8, 0x9b | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.145 | 0xe742b47c, 0xc569, 0x4dbf, 0x84, 0x9c, 0xc6, 0x15, 0x06, 0x96, 0x7b, 0x5d | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.146 | 0xd7c5b9e3, 0x8cb3, 0x4b37, 0x96, 0x3d, 0x62, 0x89, 0xf4, 0x5f, 0x78, 0xa8 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.147 | 0xfdb87c6a, 0x7b50, 0x4cf3, 0x98, 0xa8, 0x7a, 0xd8, 0x5c, 0x14, 0x2b, 0x94 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.148 | 0xe5554329, 0x1e0e, 0x4f6e, 0x92, 0xaa, 0xcd, 0x60, 0x3f, 0x12, 0xe1, 0xcd | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.149 | 0x79012c79, 0x7aa1, 0x4404, 0x8a, 0x1a, 0x81, 0x33, 0x91, 0x8e, 0x38, 0xd0 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.150 | 0xefbca8ed, 0x9ab2, 0x474a, 0xb0, 0x93, 0xb2, 0x23, 0xbc, 0x1a, 0xe2, 0x77 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.151 | 0xebc46e3f, 0xfd62, 0x42b4, 0x95, 0xaf, 0x4c, 0x7a, 0x75, 0xe8, 0x9e, 0x4a | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.152 | 0xfad30cbf, 0xd6e6, 0x4c1c, 0x96, 0xfa, 0x68, 0xb7, 0x28, 0xff, 0x50, 0x5f | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.153 | 0xab90cd9e, 0x9e8b, 0x4fd3, 0x87, 0x32, 0x10, 0x04, 0x83, 0x07, 0x7c, 0x1a | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.154 | 0x7a6722e3, 0x1211, 0x475f, 0xa8, 0x4c, 0x07, 0xe7, 0xe6, 0xfe, 0xdc, 0xb6 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a new handle.  2. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE in an external driver that does not follow EFI driver model.  3. Call OpenProtocol() with BY\_DRIVER | EXCLUSIVE again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.155 | 0x83a9ba94, 0xf3c2, 0x4760, 0x83, 0x10, 0x05, 0x33, 0x23, 0x0c, 0xb7, 0x64 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  TestDriver1 should be connected to TestHandle. |
| 5.1.3.8.156 | 0x7b6e0075, 0xd3c3, 0x4f8b, 0x82, 0xf5, 0xd8, 0x1f, 0x1a, 0x7a, 0xba, 0x52 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  TestDriver1 should be connected to TestHandle. |
| 5.1.3.8.157 | 0x10640387, 0xdb3c, 0x43ee, 0xb3, 0x22, 0xb6, 0x7d, 0x14, 0x7f, 0x63, 0xd9 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  TestDriver1 should be connected to TestHandle. |
| 5.1.3.8.158 | 0xe0026b5f, 0xbc98, 0x4090, 0xa6, 0x7d, 0xc3, 0x38, 0xe5, 0x7a, 0x2d, 0xf1 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  3. Connect TestDriver1 to TestHandle. TestDriver1 should be started. |
| 5.1.3.8.159 | 0x19bb7f70, 0x3cd8, 0x40d0, 0xbb, 0x23, 0x23, 0xa5, 0x26, 0xd8, 0x85, 0x9a | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  3. Connect TestDriver1 to TestHandle. TestDriver1 should be started. |
| 5.1.3.8.160 | 0xdc53e9ee, 0x0750, 0x4a79, 0x99, 0x47, 0x74, 0x54, 0x27, 0xab, 0xc0, 0xf8 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle.  3. Connect TestDriver1 to TestHandle. TestDriver1 should be started. |
| 5.1.3.8.161 | 0x797d1b46, 0x6dae, 0x4b5a, 0x93, 0x6c, 0xdf, 0x8a, 0x72, 0xa5, 0xee, 0xe5 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.162 | 0xa170980c, 0x8d97, 0x4d09, 0x83, 0x9b, 0x5a, 0xde, 0x94, 0x98, 0x05, 0x6e | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.163 | 0xe752f97b, 0x97cb, 0x4607, 0x96, 0xb3, 0xb8, 0x2d, 0x60, 0xdb, 0x4f, 0x5c | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.8.164 | 0x8a68d655, 0xed01, 0x4d96, 0xbf, 0x66, 0x85, 0x18, 0x8c, 0x23, 0xa9, 0x19 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle again. TestDriver1 should be started. |
| 5.1.3.8.165 | 0xfb8aee98, 0x904f, 0x4f44, 0x9f, 0xb4, 0xeb, 0x40, 0xaa, 0x0c, 0x00, 0x79 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle again. TestDriver1 should be started. |
| 5.1.3.8.166 | 0xc7551a68, 0x5aee, 0x4fcf, 0x84, 0x13, 0x6e, 0xe5, 0x5b, 0xdb, 0x7d, 0xa1 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle again. TestDriver1 should be started. |
| 5.1.3.8.167 | 0x0a010fbc, 0x7aa1, 0x4575, 0xb3, 0xad, 0x7a, 0x18, 0xac, 0xb6, 0x9f, 0xe2 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.168 | 0xb3e52ffe, 0x74fc, 0x4866, 0x86, 0x3b, 0xa7, 0x4b, 0x74, 0xe8, 0x2a, 0xcc | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.169 | 0x3ad4c925, 0x4f11, 0x4a0f, 0xa2, 0x88, 0xb9, 0x8a, 0x69, 0xbe, 0xb7, 0x2b | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install 3 protocols TestProtocol1 ~ 3 onto the TestHandle.  2. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER.  3. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again.  4. Disconnect TestDriver1.  5. Connect TestDriver1 to TestHandle, and open TestProtocol1 BY\_DRIVER again. The return code should be EFI\_SUCCESS. |
| 5.1.3.8.170 | 0x83aba934, 0x0692, 0x4016, 0x8f, 0x0c, 0x81, 0xf9, 0x2a, 0x02, 0xed, 0x0b | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.171 | 0xb60356c6, 0x15bc, 0x4064, 0xb2, 0xa9, 0x66, 0x3e, 0x04, 0x97, 0xb5, 0x8a | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.172 | 0xb3d7daa1, 0xd69b, 0x4e88, 0xa6, 0xbb, 0x04, 0x40, 0x59, 0xcf, 0xed, 0x36 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.173 | 0xd4e25744, 0x0bb8, 0x437f, 0xba, 0x71, 0x39, 0xf9, 0x3b, 0xc5, 0x9a, 0x19 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver4 should be started. |
| 5.1.3.8.174 | 0xbd89128d, 0x9a44, 0x4807, 0xae, 0x6a, 0x9b, 0xa1, 0x59, 0x21, 0x66, 0x04 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver4 should be started. |
| 5.1.3.8.175 | 0x563d5e3f, 0x426a, 0x405b, 0x8a, 0xb4, 0x2d, 0x10, 0x5d, 0x26, 0x97, 0xb2 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver4 should be started. |
| 5.1.3.8.176 | 0x472c7cc3, 0xb765, 0x4f4a, 0x87, 0xe2, 0x6b, 0xe5, 0x39, 0x38, 0x95, 0xd7 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.177 | 0xde8702c3, 0xd40c, 0x429a, 0xa4, 0xc0, 0x36, 0xda, 0x2e, 0xd1, 0xa5, 0x9c | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.178 | 0x33839db3, 0x2c94, 0x470a, 0xa8, 0x1d, 0x3d, 0xb2, 0x88, 0x1a, 0x42, 0x42 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.179 | 0xf11cc5b4, 0xfe6e, 0x48c7, 0xaf, 0xab, 0x44, 0x6d, 0x5c, 0x66, 0x51, 0xfe | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle. TestDriver4 should be started. |
| 5.1.3.8.180 | 0xd6d0a54f, 0x30e5, 0x42f5, 0x96, 0x7b, 0x1f, 0x8d, 0xb0, 0xa4, 0xc5, 0xbe | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle. TestDriver4 should be started. |
| 5.1.3.8.181 | 0xfa423bb7, 0x980a, 0x4638, 0x9d, 0xa1, 0xd3, 0x20, 0xc4, 0x1d, 0x6f, 0xd2 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle. TestDriver4 should be started. |
| 5.1.3.8.182 | 0x68460dff, 0x5f3a, 0x46bb, 0x90, 0xd3, 0xec, 0x3b, 0x90, 0xc0, 0x5b, 0x11 | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_ACCESS\_DENIED and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.183 | 0x60052ae4, 0x622a, 0x4246, 0x97, 0x10, 0xed, 0x37, 0xf1, 0xb7, 0x7a, 0xcd | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_ACCESS\_DENIED and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.184 | 0x1585ecb8, 0x2066, 0x4089, 0xa7, 0x29, 0x95, 0xee, 0x19, 0x8b, 0x15, 0xab | BS.OpenProtocol – OpenProtocol() with EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver4 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_ACCESS\_DENIED and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.185 | 0x1708f46c, 0xa0ea, 0x4fc9, 0x8d, 0xb6, 0x16, 0xfc, 0x17, 0x2d, 0x49, 0x2c | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver4 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.186 | 0xdc300053, 0x5377, 0x407f, 0x8a, 0x70, 0x20, 0x2e, 0x63, 0x01, 0xd7, 0x54 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver5 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.187 | 0xae0696f6, 0x4ee1, 0x4de7, 0x9c, 0x4d, 0x4d, 0x7b, 0x3a, 0xa6, 0x4f, 0xe8 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver5 to TestHandle again. TestDriver3 should be started. |
| 5.1.3.8.188 | 0xe2c08d3a, 0x218e, 0x411c, 0x95, 0xcf, 0x38, 0x85, 0xb3, 0x75, 0xe6, 0xa7 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver5 to TestHandle again. TestDriver5 should be started. |
| 5.1.3.8.189 | 0xcda7ab9f, 0x66db, 0x4d0c, 0xb2, 0x1d, 0x92, 0x8d, 0x6c, 0xcd, 0x63, 0x9d | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver5 to TestHandle again. TestDriver5 should be started. |
| 5.1.3.8.190 | 0xfc0c893e, 0x307c, 0x403f, 0xbe, 0x98, 0xaf, 0xc6, 0x6b, 0xee, 0xfb, 0xa2 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle.  3. Connect TestDriver5 to TestHandle again. TestDriver5 should be started. |
| 5.1.3.8.191 | 0x34ba0d95, 0x7597, 0x4a6e, 0xa8, 0xd5, 0x78, 0x61, 0x49, 0xca, 0x9e, 0xd7 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.192 | 0xc7d28ea7, 0x0d76, 0x4878, 0xab, 0x12, 0x0c, 0xd1, 0x06, 0xe2, 0x03, 0x3d | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.193 | 0x1036062c, 0x901d, 0x4ea1, 0x95, 0x8f, 0xa7, 0x38, 0xf0, 0x82, 0x74, 0x4c | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_ACCESS\_DENIED, EFI\_ACCESS\_DENIED, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.194 | 0x27ebea38, 0x414d, 0x45f9, 0x86, 0x7d, 0xb5, 0x71, 0xd6, 0x02, 0xd6, 0x00 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle. TestDriver5 should be started. |
| 5.1.3.8.195 | 0x3483f2b1, 0x4e0f, 0x4b94, 0x85, 0x4c, 0x41, 0x62, 0x2c, 0x94, 0xc9, 0x30 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle. TestDriver5 should be started. |
| 5.1.3.8.196 | 0x7a490c15, 0xe965, 0x404d, 0xa8, 0xec, 0xd2, 0x65, 0x12, 0x2f, 0x52, 0x87 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle. TestDriver5 should be started. |
| 5.1.3.8.197 | 0xb4aeff8d, 0x1836, 0x4298, 0x9f, 0x53, 0x7f, 0x50, 0x87, 0x2a, 0x35, 0x44 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.198 | 0x3ead5760, 0x74d2, 0x4780, 0x8c, 0x9d, 0x92, 0x6e, 0x02, 0x5d, 0x9a, 0x2a | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |
| 5.1.3.8.199 | 0xb4456e5c, 0x35cc, 0x49ff, 0xb2, 0x28, 0xe1, 0x99, 0xd9, 0x8a, 0xf2, 0xe8 | BS.OpenProtocol – OpenProtocol() with BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install 4 protocols TestProtocol1 ~ 4 onto the TestHandle.  2. Connect TestDriver3 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE, BY\_DRIVER | EXCLUSIVE, BY\_DRIVER and BY\_DRIVER.  3. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE.  4. Connect TestDriver5 to TestHandle, and call OpenProtocol() with TestProtocol1 ~ 4 EXCLUSIVE. The return code should be EFI\_SUCCESS, EFI\_SUCCESS, EFI\_SUCCESS and EFI\_ACCESS\_DENIED. |

### CloseProtocol()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.9.1 | 0x6b30ee3e, 0x6d78, 0x4542, 0xbd, 0x82, 0x62, 0x0c, 0xeb, 0x76, 0x89, 0xcc | BS.CloseProtocol – CloseProtocol() returns EFI\_INVALID\_PARAMETER with invalid handle. | 1. Call CloseProtocol() with invalid Handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.9.2 | 0x3c2ef125, 0x10e5, 0x4bb3, 0xaa, 0x70, 0xf9, 0x0e, 0x59, 0x1b, 0x2d, 0x49 | BS.CloseProtocol – CloseProtocol() returns EFI\_INVALID\_PARAMETER with invalid agent handle. | 1. Call CloseProtocol() with invalid AgentHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.9.3 | 0x4c580583, 0x8720, 0x4018, 0x80, 0x3a, 0xc8, 0x89, 0x46, 0xf9, 0x00, 0x07 | BS.CloseProtocol - CloseProtocol() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call CloseProtocol() with non-NULL but invalid ControllerHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.9.4 | 0x1b942668, 0xc1d5, 0x4076, 0x9d, 0x42, 0x66, 0x9c, 0xca, 0x03, 0x31, 0xbf | BS.CloseProtocol – CloseProtocol() returns EFI\_INVALID\_PARAMETER with NULL protocol. | 1. Call CloseProtocol() with NULL protocol GUID. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.9.5 | 0x35615f53, 0x7ce9, 0x491a, 0x8d, 0x3b, 0x74, 0xa4, 0x12, 0x31, 0x19, 0x1f | BS.CloseProtocol – CloseProtocol() returns EFI\_NOT\_FOUND with never installed protocol. | 1. Call CloseProtocol() to close a protocol that is not installed on the handle. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.6 | 0x60813c05, 0x9614, 0x42d6, 0xb3, 0xc1, 0x48, 0xcb, 0x7b, 0x3c, 0x5a, 0xe9 | BS.CloseProtocol - CloseProtocol() returns EFI\_NOT\_FOUND with never opened protocol. | 1. Call CloseProtocol() to close a protocol. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.7 | 0x78a501c8, 0x3d70, 0x4c55, 0x99, 0x98, 0xfc, 0x8c, 0x64, 0x4c, 0xe8, 0xe0 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.8 | 0x25258038, 0xc526, 0x4c50, 0xbd, 0x67, 0x61, 0x41, 0x93, 0x31, 0xf0, 0xfc | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.9 | 0xd4d3a269, 0x2972, 0x4613, 0xb2, 0xe4, 0x40, 0x47, 0xf3, 0x1e, 0xd6, 0xe8 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.10 | 0x3583d756, 0xee15, 0x49d2, 0xa8, 0x8d, 0xe4, 0xe0, 0x34, 0xb4, 0xe5, 0xa7 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.11 | 0x8d1b0e42, 0x68c4, 0x4118, 0xa7, 0xb4, 0xb7, 0x38, 0xc8, 0xca, 0x72, 0xd5 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.12 | 0x337f5477, 0xf41a, 0x4b1a, 0x87, 0x1c, 0x06, 0xcc, 0xf0, 0x99, 0xb8, 0xb4 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.13 | 0xb975f9f6, 0x7a4e, 0x44d4, 0x80, 0x37, 0xe4, 0xd1, 0x4f, 0x18, 0xb9, 0x46 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.14 | 0x2823a668, 0xe04f, 0x4fb6, 0xbe, 0x2a, 0x90, 0x58, 0x7f, 0x8e, 0xc5, 0x0c | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.15 | 0xc1c93781, 0x3316, 0x440f, 0x9b, 0x1b, 0x0f, 0xff, 0x2e, 0x0e, 0xc3, 0xe5 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.16 | 0xcf2eecf8, 0x864e, 0x4092, 0x9f, 0xd1, 0x2b, 0xe8, 0xd5, 0x57, 0x8e, 0xdb | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.17 | 0x7cf10a80, 0x3057, 0x4dc3, 0xb6, 0x8a, 0x6a, 0x85, 0xfc, 0x15, 0x47, 0x15 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.18 | 0x4c834cc8, 0xf8b9, 0x469c, 0x87, 0x26, 0x88, 0x2c, 0x1b, 0x32, 0xb2, 0x93 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.19 | 0xb6adc12e, 0xca4a, 0x4ee1, 0xae, 0x13, 0x97, 0xea, 0x7f, 0xb2, 0x54, 0x7d | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.20 | 0x7154668b, 0xb7a6, 0x416c, 0xb5, 0x40, 0x66, 0x82, 0x90, 0xb0, 0x73, 0x91 | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.21 | 0x5fce55ec, 0x6a72, 0x468b, 0x9c, 0x5c, 0x6a, 0x55, 0x87, 0x13, 0xfd, 0xba | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.22 | 0x530fbeb7, 0xaf17, 0x4184, 0x82, 0x22, 0x84, 0x15, 0xfd, 0x36, 0x62, 0x35 | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.23 | 0x1d2c0ca2, 0x64b8, 0x49bd, 0x81, 0x52, 0x04, 0x23, 0x39, 0xb7, 0x94, 0xbd | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.24 | 0xc6e9a0d6, 0x964c, 0x4f62, 0xa9, 0xa2, 0x8b, 0x5a, 0xef, 0x0b, 0x4d, 0x9e | BS.CloseProtocol – CloseProtocol() closes the protocol opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.25 | 0xd0252221, 0xed8e, 0x4b29, 0x94, 0x1d, 0xdd, 0x77, 0x34, 0xb0, 0x46, 0x38 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.26 | 0xf13e1252, 0x4a59, 0x457c, 0x81, 0xe3, 0x8d, 0xe8, 0x98, 0x51, 0x0c, 0xbc | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.27 | 0x444d4e4f, 0x1f92, 0x4d0f, 0xbd, 0x94, 0x55, 0x8a, 0x18, 0x04, 0x54, 0xb9 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.28 | 0xdc29e780, 0x458c, 0x4768, 0xbd, 0x74, 0x38, 0x2f, 0x5e, 0x18, 0x1d, 0xcd | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.29 | 0xf593bade, 0xdf33, 0x434c, 0xa4, 0x09, 0x2f, 0xda, 0x04, 0xb2, 0x9a, 0x37 | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.30 | 0xbd6838e1, 0x229a, 0x405b, 0xa8, 0xcd, 0x80, 0xb9, 0xd3, 0x02, 0xd2, 0x69 | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.31 | 0x7be802be, 0xc38c, 0x41ca, 0x86, 0xb5, 0x44, 0x99, 0x2b, 0x90, 0x69, 0x73 | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.32 | 0x6b61aade, 0xdf67, 0x4867, 0x96, 0xe8, 0x81, 0x18, 0x82, 0x05, 0x85, 0x3b | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.33 | 0xd235784c, 0x06dd, 0x4dcf, 0x92, 0x13, 0xde, 0xc3, 0xe6, 0x03, 0xf2, 0x37 | BS.CloseProtocol – CloseProtocol() closes the protocol opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.34 | 0xc86b323b, 0xb7d3, 0x491f, 0x9b, 0x05, 0xfc, 0x6b, 0x59, 0x6a, 0x93, 0xb8 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.35 | 0xe5a11769, 0x32f0, 0x4c86, 0xb2, 0xe9, 0x5f, 0x34, 0x63, 0xa1, 0xc7, 0xc6 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.36 | 0x4be096a6, 0x2a05, 0x4edc, 0xa9, 0x98, 0xe9, 0x99, 0xe4, 0x9e, 0xcc, 0x31 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.37 | 0x005ccabc, 0x4be9, 0x48aa, 0xa4, 0xd9, 0xcd, 0x87, 0xbe, 0xce, 0xf1, 0xed | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.38 | 0x5634facd, 0x0559, 0x4094, 0x97, 0xd5, 0x27, 0x8d, 0xe8, 0x0f, 0x24, 0x0c | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.39 | 0xe173576f, 0xc735, 0x4419, 0x95, 0x08, 0x73, 0xb3, 0x26, 0xee, 0x3e, 0x00 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.40 | 0x469d7985, 0x7868, 0x456f, 0x94, 0xb7, 0xb2, 0x24, 0x90, 0x51, 0x16, 0x45 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.41 | 0x604fd72e, 0xbbc7, 0x4693, 0x8e, 0x31, 0xf4, 0x02, 0x21, 0x13, 0xce, 0x6d | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.42 | 0x7d675f3c, 0x592e, 0x4f38, 0x98, 0xe1, 0x28, 0xae, 0xaf, 0x81, 0xdc, 0xfd | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.43 | 0x51365d70, 0xd032, 0x4bb0, 0x9e, 0x2f, 0x45, 0x79, 0xe1, 0xb4, 0x3b, 0xf4 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.44 | 0xb2dabae2, 0xdf68, 0x41cd, 0xbe, 0x21, 0x94, 0x0c, 0xe2, 0xf0, 0xdc, 0x65 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.45 | 0x2cb2bbe9, 0x81b5, 0x4589, 0xa0, 0xdc, 0xd9, 0xee, 0x6c, 0xd4, 0xf4, 0x48 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.46 | 0x747e6105, 0xab68, 0x4f7d, 0x8c, 0xed, 0x58, 0x90, 0x28, 0x3a, 0xa6, 0xaa | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.47 | 0xa140992a, 0x215c, 0x4fad, 0x8f, 0x2a, 0xd1, 0x50, 0x1f, 0x47, 0x1f, 0x50 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.48 | 0xa3296d1f, 0xc631, 0x42d8, 0xb6, 0xa4, 0x7c, 0x9b, 0xfe, 0xe7, 0x57, 0x83 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.49 | 0x3758f47c, 0x0041, 0x434c, 0x83, 0x76, 0x05, 0xeb, 0xba, 0x0f, 0x36, 0x49 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.50 | 0x5bd91b68, 0x4d35, 0x4366, 0xaf, 0x0e, 0x21, 0xf2, 0xcb, 0x6b, 0xe8, 0x13 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.51 | 0x1a02fbba, 0x35b7, 0x43c6, 0x82, 0x56, 0x90, 0x67, 0x18, 0x2f, 0xc4, 0xe0 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.52 | 0x6f75c53a, 0x1e25, 0x4767, 0x87, 0x51, 0x77, 0x5b, 0x18, 0xbc, 0xf5, 0xb0 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.53 | 0x13bc8d9b, 0x3d19, 0x413f, 0x89, 0x28, 0xc8, 0x22, 0xb5, 0x66, 0x2e, 0x96 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.54 | 0xa7e0326a, 0x01a1, 0x4d41, 0x89, 0xbe, 0x37, 0x75, 0x71, 0xef, 0x88, 0x92 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.55 | 0xf7e85205, 0x0019, 0x42a4, 0x8d, 0xaa, 0x54, 0xf2, 0xb8, 0x94, 0x0e, 0xeb | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.56 | 0x06fba0ca, 0x5fa1, 0x48e0, 0x90, 0x9e, 0x81, 0x24, 0x76, 0x9a, 0x45, 0x41 | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.57 | 0x04ef3e61, 0xd1e3, 0x474b, 0xac, 0x26, 0x1c, 0x7c, 0xac, 0x35, 0x19, 0x74 | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.58 | 0x1390eee4, 0x2409, 0x478b, 0xbc, 0x37, 0x9d, 0x17, 0x53, 0x2f, 0x68, 0x94 | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.59 | 0x372e9dd7, 0x4ea1, 0x4eb3, 0x91, 0x2c, 0x20, 0x94, 0x01, 0xde, 0x73, 0xa9 | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.60 | 0xd5da82f4, 0x43b9, 0x44f3, 0x8d, 0xb1, 0xb8, 0x2a, 0xc8, 0x20, 0x87, 0x7d | BS.CloseProtocol – CloseProtocol() closes the protocol opened EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.61 | 0xc5fe3e47, 0x3dfa, 0x473f, 0x92, 0x79, 0xfe, 0x66, 0xc4, 0x0d, 0x62, 0xed | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.62 | 0x72360334, 0x3162, 0x469c, 0x9d, 0x43, 0xa7, 0xc5, 0xba, 0xa2, 0x29, 0xa7 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.63 | 0x679010d8, 0x2815, 0x4114, 0x9d, 0xbc, 0x52, 0xfb, 0x1a, 0x3d, 0x4e, 0x53 | BS.CloseProtocol – CloseProtocol() returns EFI\_SUCCESS with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. The return code must be EFI\_SUCCESS. |
| 5.1.3.9.64 | 0xeab7d653, 0x9cde, 0x4160, 0xac, 0x7a, 0x85, 0xda, 0xc8, 0xb0, 0xd8, 0xfd | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.65 | 0x5846a316, 0x5fc2, 0x455a, 0x88, 0xc0, 0x47, 0x85, 0xcd, 0x22, 0xe9, 0x76 | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.66 | 0x7c825d57, 0x616f, 0x43c4, 0x81, 0xa9, 0xd9, 0xab, 0xc1, 0x6b, 0xab, 0x8b | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol. TestProtocol should not be opened. |
| 5.1.3.9.67 | 0x383627c5, 0xf2fa, 0x4b4f, 0xac, 0xa6, 0x66, 0xb2, 0xd9, 0xae, 0xe2, 0xbf | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.68 | 0x1a6476cd, 0xefa7, 0x4416, 0x94, 0x5a, 0x45, 0x44, 0xae, 0xc1, 0xd1, 0x9d | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.9.69 | 0x4e3cb0f2, 0xb5fc, 0x4563, 0x99, 0x6d, 0xcc, 0x44, 0xda, 0x3d, 0xf0, 0xae | BS.CloseProtocol – CloseProtocol() closes the protocol opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call CloseProtocol() to close the protocol.  4. Call CloseProtocol() to close the protocol again. The return code should be EFI\_NOT\_FOUND. |

### OpenProtocolInformation()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.10.1 | 0x5c23f55a, 0x5ea3, 0x4576, 0x9e, 0xe0, 0x77, 0xb0, 0x0d, 0x9b, 0xf8, 0x22 | BS.OpenProtocolInformation – OpenProtocolInformation() returns EFI\_NOT\_FOUND with never installed protocol | 1. Call OpenProtocolInformation() to attempt to retrieve open information of a protocol that is not installed on the handle. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.10.2 | 0x551ffed5, 0x5e44, 0x42cc, 0xa1, 0xcc, 0xbf, 0xc8, 0x0e, 0x74, 0x98, 0xcb | BS.OpenProtocolInformation – OpenProtocolInformation() returns EFI\_SUCCESS with valid parameters at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.3 | 0xa7b17f7d, 0x001e, 0x40db, 0xb6, 0x3e, 0xfc, 0x2f, 0x37, 0xf6, 0xb5, 0xd2 | BS.OpenProtocolInformation – OpenProtocolInformation() returns EFI\_SUCCESS with valid parameters at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.4 | 0x8fccb668, 0xf502, 0x4020, 0x8e, 0x48, 0x07, 0x5c, 0x58, 0xfa, 0x55, 0x1a | BS.OpenProtocolInformation – OpenProtocolInformation() returns EFI\_SUCCESS with valid parameters at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.5 | 0x68534ef5, 0x8cb0, 0x402f, 0x8d, 0x15, 0xa8, 0x0d, 0x38, 0x62, 0x46, 0x27 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryCount should be 4. |
| 5.1.3.10.6 | 0x38e40fdd, 0x6338, 0x41da, 0xa6, 0xe2, 0x4b, 0x4b, 0x25, 0x02, 0xdb, 0x4d | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryCount should be 4. |
| 5.1.3.10.7 | 0x683363d5, 0x821e, 0x4b53, 0xa3, 0x3f, 0x3c, 0x39, 0xbe, 0xfa, 0x17, 0x3b | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryCount should be 4. |
| 5.1.3.10.8 | 0x0ba0d7b1, 0x25cd, 0x410d, 0x8b, 0x2e, 0xf8, 0xe9, 0xc4, 0xf4, 0xe0, 0xd7 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.9 | 0x0f467d96, 0x2424, 0x4a85, 0x98, 0x7c, 0xa6, 0xec, 0x5f, 0xcc, 0x4a, 0x04 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.10 | 0xeace4c54, 0x5bb2, 0x4419, 0x89, 0x66, 0x67, 0x3d, 0x24, 0xa8, 0x7a, 0x9e | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.11 | 0x27a25cb1, 0xbd5e, 0x4ae3, 0xb6, 0xfd, 0xde, 0xd8, 0xb0, 0x1f, 0xc8, 0x0a | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.12 | 0x6b60a557, 0xdfc4, 0x4c1b, 0x8a, 0x5a, 0xd8, 0x10, 0x1b, 0xd3, 0x41, 0xd8 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.13 | 0x3486a27c, 0xb5e7, 0x4d63, 0x8e, 0x24, 0x17, 0x63, 0xdd, 0xae, 0x4b, 0xd5 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.14 | 0x0d0c3286, 0xefb8, 0x43b0, 0x9b, 0x80, 0xe5, 0x50, 0x8c, 0x6b, 0xa2, 0x54 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryCount should be 5. |
| 5.1.3.10.15 | 0x5642b941, 0xf367, 0x4a1c, 0x90, 0xb7, 0xd5, 0x81, 0x50, 0x62, 0x0c, 0x10 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryCount should be 5. |
| 5.1.3.10.16 | 0x5811c19c, 0x759f, 0x449b, 0x8f, 0xff, 0x2f, 0xf3, 0x55, 0x64, 0x26, 0xb0 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryCount should be 5. |
| 5.1.3.10.17 | 0x6edfefb8, 0x06fa, 0x4aff, 0xaf, 0xbc, 0xad, 0xcc, 0x97, 0xa9, 0x18, 0x98 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.18 | 0xa8c20f63, 0x0c01, 0x421c, 0x84, 0x85, 0xbe, 0x36, 0xef, 0xe0, 0x1e, 0x6e | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.19 | 0xa926af54, 0x6ccc, 0x4360, 0xab, 0x91, 0xfa, 0x3e, 0xb0, 0x04, 0x56, 0xfb | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.20 | 0x60f32615, 0x26de, 0x4088, 0x92, 0xf7, 0x42, 0x48, 0xc4, 0xb0, 0x15, 0x62 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.21 | 0x88b06cc1, 0x07f3, 0x4c2c, 0xa0, 0x66, 0x17, 0x6c, 0xc0, 0xb5, 0x13, 0x52 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.22 | 0x93cbdeae, 0x7377, 0x4c9c, 0xbb, 0x89, 0x1f, 0xa8, 0x34, 0xa1, 0xb1, 0x50 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.23 | 0x69f77854, 0xd208, 0x4447, 0x80, 0x55, 0xb0, 0x29, 0x0b, 0x5d, 0xdb, 0x99 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.24 | 0xfdcfbc23, 0x5f95, 0x4ea0, 0xa4, 0xfe, 0xba, 0x00, 0xd7, 0xc5, 0xc4, 0xde | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.25 | 0xc88b2499, 0x4673, 0x413c, 0x86, 0x75, 0xba, 0xa0, 0xbc, 0x10, 0x54, 0x4d | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.26 | 0x2c1311fb, 0xe4af, 0x4530, 0x93, 0xb7, 0xa2, 0xd5, 0x9a, 0x3f, 0xcf, 0xf7 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.27 | 0xddb30788, 0x7061, 0x4ea8, 0x8c, 0x84, 0x72, 0xc1, 0x84, 0x60, 0xe6, 0xef | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.28 | 0x88b002c4, 0x19b1, 0x496f, 0xa7, 0x16, 0x8b, 0xaf, 0x50, 0x30, 0xf6, 0x0f | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Call OpenProtocolInformation() again. The return EntryBuffer should be the expected handle and attributes. |
| 5.1.3.10.29 | 0xdda74e1b, 0xfac7, 0x47b4, 0x8a, 0xd2, 0xb8, 0x14, 0x17, 0x38, 0x0e, 0xfc | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.30 | 0xb0d45adf, 0xc9aa, 0x416e, 0xb2, 0x39, 0x4a, 0xfe, 0x3b, 0x1a, 0x43, 0xde | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.31 | 0x71da8c49, 0x0fe8, 0x4298, 0x80, 0xe9, 0x2e, 0x86, 0x40, 0x9b, 0x15, 0xc6 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.32 | 0x63867ba8, 0xa4da, 0x4153, 0x93, 0xd0, 0xe2, 0x67, 0xbe, 0x35, 0x93, 0x14 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.33 | 0x60b01808, 0x28e7, 0x4800, 0xa8, 0x1a, 0x01, 0xa1, 0xbd, 0xec, 0xa5, 0x1f | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.34 | 0x1ac2f4d5, 0x980d, 0x49a5, 0xa5, 0xd1, 0x30, 0x82, 0x7c, 0x45, 0x5c, 0x77 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryCount should be 1. |
| 5.1.3.10.35 | 0xce333372, 0x126d, 0x4d25, 0x93, 0x45, 0x12, 0x1a, 0x45, 0x15, 0xb2, 0x2b | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryBuffer should be expected handle and attributes. |
| 5.1.3.10.36 | 0xdeb1b1af, 0x90ef, 0x476d, 0xa1, 0xfd, 0xc3, 0x19, 0x44, 0xed, 0x91, 0xe2 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryBuffer should be expected handle and attributes. |
| 5.1.3.10.37 | 0x6eace800, 0xbc38, 0x4766, 0xb6, 0xb7, 0xa7, 0xff, 0xb1, 0xf3, 0x64, 0x43 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Call OpenProtocolInformation() again. The return EntryBuffer should be expected handle and attributes. |
| 5.1.3.10.38 | 0x8ca604c4, 0x0b6c, 0x40a9, 0xa5, 0x7d, 0x81, 0x22, 0x5d, 0x02, 0xb8, 0xb1 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.39 | 0xfad446e9, 0x9d06, 0x4f7c, 0xbf, 0x91, 0x3b, 0x3b, 0xea, 0xc0, 0x0f, 0xcf | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.40 | 0xdb121aed, 0xb553, 0x4fa0, 0x9f, 0xad, 0x12, 0x0b, 0xf4, 0x54, 0xef, 0x9e | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.10.41 | 0xbcf00a90, 0xf775, 0x4103, 0xab, 0x4a, 0x36, 0x41, 0xea, 0xc4, 0xc7, 0xf7 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return EntryCount should be 0. |
| 5.1.3.10.42 | 0x65097fed, 0x6b9e, 0x4365, 0x95, 0xb8, 0x7f, 0xf4, 0xfa, 0xd5, 0x89, 0xe7 | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return EntryCount should be 0. |
| 5.1.3.10.43 | 0x3e749cd6, 0x0f4c, 0x49f0, 0xbc, 0xf8, 0x70, 0x66, 0xd9, 0xce, 0x08, 0x0b | BS.OpenProtocolInformation – OpenProtocolInformation() gets the open information at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto a handle.  2. Open TestProtocol1 with BY\_HANDLE\_PROTOCOL, GET\_PROTOCOL, TEST\_PROTOCOL, and BY\_CHILD\_CONTROLLER.  3. Call OpenProtocolInformation() on the handle and TestProtocol1 to retrieve the open information.  4. Open TestProtocol1 with BY\_DRIVER.  5. Close the TestProtocol1.  6. Open TestProtocol1 with EXCLUSIVE.  7. Close the TestProtocol1.  8. Open TestProtocol1 with BY\_DRIVER | EXCLUSIVE.  9. Close the TestProtocol1.  10. Call OpenProtocolInformation() again. The return EntryCount should be 0. |

### ConnectController()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.11.1 | 0x5062ba7f, 0x98f8, 0x42dd, 0x98, 0x4e, 0xa3, 0xcf, 0xe7, 0x4c, 0x7a, 0x74 | BS.ConnectController – ConnectController() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle | 1. Call ConnectController() with invalid ControllerHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.11.2 | 0xd2a2f8db, 0x08bc, 0x4c02, 0x87, 0x8b, 0x89, 0x02, 0xd8, 0xf0, 0x24, 0x01 | BS.ConnectController – ConnectController() returns EFI\_NOT\_FOUND with related driver. | 1. Call InstallProtocolInterface() to create a new handle attached with a new protocol defined by the test case.  2. Call ConnectController() to attempt to connect the new handle with any driver exist in current system. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.11.3 | 0x90263ddb, 0x043b, 0x480a, 0x9b, 0xb4, 0x1d, 0xbb, 0x45, 0x12, 0xe0, 0x95 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with NULL driver handle and End device path at EFI\_TPL\_APPLICATION. | 1. Call ConnectController() with a DriverImageHandle value of NULL, and a RemainingDevicePath value of End device path node. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.4 | 0x9e334c55, 0x2d9d, 0x4c6f, 0x82, 0xed, 0x67, 0xf0, 0x68, 0x2c, 0x43, 0x79 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with NULL driver handle and End device path at EFI\_TPL\_CALLBACK. | 1. Call ConnectController() with a DriverImageHandle value of NULL, and a RemainingDevicePath value of End device path node. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.5 | 0xbf4441cf, 0x401d, 0x45ed, 0xa1, 0xa9, 0xa8, 0x88, 0x80, 0x6c, 0xd8, 0x92 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with NULL driver handle and End device path at EFI\_TPL\_NOTIFY. | 1. Call ConnectController() with a DriverImageHandle value of NULL, and a RemainingDevicePath value of End device path node. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.6 | 0x3ccb67c9, 0xd8b1, 0x44e6, 0x8c, 0x47, 0x4a, 0x79, 0xe8, 0x12, 0x17, 0xe2 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.7 | 0x390d6e25, 0xf39a, 0x40d7, 0xb1, 0xdd, 0x7e, 0xcf, 0x00, 0xf6, 0xbe, 0x43 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.8 | 0x08b89696, 0xae6b, 0x4a9c, 0xa5, 0xfb, 0x8d, 0x95, 0x1f, 0x01, 0x8b, 0x08 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.9 | 0x14ac9b54, 0xe7c7, 0x4858, 0x86, 0x69, 0x33, 0x23, 0x88, 0xf1, 0x66, 0xf9 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The TestProtocol2 should be located. |
| 5.1.3.11.10 | 0x3da1683e, 0x49f1, 0x4c2f, 0x82, 0xc3, 0x84, 0x40, 0xb6, 0x73, 0xac, 0xbb | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The TestProtocol2 should be located. |
| 5.1.3.11.11 | 0x13e0da6e, 0xe60f, 0x4bba, 0xbc, 0xb8, 0x6b, 0xe0, 0x2f, 0xd6, 0xec, 0xb5 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with driver handle at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The TestProtocol2 should be located. |
| 5.1.3.11.12 | 0xed970fb7, 0xb2a8, 0x41e9, 0x95, 0xc7, 0x78, 0xe6, 0x29, 0x0e, 0x8d, 0xf1 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.13 | 0x8abcac46, 0xe840, 0x496a, 0x8a, 0x8c, 0xa6, 0xc4, 0x80, 0x2a, 0x4f, 0x9f | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.14 | 0xdc039a94, 0x58da, 0x4794, 0x87, 0xae, 0x8f, 0xb4, 0x9a, 0x50, 0xd6, 0xf8 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.15 | 0xd1ccb8e6, 0x0b71, 0x4369, 0x82, 0xec, 0x88, 0x20, 0x9e, 0x63, 0xec, 0x4c | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. TestProtocol2 should be located. |
| 5.1.3.11.16 | 0x4fa1cf88, 0xd6b6, 0x48ed, 0xb8, 0x89, 0xaa, 0x11, 0x47, 0xb3, 0xc0, 0x8b | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. TestProtocol2 should be located. |
| 5.1.3.11.17 | 0x62e2a15a, 0xd00b, 0x43b1, 0x92, 0x28, 0x06, 0xe0, 0x19, 0x23, 0xe7, 0x22 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. TestProtocol2 should be located. |
| 5.1.3.11.18 | 0x2b2076c7, 0x6555, 0x473c, 0xbd, 0xa3, 0xe6, 0xfe, 0x2e, 0x62, 0x23, 0x8e | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The count of TestProtocol2 should be 10. |
| 5.1.3.11.19 | 0xfbf6e1e7, 0x915a, 0x450c, 0x8f, 0x89, 0x4f, 0xc3, 0x28, 0x71, 0x1f, 0xf7 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The count of TestProtocol2 should be 10. |
| 5.1.3.11.20 | 0xd29d9db1, 0x8433, 0x43b5, 0x83, 0x53, 0xb2, 0xb6, 0x43, 0x28, 0x12, 0x69 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver. The count of TestProtocol2 should be 10. |
| 5.1.3.11.21 | 0x93f764f7, 0x890c, 0x4939, 0xb7, 0x5b, 0xc2, 0x2a, 0x0b, 0x60, 0x15, 0xbf | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The device path should be located in the test driver. |
| 5.1.3.11.22 | 0x98c2f02b, 0x0875, 0x4b69, 0xb9, 0xb8, 0xa8, 0x58, 0xfe, 0xd9, 0x28, 0xf7 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The device path should be located in the test driver. |
| 5.1.3.11.23 | 0xf36c7d9b, 0x12ea, 0x4dc1, 0xad, 0xba, 0x25, 0x06, 0xb7, 0xe5, 0x39, 0x57 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The device path should be located in the test driver. |
| 5.1.3.11.24 | 0x4638f45f, 0x707c, 0x4cd5, 0x80, 0xcd, 0x9d, 0xf0, 0xeb, 0xdc, 0xc3, 0x4a | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The remaining device path node is the same as the input. |
| 5.1.3.11.25 | 0xe9cc5de6, 0x3847, 0x4af8, 0xa9, 0x41, 0x39, 0x39, 0xc9, 0x30, 0x85, 0x12 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The remaining device path node is the same as the input. |
| 5.1.3.11.26 | 0xfa25dafa, 0xf36b, 0x45f6, 0x88, 0x59, 0x85, 0xd8, 0x8e, 0xde, 0x10, 0x6b | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle and device path at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto 10 child handles based on different device path nodes.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() with this handle and the test driver, and the specified device path. The remaining device path node is the same as the input. |
| 5.1.3.11.27 | 0x08eda2de, 0xcd07, 0x42b6, 0x85, 0xcb, 0x68, 0x75, 0x69, 0x5e, 0xee, 0x61 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.28 | 0x8b053397, 0x4ef1, 0x44b6, 0xb5, 0x06, 0xff, 0x31, 0xc1, 0x29, 0x7a, 0xc5 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.29 | 0xe76ab343, 0x1c15, 0x4464, 0xa9, 0xae, 0x15, 0x19, 0x1f, 0x54, 0x20, 0x6b | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.30 | 0x797d540f, 0x0b07, 0x40c2, 0x9a, 0x92, 0xdb, 0xe8, 0xae, 0x42, 0xaa, 0xa7 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. TestProtocol2 should be located. |
| 5.1.3.11.31 | 0xe9083c7c, 0x0ec6, 0x4d4e, 0x82, 0xaa, 0x37, 0xc7, 0x15, 0xf0, 0x1b, 0x2b | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. TestProtocol2 should be located. |
| 5.1.3.11.32 | 0x2661fc3b, 0x060e, 0x459b, 0xb6, 0x9e, 0x9a, 0xbd, 0xf3, 0x8d, 0x18, 0x78 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with non-recursively. TestProtocol2 should be located. |
| 5.1.3.11.33 | 0xff8e9b83, 0x3056, 0x4460, 0xaf, 0xcf, 0x00, 0xea, 0x49, 0x7f, 0x3b, 0x88 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with non-recursively. TestProtocol3 should not be located. |
| 5.1.3.11.34 | 0x3dab87dd, 0x3300, 0x4bd1, 0xbe, 0x7d, 0x8a, 0xbc, 0x7f, 0x2d, 0x7c, 0xec | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with non-recursively. TestProtocol3 should not be located. |
| 5.1.3.11.35 | 0x05746bbf, 0x24ec, 0x4a9b, 0x87, 0xf8, 0xc1, 0xe1, 0xa3, 0x59, 0x9a, 0x85 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle non-recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with non-recursively. TestProtocol3 should not be located. |
| 5.1.3.11.36 | 0xe5ac854a, 0xed36, 0x4a52, 0x8b, 0xf5, 0xa2, 0xcf, 0x38, 0x72, 0x87, 0xef | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.37 | 0xff98ccd3, 0xabd4, 0x40f5, 0xa8, 0x61, 0xba, 0xaf, 0x44, 0x1b, 0x85, 0x16 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.38 | 0x8e783e67, 0x9591, 0x4a2b, 0x92, 0x1c, 0x88, 0xf5, 0x01, 0x57, 0x6f, 0x60 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.39 | 0xac33fc14, 0x5103, 0x4f74, 0x9e, 0x45, 0xe5, 0x2e, 0xa2, 0x34, 0xa6, 0x05 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. TestProtocol2 should be located. |
| 5.1.3.11.40 | 0x6c322336, 0xa1c9, 0x44a5, 0xbd, 0xe7, 0x28, 0x4b, 0xb8, 0x0e, 0xb3, 0x9c | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. TestProtocol2 should be located. |
| 5.1.3.11.41 | 0xcddb22e1, 0x257e, 0x46a8, 0x97, 0xb2, 0xcc, 0x42, 0x24, 0x7b, 0x95, 0x27 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect them with recursively. TestProtocol2 should be located. |
| 5.1.3.11.42 | 0xde796be2, 0xa687, 0x4853, 0xb8, 0x23, 0xd4, 0x6f, 0x45, 0x04, 0xb5, 0xf2 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_APPLICATION. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with recursively. TestProtocol3 should be located. |
| 5.1.3.11.43 | 0xbf767b24, 0x2947, 0x4be2, 0x94, 0xd2, 0x19, 0x00, 0x2b, 0x43, 0x4c, 0x55 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_CALLBACK. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with recursively. TestProtocol3 should be located. |
| 5.1.3.11.44 | 0x7f316b06, 0xe1ee, 0x47da, 0xb6, 0x67, 0x3b, 0xc4, 0xc9, 0x10, 0x3c, 0xd7 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with bus driver handle recursively at EFI\_TPL\_NOTIFY. | 1. Create a test driver1 to consume TestProtocol1 and install TestProtocol2 onto a child handle.  2. Create a test driver2 to associate with the child handle created by test driver1, and install TestProtocol3 on the handle.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect them with recursively. TestProtocol3 should be located. |
| 5.1.3.11.45 | 0x917ecceb, 0x5338, 0x4d26, 0xbf, 0x7e, 0x59, 0xee, 0xc8, 0x28, 0x05, 0x28 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_APPLICATION. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.46 | 0x51c7c310, 0xde21, 0x4de3, 0xb7, 0x42, 0x58, 0x72, 0x7c, 0x0b, 0x56, 0x04 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_CALLBACK. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.47 | 0xf5b2a58b, 0x2066, 0x457b, 0xbf, 0x12, 0xaf, 0x16, 0xc9, 0x67, 0xf4, 0xbd | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_NOTIFY. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.48 | 0x36fba4aa, 0xd674, 0x48ae, 0x80, 0x79, 0x00, 0xc4, 0x33, 0x03, 0x92, 0x79 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_APPLICATION. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. TestProtocol2 ~ 4 should be located. |
| 5.1.3.11.49 | 0x51ffd5da, 0x49d0, 0x40bf, 0xaf, 0xe9, 0x50, 0xaa, 0x2f, 0x08, 0x6a, 0xf8 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_CALLBACK. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. TestProtocol2 ~ 4 should be located. |
| 5.1.3.11.50 | 0xe3c583a5, 0xa3da, 0x4e4e, 0xaf, 0x5d, 0x65, 0xb6, 0x1b, 0x18, 0xe9, 0x11 | BS.ConnectController – ConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_NOTIFY. | 1. Create three test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol2 and install TestProtocol3, and the last one consume TestProtocol3 and install TestProtocol4.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 3 test drivers. TestProtocol2 ~ 4 should be located. |
| 5.1.3.11.51 | 0x1b08dc10, 0xc423, 0x4a3a, 0x84, 0x84, 0xf0, 0x73, 0x02, 0xf7, 0x12, 0x8b | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.52 | 0x079ebac7, 0xcc02, 0x4472, 0x95, 0xc4, 0xc0, 0x5f, 0x10, 0x05, 0x5c, 0xc1 | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.53 | 0x44ab5c2d, 0x0898, 0x4ac9, 0xa0, 0x96, 0x7c, 0x91, 0x96, 0x74, 0xf9, 0xe4 | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.54 | 0xb5b557e9, 0x1023, 0x4110, 0xbd, 0x49, 0xeb, 0x9a, 0x2e, 0x58, 0x81, 0xd3 | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.55 | 0x36fa3b30, 0x2aed, 0x4bae, 0xb6, 0x3c, 0x35, 0x34, 0xba, 0x88, 0x54, 0xc0 | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.56 | 0xe0b288b9, 0x2e75, 0x4314, 0x99, 0x56, 0xc3, 0xf8, 0xdf, 0x4f, 0x6b, 0x9e | BS.ConnectController – ConnectController() connects driver list in order at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle with 2 test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.57 | 0x9528d695, 0xffd5, 0x4ec9, 0x9c, 0x23, 0x3c, 0x45, 0x1c, 0x81, 0x70, 0xa4 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.58 | 0x4e710111, 0x1f35, 0x41eb, 0x86, 0xc0, 0x09, 0x24, 0xd6, 0xc4, 0x4d, 0xdf | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.59 | 0x1216a391, 0xdd69, 0x4e1e, 0xa7, 0x95, 0x76, 0x90, 0xa4, 0x01, 0x59, 0x14 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.60 | 0x207a93c8, 0x9c2c, 0x496f, 0xad, 0x9f, 0xe9, 0xf7, 0x1c, 0xfd, 0xd4, 0xfd | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.61 | 0x9ee6b3f3, 0xbe55, 0x465d, 0xad, 0xdb, 0xd5, 0x52, 0xc0, 0xd0, 0xff, 0x39 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.62 | 0x9ae537a6, 0xa090, 0x41d3, 0x8c, 0xe1, 0x3e, 0x7f, 0x07, 0x30, 0x21, 0x16 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.63 | 0xe7408bd3, 0xfe38, 0x4298, 0x87, 0x8b, 0x9a, 0x46, 0x39, 0x3a, 0x3d, 0x39 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.64 | 0x8a1955bd, 0xe50e, 0x4c19, 0x85, 0x9d, 0xcc, 0x29, 0x13, 0xc0, 0x1c, 0x23 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install a EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.65 | 0x9047b56d, 0x3169, 0x4f87, 0x88, 0x45, 0xf0, 0x65, 0x89, 0xbb, 0x62, 0xcb | BS.ConnectController – ConnectController() connects driver list in order of Bus Specific Driver Override at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.66 | 0xe50b3169, 0xbb9f, 0x45b1, 0xb0, 0xf3, 0x4c, 0x4f, 0xab, 0x88, 0xc9, 0x67 | BS.ConnectController – ConnectController() connects driver list in order of Bus Specific Driver Override at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.67 | 0xec307bd4, 0x904d, 0x4a0f, 0xbf, 0x74, 0x47, 0xf6, 0x87, 0x1e, 0x43, 0x5c | BS.ConnectController – ConnectController() connects driver list in order of Bus Specific Driver Override at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.68 | 0x507332b3, 0xe897, 0x421a, 0xa3, 0x62, 0xe9, 0x0a, 0x38, 0x18, 0xe2, 0x76 | BS.ConnectController – ConnectController() connects driver list in order described in EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.69 | 0xdb605bb5, 0x0720, 0x4d47, 0xb4, 0x29, 0xde, 0xd1, 0xbe, 0xd5, 0x4a, 0x87 | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.70 | 0x53fa4d60, 0x6ab1, 0x418f, 0x8b, 0xdf, 0x50, 0x43, 0x90, 0xae, 0xd2, 0x9d | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.71 | 0x4be4a695, 0xe6cd, 0x4b44, 0xb5, 0x73, 0x9a, 0x53, 0x0a, 0x6b, 0x57, 0xae | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.72 | 0x2a342c0d, 0x32f9, 0x4380, 0xb5, 0x5d, 0x9f, 0x0b, 0xca, 0xd5, 0xc1, 0x44 | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.73 | 0xd5831426, 0x6631, 0x46ca, 0x92, 0x72, 0x76, 0xca, 0x3d, 0xd7, 0x67, 0x3b | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.74 | 0x43c3a632, 0xeaea, 0x4ae2, 0x84, 0x88, 0x2e, 0x01, 0x94, 0x34, 0xd8, 0x28 | BS.ConnectController – ConnectController() connects driver list in order of Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle. TestProtocol3 should be located, TestProtocol2 could not. |
| 5.1.3.11.75 | 0x2d951d03, 0xd6f6, 0x4ca3, 0x9b, 0xcd, 0x9f, 0x96, 0xb3, 0x3a, 0x65, 0x5b | BS.ConnectController – Handle list’s priority is higher than Platform Driver Override at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.76 | 0xc9f37982, 0x7df2, 0x4187, 0xa6, 0x6c, 0xf0, 0x94, 0x1c, 0xf7, 0x8b, 0x7f | BS.ConnectController – **Handle** list’s priority is higher than Platform Driver Override at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.77 | 0x3484123c, 0xb134, 0x4ff4, 0x81, 0x92, 0xba, 0xa3, 0x96, 0x84, 0xea, 0x45 | BS.ConnectController – **Handle** list’s priority is higher than Platform Driver Override at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.78 | 0x214b4f8a, 0x2d44, 0x4de0, 0xb1, 0x94, 0x93, 0xe0, 0xf3, 0x0f, 0xe6, 0x9a | BS.ConnectController – **Handle** list’s priority is higher than Platform Driver Override at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.79 | 0xa99252b2, 0x9657, 0x45f7, 0x84, 0x53, 0xdd, 0x8c, 0x80, 0xaf, 0xd8, 0x71 | BS.ConnectController – **Handle** list’s priority is higher than Platform Driver Override at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.80 | 0x0bf6828c, 0xb3f1, 0x460e, 0xa4, 0xd9, 0xd0, 0x73, 0xbd, 0x19, 0xd2, 0xcb | BS.ConnectController – **Handle** list’s priority is higher than Platform Driver Override at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.81 | 0xf7ebadd8, 0x67bc, 0x4193, 0xbb, 0x10, 0x38, 0x46, 0xd5, 0x0b, 0x42, 0x15 | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.82 | 0x8726db63, 0x66d6, 0x490c, 0x8e, 0xc5, 0x78, 0x5f, 0xc7, 0x6d, 0xfa, 0xa5 | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.83 | 0xe29caa36, 0x8eef, 0x49ff, 0x9a, 0xd4, 0xff, 0x35, 0xbb, 0xa2, 0x48, 0xad | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.84 | 0x101b28c9, 0xe6a2, 0x4951, 0xa8, 0x83, 0x2e, 0xbf, 0xe0, 0x13, 0x30, 0xaf | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.85 | 0x81d10eed, 0xacb4, 0x4f1e, 0xa7, 0xff, 0x92, 0x4f, 0x16, 0xbc, 0x38, 0xe3 | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.86 | 0x161e8954, 0x9580, 0x4ef5, 0x93, 0x09, 0x32, 0xb3, 0x27, 0x85, 0x2e, 0x84 | BS.ConnectController – **Handle** list’s priority is higher than Bus Specific Driver Override at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.87 | 0xd5a44649, 0xb901, 0x4c15, 0xbd, 0xef, 0xe6, 0x77, 0x17, 0x57, 0x76, 0xf6 | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.88 | 0x44ddbe59, 0xabfa, 0x4456, 0x8c, 0x76, 0xfd, 0x18, 0x4f, 0x65, 0xce, 0x6e | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.89 | 0x09fd1f45, 0xa8f8, 0x45bd, 0xad, 0xa7, 0x35, 0xd1, 0x66, 0x9e, 0xf0, 0x99 | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.90 | 0x4643e80e, 0xa6bf, 0x412c, 0xb4, 0xff, 0x96, 0x29, 0x28, 0x2b, 0xc8, 0x31 | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. TestProtocol3 should be located, TestProtocol4 could not. |
| 5.1.3.11.91 | 0x25cffdf5, 0xd252, 0x4515, 0xaf, 0x8f, 0xd8, 0xdb, 0x68, 0xf0, 0x22, 0xc3 | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. TestProtocol3 should be located, TestProtocol4 could not. |
| 5.1.3.11.92 | 0x555913e8, 0xba56, 0x4c68, 0x80, 0xb5, 0xa9, 0x6b, 0x8a, 0x3a, 0xfc, 0xb1 | BS.ConnectController – Platform Driver Override’s priority is higher than Bus Specific Driver Override’s at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the second driver first.  3. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  4. Create a new handle and install TestProtocol1 on this handle.  5. Call ConnectController() to connect the handle and the two test drivers. TestProtocol3 should be located, TestProtocol4 could not. |
| 5.1.3.11.93 | 0x5576dfdf, 0x4303, 0x41dc, 0xb4, 0xa5, 0xab, 0x49, 0xb8, 0x5e, 0x97, 0x5b | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.94 | 0xc8facf42, 0x1aa4, 0x4507, 0x96, 0x6f, 0x7b, 0x5e, 0xd7, 0xc4, 0xd1, 0x0b | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.95 | 0xf9a48521, 0xede3, 0x4a39, 0xac, 0x5d, 0x22, 0x2c, 0x31, 0x53, 0xf5, 0x11 | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.96 | 0xdd1ab5c6, 0xf998, 0x4aae, 0x91, 0xde, 0x2d, 0xb7, 0x72, 0x9a, 0xa2, 0xc8 | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.97 | 0x75b1cb4e, 0x10b5, 0x4b97, 0x8b, 0xc7, 0xf5, 0x81, 0x6f, 0x7c, 0xcb, 0x58 | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.98 | 0xdb926006, 0x2dda, 0x45f9, 0x95, 0xff, 0xf2, 0xd3, 0xc3, 0x64, 0x6a, 0x5c | BS.ConnectController – Platform Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_PLATFORM DRIVER\_OVERRIDE\_PROTOCOLand list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.99 | 0x5601264e, 0x2d2c, 0x4517, 0x8e, 0xa6, 0x69, 0x27, 0x3d, 0xd8, 0x07, 0x10 | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.100 | 0x6078602e, 0x4689, 0x4b00, 0x8e, 0xb6, 0xc0, 0x56, 0x0b, 0x6f, 0x8e, 0xee | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.101 | 0xa213d518, 0xade6, 0x4661, 0xa8, 0x27, 0x6a, 0x7f, 0x5a, 0xcf, 0x6b, 0x94 | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. The return code should be EFI\_SUCCESS. |
| 5.1.3.11.102 | 0x3f54452d, 0xe68c, 0x49ec, 0xae, 0x62, 0x9b, 0x89, 0x88, 0x94, 0xde, 0xe3 | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.103 | 0x6a061cbc, 0x1f2a, 0x4ab1, 0x91, 0x74, 0x73, 0x86, 0x1c, 0xae, 0x54, 0x14 | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |
| 5.1.3.11.104 | 0x497c37b8, 0x1371, 0x4b2c, 0xb9, 0x85, 0xd0, 0x99, 0x67, 0x6e, 0xa5, 0x79 | BS.ConnectController – Bus Specific Driver Override’s priority is higher than Driver Binding Version at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consume TestProtocol1 and install TestProtocol2, the second one consume TestProtocol1 and install TestProtocol3, and its Driver Binding Version is higher than the first one.  2. Install an EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL and list the first driver first.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and the two test drivers. TestProtocol2 should be located, TestProtocol3 could not. |

### DisconnectController()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.12.1 | 0x49160a12, 0x5137, 0x40ee, 0x8f, 0xca, 0x8f, 0x3e, 0x90, 0xe1, 0xd5, 0x24 | BS.DisconnectController – DisConnectController() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call DisConnectController() with invalid ControllerHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.12.2 | 0x90ab5fee, 0x4de2, 0x4136, 0x9b, 0x22, 0x34, 0x29, 0x3e, 0x60, 0x02, 0xde | BS.DisconnectController – DisConnectController() returns EFI\_INVALID\_PARAMETER with invalid driver image handle. | 1. Call DisConnectController() with invalid **DriverImageHandle**. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.12.3 | 0x13f11092, 0xeb7f, 0x44b2, 0xba, 0x0f, 0x43, 0x19, 0x82, 0x3b, 0x63, 0xbd | BS.DisconnectController - DisConnectController() returns EFI\_INVALID\_PARAMETER with invalid child handle. | 1. Call DisConnectController() with invalid ChildHandle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.12.4 | 0x455218e4, 0xe706, 0x42c6, 0x83, 0x7e, 0xab, 0xd9, 0x19, 0x41, 0x86, 0x5a | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with NULL driver at EFI\_TPL\_APPLICATION. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.5 | 0x740244c7, 0xb695, 0x48e5, 0x8e, 0x00, 0x03, 0xac, 0x0a, 0x06, 0x85, 0x54 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with NULL driver at EFI\_TPL\_CALLBACK. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.6 | 0x33154ee3, 0x75d0, 0x483e, 0xab, 0x48, 0x77, 0x92, 0x51, 0xf8, 0x36, 0xfd | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with NULL driver at EFI\_TPL\_NOTIFY. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.7 | 0x60e90357, 0x8c2f, 0x46db, 0xa8, 0x50, 0xfd, 0x97, 0xd4, 0x47, 0x70, 0x90 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with unmanaged driver at EFI\_TPL\_APPLICATION. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and an unmanaged driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.8 | 0xfafdc41c, 0x5454, 0x450d, 0xb6, 0x74, 0x36, 0x19, 0x61, 0x7f, 0x06, 0xc8 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with unmanaged driver at EFI\_TPL\_CALLBACK. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and an unmanaged driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.9 | 0x2ffac82d, 0x3943, 0x4286, 0xa7, 0x7e, 0x51, 0xfb, 0xf3, 0xc9, 0xf8, 0x9a | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with unmanaged driver at EFI\_TPL\_NOTIFY. | 1. Create a new handle and install TestProtocol1 on this handle.  2. Call DisConnectController() with this handle and an unmanaged driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.10 | 0x0235bd32, 0x34a0, 0x4f33, 0x9b, 0x1c, 0x84, 0xd5, 0xbe, 0x61, 0x6c, 0x32 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with a managed driver at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the second driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.11 | 0x727c405e, 0x1132, 0x4653, 0x89, 0x81, 0x49, 0x3a, 0x91, 0xe3, 0xe8, 0x42 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with a managed driver at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the second driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.12 | 0xd14c28ee, 0xb466, 0x43eb, 0x85, 0x01, 0x5f, 0x05, 0x85, 0xf1, 0x77, 0x3a | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with a managed driver at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the second driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.13 | 0xc85a941b, 0x57cb, 0x42ee, 0xbb, 0x5d, 0xed, 0x1e, 0x21, 0x61, 0x9f, 0xca | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.14 | 0x4894ad43, 0x77e5,  0x4f8d, 0x9f, 0x50, 0x3b, 0xc7, 0x53, 0x6d, 0xd0, 0x62 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.15 | 0x6b66b89c, 0x3c58, 0x411b, 0xb8, 0xb5, 0x8d, 0x3e, 0xbe, 0x92, 0x37, 0x04 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.16 | 0x4aee7de8, 0x2350, 0x4072, 0x94, 0xc6, 0xd4, 0x42, 0xdb, 0xdd, 0x55, 0xc5 | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_APPLICATION. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. TestProtocol2 ~ 3 should not be located. |
| 5.1.3.12.17 | 0x5ce10b3a, 0x18ce, 0x4898, 0xae, 0x73, 0xbd, 0xca, 0xfc, 0xe2, 0x32, 0x5c | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_CALLBACK. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. TestProtocol2 ~ 3 should not be located. |
| 5.1.3.12.18 | 0x5b936fb6, 0x9ecb, 0x42e5, 0x95, 0x34, 0xcc, 0x98, 0x6e, 0xca, 0x0f, 0xaa | BS.DisconnectController – DisConnectController() returns EFI\_SUCCESS with multiple drivers at EFI\_TPL\_NOTIFY. | 1. Create two test drivers, the first one consumes TestProtocol1 and installs TestProtocol2, the second one consumes TestProtocol2 and Installs TestProtocol3  2. Create a new handle and install TestProtocol1 on this handle.  3. Call ConnectController() to connect the handle and two test drivers.  4. Call DisConnectController() to disconnect the handle and NULL driver. TestProtocol2 ~ 3 should not be located. |
| 5.1.3.12.19 | 0x9311a4a0, 0xa493, 0x4451, 0xb2, 0xa1, 0x1b, 0x21, 0xef, 0x94, 0xd9, 0x11 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.20 | 0x4fbd2f1d, 0xfeba, 0x4dc7, 0xb0, 0x30, 0x44, 0x5b, 0x13, 0xca, 0xc2, 0xaa | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.21 | 0xef305583, 0x6ed8, 0x4f3a, 0xa1, 0x43, 0x20, 0x28, 0x43, 0x9e, 0x91, 0x6a | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.22 | 0xf196155e, 0x6d04, 0x47f8, 0xb4, 0x54, 0x89, 0xd6, 0xe7, 0x06, 0x73, 0xd2 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. TestProtocol2 ~ 5 should not be located. |
| 5.1.3.12.23 | 0x66ce17bf, 0x834f, 0x4d17, 0xb6, 0xcf, 0x85, 0x05, 0xca, 0x01, 0xc0, 0xd8 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. TestProtocol2 ~ 5 should not be located. |
| 5.1.3.12.24 | 0x90c42308, 0x4c75, 0x4716, 0x8e, 0xc6, 0x0f, 0x1e, 0x35, 0x8e, 0x51, 0xd9 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and installs TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. TestProtocol2 ~ 5 should not be located. |
| 5.1.3.12.25 | 0x41ba209a, 0x9251, 0x4c6f, 0xb8, 0x56, 0x77, 0x15, 0x6d, 0x8f, 0x54, 0x29 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The bus driver should not be located. |
| 5.1.3.12.26 | 0x3ebebd1a, 0xd252, 0x420c, 0xaa, 0xcf, 0x8e, 0x9c, 0x9c, 0xa0, 0x3a, 0x69 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The bus driver should not be located. |
| 5.1.3.12.27 | 0x906f71a7, 0xfb1b, 0x4432, 0x94, 0x84, 0x81, 0xb7, 0x27, 0x06, 0xa5, 0x58 | BS.DisconnectController – DisConnectController() disconnects all child handles with Child is NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is NULL. The bus driver should not be located. |
| 5.1.3.12.28 | 0x10ad8db1, 0x29c0, 0x4015, 0x9f, 0xee, 0xca, 0x53, 0x2d, 0x4d, 0xe1, 0x40 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.29 | 0xf9e8db68, 0xf1e4, 0x4705, 0xa3, 0xe1, 0xa2, 0xa6, 0x84, 0x02, 0x40, 0xad | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.30 | 0x1a42e2d7, 0xbdeb, 0x43ca, 0xb1, 0xc7, 0xff, 0x09, 0x00, 0xfd, 0x88, 0x5c | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.31 | 0x7119d125, 0xc346, 0x4c29, 0x88, 0x34, 0x97, 0x5a, 0xcd, 0x1b, 0x52, 0xca | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. TestProtocol2 and TestProtocol4 should not be located. |
| 5.1.3.12.32 | 0xd95f9fc1, 0x0fcc, 0x4d42, 0xb9, 0x76, 0x81, 0x4a, 0xbd, 0x6c, 0x7a, 0x9b | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. TestProtocol2 and TestProtocol4 should not be located. |
| 5.1.3.12.33 | 0x0800e672, 0xa39f, 0x46b6, 0x86, 0xe4, 0xf4, 0xf9, 0x7c, 0xf0, 0x6a, 0xc1 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. TestProtocol2 and TestProtocol4 could not be located. |
| 5.1.3.12.34 | 0x96ef96af, 0x4baa, 0x4a76, 0x91, 0xb4, 0x9f, 0x7f, 0x4e, 0xec, 0xac, 0x44 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The bus driver should be located. |
| 5.1.3.12.35 | 0x513580a5, 0xb1bc, 0x4855, 0x9d, 0xf6, 0xaa, 0x3b, 0xb5, 0x23, 0xf6, 0x7a | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The bus driver should be located. |
| 5.1.3.12.36 | 0x98639028, 0xf0a4, 0x4a45, 0xb4, 0x23, 0x9c, 0x93, 0x37, 0x45, 0x99, 0x8f | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child. The bus driver should be located. |
| 5.1.3.12.37 | 0xffb2826f, 0xf636, 0x4b4c, 0xac, 0xf3, 0x33, 0xa4, 0xb4, 0xeb, 0xcd, 0x54 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.38 | 0xc93237b5, 0x9662, 0x46cf, 0x89, 0x41, 0xcc, 0xf2, 0x30, 0xc7, 0x87, 0x05 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.39 | 0xa3b1c71b, 0xfae6, 0x4348, 0x85, 0x5e, 0x3a, 0x1b, 0xde, 0x6b, 0xd1, 0x0d | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The return code should be EFI\_SUCCESS. |
| 5.1.3.12.40 | 0x26ea5cb9, 0x6c10, 0x4671, 0xba, 0x04, 0xe3, 0x8a, 0x9d, 0x23, 0xc5, 0xcc | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. TestProtocol2 ~ 5 could not be located. |
| 5.1.3.12.41 | 0x80ec98e2, 0x0b2c, 0x4dbb, 0xa6, 0x2f, 0xe4, 0xcd, 0x3b, 0x2b, 0x83, 0x30 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. TestProtocol2 ~ 5 could not be located. |
| 5.1.3.12.42 | 0x8d444cd1, 0x4ee6, 0x45a8, 0x8d, 0xef, 0x18, 0x67, 0x51, 0x75, 0x22, 0xa7 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. TestProtocol2 ~ 5 could not be located. |
| 5.1.3.12.43 | 0x8cd9bfbf, 0x021f, 0x469f, 0xbc, 0xb3, 0x9a, 0xff, 0x5e, 0x90, 0x36, 0x4b | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_APPLICATION. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The bus driver could not be located. |
| 5.1.3.12.44 | 0xc3f9ef08, 0xb346, 0x4c61, 0xa4, 0xc4, 0x6f, 0x31, 0x9c, 0xb0, 0xc0, 0xfc | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_CALLBACK. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The bus driver could not be located. |
| 5.1.3.12.45 | 0xd0b46a61, 0x8708, 0x447b, 0x8c, 0xb8, 0x38, 0x60, 0x6a, 0x13, 0x4a, 0x64 | BS.DisconnectController – DisConnectController() disconnects related child handles with Child is not NULL at EFI\_TPL\_NOTIFY. | 1. Create a test driver that consumes TestProtocol1 and installs TestProtocol2 and TestProtocol3 onto two new child handles.  2. Create two test drivers, the first one consumes TestProtocol2 and install TestProtocol4, the second one consumes TestProtocol3 and TestProtocol5.  3. Create a new handle and install TestProtocol1 on this handle.  4. Call ConnectController() to connect the handle and test driver.  5. Call DisConnectController() with Child is the first child.  6. Call DisConnectController() with Child is the second child. The bus driver could not be located. |

### ProtocolsPerHandle()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.13.1 | 0xbd6c7a67, 0x0398, 0x496c, 0x8e, 0x28, 0x9d, 0xf9, 0x73, 0xb6, 0x5d, 0x0b | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call ProtocolsPerHandle() with NULL handle or invalid handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.13.2 | 0xebd50604, 0x8586, 0x43d8, 0xb5, 0xc8, 0x5a, 0x93, 0xa8, 0x01, 0xd1, 0x7a | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_INVALID\_PARAMETER with NULL protocol buffer | 1. Call ProtocolsPerHandle() with NULL protocol buffer (type is EFI\_GUID\*\*\*). The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.13.3 | 0x0b12494f, 0xd484, 0x4cb7, 0xa9, 0x9d, 0xaf, 0x20, 0x03, 0x3f, 0x2d, 0xec | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_INVALID\_PARAMETER with **Buffer** count NULL | 1. Call ProtocolsPerHandle() with pointer to buffer count value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.13.4 | 0xfea682e9, 0x5bb0, 0x4309, 0xa5, 0xbd, 0x90, 0xae, 0x8a, 0x8c, 0xaf, 0x6e | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.5 | 0xa9a8a9f5, 0x5b7d, 0x472e, 0xb1, 0xa0, 0xad, 0x80, 0x1d, 0x3a, 0xd2, 0x8a | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.6 | 0xd7b10222, 0x8df7, 0x4746, 0xbb, 0x35, 0xb2, 0x4a, 0x0a, 0xd6, 0xbc, 0x70 | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.7 | 0x8f3ade4b, 0x242c, 0x4ed7, 0x8a, 0x9f, 0x30, 0x84, 0xf4, 0x6c, 0x8e, 0x73 | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol4 should be returned. |
| 5.1.3.13.8 | 0x6460ddb3, 0x61f4, 0x4072, 0xbb, 0xe5, 0x7c, 0x2d, 0x3a, 0xee, 0x31, 0x7f | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol4 should be returned. |
| 5.1.3.13.9 | 0x05f7ae94, 0x9646, 0x43f0, 0xa5, 0x8b, 0x9c, 0x4e, 0x1c, 0x78, 0x3f, 0x43 | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol4 should be returned. |
| 5.1.3.13.10 | 0x995133c6, 0xda8e, 0x4aa4, 0x87, 0xeb, 0xf8, 0x2f, 0xe7, 0xd5, 0xd5, 0x03 | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.11 | 0x4fd61cf7, 0xcab6, 0x4f67, 0x96, 0x0c, 0x56, 0x62, 0xa6, 0x90, 0x31, 0xaa | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.12 | 0x0001b457, 0x86f7, 0x4085, 0x8d, 0xb0, 0x2b, 0xfb, 0xad, 0xd8, 0x32, 0x08 | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.13 | 0xf69d5220, 0x5e30, 0x4ab9, 0x9d, 0x09, 0xc7, 0x50, 0x40, 0xf7, 0xbb, 0x36 | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol5 should be returned. |
| 5.1.3.13.14 | 0xfcfe375e, 0xa1ba, 0x4eaa, 0x87, 0x28, 0xaf, 0x44, 0xd5, 0xfa, 0xd3, 0x81 | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol5 should be returned. |
| 5.1.3.13.15 | 0x1d05c8b8, 0x7dae, 0x41eb, 0x87, 0x55, 0x10, 0x48, 0xfe, 0x1d, 0x49, 0xeb | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle. TestProtocol1 ~ TestProtocol5 should be returned. |
| 5.1.3.13.16 | 0x4f302ea9, 0xa047, 0x4448, 0x8b, 0xdd, 0xd1, 0x60, 0x23, 0x13, 0xa4, 0x40 | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.17 | 0x24ea2098, 0x3fd2, 0x4012, 0x83, 0xe4, 0x6b, 0x65, 0xe9, 0x6d, 0xd9, 0xad | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.18 | 0xc0edf6f9, 0x3954, 0x47ea, 0x86, 0x08, 0x10, 0xb1, 0x05, 0x18, 0x50, 0xd3 | BS.ProtocolsPerHandle – ProtocolsPerHandle() returns EFI\_SUCCESS with valid parameter at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. The return code should be EFI\_SUCCESS. |
| 5.1.3.13.19 | 0x4f460e70, 0xf979, 0x4ba9, 0x8b, 0x0b, 0xa4, 0x61, 0x2c, 0xc5, 0xe8, 0x6a | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. TestProtocol3 ~ TestProtocol5 should be returned. |
| 5.1.3.13.20 | 0xe8638e2d, 0xa62c, 0x4566, 0xa4, 0xbb, 0xfe, 0x36, 0xb6, 0x33, 0xfe, 0x3e | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. TestProtocol3 ~ TestProtocol5 should be returned. |
| 5.1.3.13.21 | 0x0300f2e9, 0xaaaa, 0x4735, 0xb3, 0x83, 0xe9, 0xa7, 0x4a, 0x9e, 0xfb, 0x7f | BS.ProtocolsPerHandle – ProtocolsPerHandle() gets all protocols on the handle at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 ~ TestProtocol4 onto a new handle.  2. Call ProtocolsPerHandle() to retrieve protocol number and GUID array on the handle.  3. Install TestProtocol5 onto the new handle.  4. Call ProtocolsPerHandle() again.  5. Uninstall TestProtocol1 & TestProtocol2 from the handle.  6. Call ProtocolsPerHandle() again. TestProtocol3 ~ TestProtocol5 should be returned. |

### LocateHandleBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.14.1 | 0x4f70540a, 0xfa1e, 0x4f00, 0x9e, 0x07, 0xc9, 0xf8, 0x3c, 0xc4, 0x5a, 0xf5 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_INVALID\_PARAMETER with invalid sarch type | 1. Call LocateHandleBuffer() with search type other than AllHandles, ByRegisterNotify and ByProtocol. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.14.2 | 0xf77677d7, 0x8869, 0x453c, 0xae, 0x7f, 0xa7, 0x7d, 0x16, 0x97, 0xe9, 0xe2 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_NOT\_FOUND with never installed protocol | 1. Call LocateHandleBuffer() to locate the handles for a never installed protocol. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.14.3 | 0xf5b84647, 0xbee8, 0x46ff, 0xaf, 0xb3, 0xb3, 0xd5, 0xd5, 0xa0, 0x08, 0x38 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_INVALID\_PARAMETER with **Buffer** is NULL or NoHandles is NULL | 1. Call LocateHandleBuffer() to locate all handles with **Buffer** is NULL or NoHandles is NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.14.4 | 0x2e9a3ce0, 0x779a, 0x4bba, 0xaa, 0x6d, 0xe5, 0xa3, 0x77, 0x89, 0x85, 0xba | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of AllHandles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.5 | 0x8dd43d2b, 0xed7b, 0x4f6a, 0x9a, 0xf6, 0x16, 0x2f, 0x73, 0xc9, 0x84, 0x7b | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of AllHandles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.6 | 0x3d54399c, 0x7989, 0x4ce0, 0x9d, 0xeb, 0x80, 0x78, 0x7a, 0xcc, 0xdf, 0x6b | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of AllHandles at EFI\_TPL\_NOTIFY | 1. Call LocateHandle() via search type AllHandles to retrieve all handles in the system. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.7 | 0x5e78fd28, 0x36ee, 0x4d8d, 0xb3, 0x21, 0x64, 0x06, 0xc9, 0x40, 0xc7, 0x50 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.8 | 0xcebea147, 0x8237, 0x4254, 0xb5, 0xec, 0xae, 0x42, 0x92, 0xbf, 0x7c, 0xe1 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.9 | 0xab575087, 0xdd21, 0x42fd, 0x8c, 0x66, 0x68, 0x7b, 0x7d, 0x81, 0x57, 0xa6 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.10 | 0x18b8f641, 0x4c03, 0x4e17, 0x8b, 0x73, 0x27, 0xa5, 0x1b, 0x61, 0x29, 0x17 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.11 | 0xc22a5509, 0x92bb, 0x4dbd, 0x95, 0xaf, 0xde, 0xf0, 0xba, 0xe5, 0x27, 0x8d | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.12 | 0xc929f6d1, 0xc810, 0x434e, 0xb2, 0x05, 0xfb, 0xf0, 0xee, 0x88, 0xe7, 0x3a | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.13 | 0x59988b38, 0x031f, 0x4405, 0x89, 0x41, 0x49, 0x33, 0x04, 0xbb, 0x3b, 0x11 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.14.14 | 0xf82d253c, 0x7d51, 0x4efd, 0x90, 0x3d, 0xbb, 0x0b, 0x57, 0x34, 0xfe, 0xae | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.14.15 | 0x3d990f50, 0xf775, 0x46d6, 0xab, 0xba, 0xe0, 0x2e, 0x00, 0x8b, 0x58, 0x6d | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system increases by 1. |
| 5.1.3.14.16 | 0x1a435f75, 0x3636, 0x423f, 0x8d, 0x9d, 0x13, 0x64, 0xc3, 0xbe, 0x2c, 0xce | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.17 | 0xf882343e, 0x81e0, 0x4c36, 0x81, 0x3e, 0xd9, 0x19, 0xde, 0xe9, 0x9a, 0xb9 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.18 | 0x854ef303, 0xc627, 0x48c9, 0x80, 0x0a, 0xa3, 0xc6, 0x80, 0xb8, 0x65, 0xbb | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.19 | 0x36c035e2, 0x4ffc, 0x4144, 0x89, 0x5d, 0x67, 0x87, 0xe2, 0x8a, 0x47, 0x70 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.20 | 0x1771620b, 0x01ca, 0x4f40, 0xb5, 0x4a, 0x96, 0x84, 0xcb, 0xd5, 0x66, 0x99 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.21 | 0xb57efffb, 0xadc7, 0x4980, 0xb9, 0x09, 0xcb, 0x71, 0xb1, 0x57, 0x93, 0x77 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.22 | 0x5a2174e7, 0x5858, 0x4b24, 0xa5, 0x97, 0x3a, 0x85, 0x65, 0x59, 0xcc, 0x53 | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_APPLICATION | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.14.23 | 0x2ebaf385, 0xc0c9, 0x4ffd, 0x99, 0xe0, 0x3b, 0x62, 0xdc, 0xd8, 0x81, 0x0a | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_CALLBACK | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.14.24 | 0xa4085bb8, 0xa805, 0x4015, 0x9a, 0x3e, 0x54, 0xe6, 0x0b, 0x79, 0x96, 0xef | BS.LocateHandleBuffer – LocateHandleBuffer() locates all handles at EFI\_TPL\_NOTIFY | 1. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handle.  3. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again.  4. Call UninstallProtocolInterface() to uninstall TestProtocol1.  5. Call LocateHandleBuffer() via search type AllHandles to retrieve all handles in the system again. The number of handles of the system decreases by 1. |
| 5.1.3.14.25 | 0x96ef51d8, 0x85d9, 0x4147, 0x91, 0x17, 0xe6, 0x7e, 0x40, 0xb2, 0x24, 0x5c | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByRegisterNotify at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.26 | 0xaffa52a9, 0x70d8, 0x41c7, 0x86, 0x8c, 0xdb, 0x30, 0xae, 0xa6, 0x86, 0xd2 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByRegisterNotify at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.27 | 0x0e525b23, 0x9b6c, 0x4d66, 0xb0, 0xab, 0xbd, 0xf4, 0x1f, 0x57, 0xf6, 0x3a | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByRegisterNotify at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.28 | 0x9f8b22e2, 0x46b4, 0x49ee, 0x86, 0xb1, 0xe5, 0xb8, 0x77, 0x4b, 0x0f, 0x5e | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.29 | 0xf268e2c7, 0x3b59, 0x4592, 0x9f, 0x6a, 0x45, 0x52, 0x23, 0x8d, 0x56, 0x2c | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.30 | 0xbdee4f25, 0x307c, 0x4152, 0x95, 0xd6, 0x8e, 0x2e, 0xc4, 0xa5, 0x3e, 0x1a | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.31 | 0x94de767d, 0x38d1, 0x4205, 0x9f, 0xf9, 0xfd, 0x71, 0xf3, 0x7e, 0x81, 0x27 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle number should be 1. |
| 5.1.3.14.32 | 0xf0bf589a, 0xdbfc, 0x4f36, 0xa1, 0x28, 0xbb, 0x95, 0x0d, 0x65, 0xe7, 0xff | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle number should be 1. |
| 5.1.3.14.33 | 0x684d6623, 0x49d2, 0x4807, 0x83, 0x67, 0xa3, 0xc4, 0x0d, 0xc6, 0xdb, 0x4a | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle number should be 1. |
| 5.1.3.14.34 | 0xd690f3cd, 0x52e8, 0x4fab, 0x9b, 0x01, 0x75, 0x37, 0xa4, 0x20, 0xe8, 0xd4 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be matched. |
| 5.1.3.14.35 | 0xe284b0bf, 0xac06, 0x45af, 0xa5, 0x73, 0x19, 0x9c, 0xd8, 0xce, 0x67, 0x44 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be matched. |
| 5.1.3.14.36 | 0x03e06b5f, 0xee50, 0x46c4, 0xa2, 0xfe, 0x47, 0x63, 0xc5, 0x6e, 0x90, 0xd5 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify. The return handle should be matched. |
| 5.1.3.14.37 | 0x6a2c8795, 0x5f4f, 0x4fb0, 0xae, 0x45, 0xcc, 0xab, 0x73, 0x22, 0x31, 0x78 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandleBuffer() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.14.38 | 0x61b79601, 0xd085, 0x4733, 0x91, 0xea, 0x1c, 0x94, 0x30, 0xb1, 0x31, 0xb8 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandleBuffer() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.14.39 | 0x8b0d77ac, 0x08d0, 0x4c8c, 0xa4, 0x0c, 0xea, 0x43, 0x46, 0xb6, 0x33, 0x86 | BS.LocateHandleBuffer – LocateHandleBuffer() locates the new register handle at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Call InstallProtocolInterface() to install TestProtocol1 onto a new handles.  3. Call LocateHandleBuffer() via search type ByRegisterNotify with the search key generated by previous RegisterProtocolNotify.  4. Call LocateHandleBuffer() again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.14.40 | 0x423bb934, 0xbbe3, 0x4841, 0xb3, 0x15, 0x92, 0xa0, 0xfa, 0x85, 0x67, 0xfc | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.14.41 | 0x3b0019f3, 0x7eb6, 0x4662, 0xa9, 0x05, 0x4a, 0xe2, 0x26, 0xb4, 0x92, 0xa7 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.14.42 | 0x7e86a93d, 0x5d29, 0x4b3d, 0x82, 0x2f, 0xdd, 0x93, 0xb0, 0xb4, 0x4b, 0x22 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles. InstallProtocolInterface() return code should be EFI\_SUCCESS. |
| 5.1.3.14.43 | 0x0df33644, 0x4729, 0x400e, 0xa7, 0x99, 0x84, 0x24, 0xa8, 0xd4, 0x58, 0x09 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.44 | 0x44311df6, 0x4f7a, 0x49e1, 0x84, 0x7e, 0xdd, 0x30, 0x8c, 0x7a, 0xc5, 0x2f | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.45 | 0xd7927271, 0x3631, 0x424c, 0xad, 0x83, 0xec, 0xa5, 0x2a, 0x64, 0x5f, 0x92 | BS.LocateHandleBuffer – LocateHandleBuffer() returns EFI\_SUCCESS with a **Type** value of ByProtocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return code should be EFI\_SUCCESS. |
| 5.1.3.14.46 | 0x0bdcd179, 0xf25c, 0x4002, 0x9c, 0x6b, 0x5e, 0xea, 0x13, 0xdc, 0xa4, 0x13 | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.14.47 | 0x8f909926, 0x153f, 0x4dc6, 0xad, 0xd3, 0x89, 0x46, 0x6b, 0x82, 0xa9, 0x68 | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.14.48 | 0x75d8aa1b, 0x75d9, 0x4122, 0xb7, 0xa5, 0xa3, 0x8c, 0x77, 0x9f, 0xf0, 0x1e | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handle number should be 10. |
| 5.1.3.14.49 | 0xae68a349, 0x9644, 0x4156, 0x82, 0x77, 0x44, 0x77, 0x79, 0x5b, 0xca, 0xda | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.14.50 | 0x0283802c, 0x2f33, 0x46ee, 0xb6, 0xec, 0x0a, 0xe4, 0x0d, 0x70, 0xfe, 0x3e | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.14.51 | 0x5a50388b, 0xb7e9, 0x485c, 0x8f, 0xdd, 0x1f, 0xaf, 0xe9, 0xd2, 0x45, 0x16 | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. The return handles should equal to those created. |
| 5.1.3.14.52 | 0x9bfc5990, 0x24a6, 0x4f73, 0x8f, 0xa3, 0x5d, 0x20, 0xa6, 0xe1, 0xb9, 0x53 | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |
| 5.1.3.14.53 | 0xe6591929, 0xd475, 0x483c, 0xa9, 0x1b, 0x43, 0x12, 0xba, 0x4e, 0x59, 0x8d | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |
| 5.1.3.14.54 | 0x746f82f2, 0x8b90, 0x451a, 0xaf, 0x0b, 0xe6, 0xaa, 0x1b, 0xed, 0x4b, 0x27 | BS.LocateHandleBuffer – LocateHandleBuffer() locates handles by protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 onto 10 new handles.  2. Call LocateHandleBuffer() via search type ByProtocol to attempt to locate all handles that support TestProtocol1. TestProtocol1 should be located via each return handle. |

### LocateProtocol()

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| Number | GUID | Assertion | Test Description |
| 5.1.3.15.1 | 0x972e9815, 0x5a39, 0x4a39, 0x98, 0x08, 0x18, 0x17, 0x23, 0x7e, 0xb9, 0x05 | BS.LocateProtocol – LocateProtocol() returns EFI\_INVALID\_PARAMETER with NULL interface | 1. Call LocateProtocol() with NULL interface (type is void \*\*). The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.15.2 | 0x336a39f9, 0x7771, 0x44f7, 0x9f, 0xc1, 0xb4, 0x1b, 0x8d, 0x6a, 0x86, 0x1f | BS.LocateProtocol – LocateProtocol() returns EFI\_NOT\_FOUND with never installed protocol | 1. Call LocateProtocol() to attempt to locate a protocol that is never installed in the system. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.15.3 | 0x711df728, 0x1a59, 0x4298, 0xaf, 0xf5, 0x1b, 0x6f, 0x62, 0x24, 0xa3, 0xbf | BS.LocateProtocol – LocateProtocol() returns EFI\_NOT\_FOUND if no new protocol installed for the Registration | 1. Call RegisterNotify() to register for the specified protocol.  2. Call LocateProtocol() with Registration returned from RegisterNotify(). The return code must be EFI\_NOT\_FOUND. |
| 5.1.3.15.4 | 0x30c4caa5, 0x90ef, 0x44e8, 0xb1, 0x80, 0x33, 0x36, 0xff, 0x36, 0x98, 0xfc | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.5 | 0xbc9928fd, 0xd6ee, 0x4238, 0x97, 0x53, 0xb6, 0xda, 0x3f, 0xfb, 0x57, 0xad | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.6 | 0x29194f89, 0xae18, 0x4059, 0xba, 0xa9, 0x19, 0x44, 0xb1, 0x04, 0x76, 0x03 | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with exist protocol at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.7 | 0x8f5fde8a, 0xc855, 0x4c8e, 0x9e, 0x4d, 0x27, 0xcb, 0xf8, 0x74, 0xb3, 0xc7 | BS.LocateProtocol – LocateProtocol() locates exist protocol at EFI\_TPL\_APPLICATION. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.8 | 0x6fbe36a1, 0x7d50, 0x4baa, 0xa1, 0xf4, 0x90, 0x07, 0xff, 0x6f, 0x28, 0xc2 | BS.LocateProtocol – LocateProtocol() locates exist protocol at EFI\_TPL\_CALLBACK. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.9 | 0x9106e5c2, 0x6a82, 0x447e, 0xaf, 0x96, 0x2b, 0x7a, 0xb2, 0xa8, 0x70, 0xd9 | BS.LocateProtocol – LocateProtocol() locates exist protocol at EFI\_TPL\_NOTIFY. | 1. Install TestProtocol1 onto a new handle.  2. Call LocateProtocol() to locate the protocol. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.10 | 0x70358727, 0x45c5, 0x4d79, 0xb2, 0xf8, 0xa6, 0x0a, 0x33, 0x06, 0x04, 0x49 | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with registration key at EFI\_TPL\_APPLICATION. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.11 | 0x42f3df2e, 0xa23c, 0x4f44, 0xb7, 0xb1, 0xdd, 0x62, 0x77, 0x79, 0x04, 0x58 | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with registration key at EFI\_TPL\_CALLBACK. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.12 | 0x2c0ea674, 0xd3cb, 0x4a7a, 0xb1, 0x4b, 0xf4, 0xa8, 0x53, 0x0c, 0x17, 0xdd | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with registration key at EFI\_TPL\_NOTIFY. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.13 | 0xcff56950, 0x1dda, 0x4c41, 0xaa, 0x71, 0x58, 0x41, 0x27, 0xad, 0x23, 0xd9 | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_APPLICATION. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.14 | 0x47755194, 0x49e3, 0x452f, 0x9c, 0x02, 0x61, 0xa8, 0x89, 0x54, 0x5f, 0x43 | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_CALLBACK. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.15 | 0xc385d8ab, 0x6038, 0x43b2, 0x82, 0x9d, 0x2d, 0xa4, 0x24, 0x62, 0x8f, 0xe6 | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_NOTIFY. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance. The TestProtocol1’s function should be accessed and executed correctly. |
| 5.1.3.15.16 | 0xc9ed276a, 0x3d30, 0x4510, 0xa5, 0xdd, 0x93, 0x2d, 0xd8, 0x4f, 0x94, 0x9e | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_APPLICATION. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance.  4. Call LocateProtocol() with the registration key again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.15.17 | 0x2e2d0e7e, 0x8de3, 0x4522, 0x84, 0x0d, 0x2c, 0xda, 0x60, 0xcb, 0x11, 0x5c | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_CALLBACK. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance.  4. Call LocateProtocol() with the registration key again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.15.18 | 0x63940439, 0xd67c, 0x4ae0, 0xb9, 0x14, 0x90, 0xe7, 0x09, 0x40, 0x05, 0x44 | BS.LocateProtocol – LocateProtocol() locates protocol with registration key at EFI\_TPL\_NOTIFY. | 1. Call RegisterProtocolNotify() to register for TestProtocol1’s installation.  2. Install TestProtocol1 onto a new handle.  3. Call LocateProtocol() with the registration key to attempt to retrieve TestProtocol1’s instance.  4. Call LocateProtocol() with the registration key again. The return code should be EFI\_NOT\_FOUND. |
| 5.1.3.15.19 | 0x3274a5c2, 0x1a28, 0x4231, 0x8f, 0x3c, 0x4a, 0xe1, 0x66, 0x41, 0x26, 0x3f | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with NULL protocol interface at EFI\_TPL\_APPLICATION. | 1. Install TestNoInterfaceProtocol1 onto a new handle.  2. Call LocateProtocol() to attempt to retrieve TestNoInterfaceProtocol1’s instance. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.20 | 0x2e8a72b3, 0x4cab, 0x4e02, 0xa1, 0x7f, 0xbc, 0xda, 0x52, 0xe9, 0xe3, 0x81 | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with NULL protocol interface at EFI\_TPL\_CALLBACK. | 1. Install TestNoInterfaceProtocol1 onto a new handle.  2. Call LocateProtocol() to attempt to retrieve TestNoInterfaceProtocol1’s instance. The return code should be EFI\_SUCCESS. |
| 5.1.3.15.21 | 0x712cef7b, 0xdc81, 0x466c, 0x97, 0x85, 0xad, 0xa1, 0x3b, 0x71, 0x33, 0xf5 | BS.LocateProtocol – LocateProtocol() returns EFI\_SUCCESS with NULL protocol interface at EFI\_TPL\_NOTIFY. | 1. Install TestNoInterfaceProtocol1 onto a new handle.  2. Call LocateProtocol() to attempt to retrieve TestNoInterfaceProtocol1’s instance. The return code should be EFI\_SUCCESS. |

### InstallMultipleProtocolInterfaces()

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| Number | GUID | Assertion | Test Description |
| 5.1.3.16.1 | 0x804b0522, 0x4ff9, 0x47cc, 0xa6, 0x2a, 0xe3, 0x27, 0xec, 0xce, 0xbe, 0x4b | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_ALREADY\_STARTED with device path protocol instance already present | 1. Call InstallMultipleProtocolInterfaces() to attempt to install multiple protocol instances at the same time, among them is a device path protocol instance that is already present in the handle database. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.16.2 | 0x3ff2cc4e, 0xf56a, 0x44a7, 0xb4, 0x86, 0x1f, 0x7e, 0x4d, 0x63, 0x97, 0x94 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() does not install any interfaces with device path protocol instance already present | 1. Call InstallMultipleProtocolInterfaces() to attempt to install multiple protocol instances at the same time, among them is a device path protocol instance that is already present in the handle database. All the protocol instances should not be installed onto the handle during this call. |
| 5.1.3.16.3 | 0x79d79b37, 0x756f, 0x4754, 0x80, 0x43, 0x58, 0x44, 0xa7, 0x22, 0xac, 0x7d | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_INVALID\_PARAMETER with invalid handle | 1. Call InstallMultipleProtocolInterfaces() with an invalid handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.16.4 | 0xf7e5fa57, 0xb2bb, 0x4ace, 0xa3, 0x99, 0x43, 0xd2, 0x26, 0x44, 0x83, 0x4c | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() does not install any interfaces with invalid handle | 1. Call InstallMultipleProtocolInterfaces() with an invalid handle. All protocols should not be installed onto a handle during this call. |
| 5.1.3.16.5 | 0x090defdb, 0x24a2, 0x43ff, 0xa6, 0x14, 0x75, 0x7b, 0xc2, 0xce, 0x9c, 0xdb | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_INVALID\_PARAMETER with same protocol multiple times | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle.  2. Call InstallMultipleProtocolInterfaces() again to try to install TestProtocol1 & TestProtocol2 onto the same handle. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.3.16.6 | 0xdb705ca6, 0x40ca, 0x4abc, 0x92, 0x66, 0x78, 0x0d, 0x3b, 0xac, 0x62, 0x63 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() does not install any interfaces with same protocol multiple times | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle.  2. Call InstallMultipleProtocolInterfaces() again to try to install TestProtocol1 & TestProtocol2 onto the same handle. The TestProtocol1 should still exist and TestProtocol2 should not be installed.. |
| 5.1.3.16.7 | 0x12cdfc3b, 0x10b7, 0x45cc, 0x81, 0x84, 0xe6, 0x64, 0x42, 0x2c, 0xff, 0x64 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.8 | 0x3e85df7a, 0x6128, 0x41a2, 0xa6, 0x93, 0x42, 0xba, 0xe2, 0x1c, 0xe7, 0xa6 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.9 | 0x0012978f, 0xb761, 0x4531, 0xbd, 0xe0, 0xbd, 0x16, 0xfd, 0x98, 0x19, 0x02 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.10 | 0x8707601e, 0x4d04, 0x4a15, 0xb1, 0x53, 0x20, 0x8b, 0x9b, 0x3d, 0xc9, 0x2e | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. A new handle should be created. |
| 5.1.3.16.11 | 0x80ab6d49, 0x43f8, 0x4c1f, 0xbb, 0x64, 0x9c, 0x20, 0x99, 0x96, 0x62, 0x4a | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. A new handle should be created. |
| 5.1.3.16.12 | 0x976e2272, 0x0454, 0x4d88, 0x9e, 0xf2, 0x7a, 0x54, 0xa9, 0x76, 0x81, 0x66 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. A new handle should be created. |
| 5.1.3.16.13 | 0xd2c0eaa9, 0xaa4d, 0x447a, 0xa9, 0xd1, 0x6e, 0x0f, 0x78, 0x31, 0x17, 0x48 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The handle should be located via the protocol. |
| 5.1.3.16.14 | 0xeb664f78, 0x8e6f, 0x4dc7, 0xb1, 0xa1, 0xd6, 0x0d, 0xf9, 0x6f, 0x1f, 0xfd | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The handle should be located via the protocol. |
| 5.1.3.16.15 | 0x7b54fb1c, 0x1731, 0x423c, 0xa0, 0x29, 0xef, 0xd1, 0x0c, 0xb4, 0x41, 0x69 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The handle should be located via the protocol. |
| 5.1.3.16.16 | 0x7aaf4b71, 0xdd01, 0x4562, 0x82, 0x1a, 0x13, 0x08, 0x7d, 0x9f, 0x8a, 0x75 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.17 | 0x5fba4597, 0x43e6, 0x4ba2, 0x80, 0x2d, 0xba, 0x56, 0xaf, 0x10, 0x06, 0x66 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.18 | 0x9a4f2f3b, 0x5209, 0x40d3, 0x95, 0xa2, 0x9a, 0xea, 0x98, 0x19, 0x8a, 0xc0 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.19 | 0x802b5c2e, 0x2c3c, 0x43ff, 0x9c, 0xda, 0x04, 0xf8, 0x94, 0x42, 0xb5, 0x7b | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.20 | 0xb7ffd827, 0x9478, 0x40c0, 0xad, 0x9b, 0x03, 0x22, 0x99, 0x2e, 0xc5, 0x97 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.21 | 0x77fe21e8, 0x58fd, 0x468d, 0xad, 0xbc, 0x5c, 0x4b, 0xbb, 0xe8, 0x5e, 0x59 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.22 | 0xbccb1238, 0xd969, 0x4a35, 0xa1, 0xc4, 0x74, 0x5c, 0xb1, 0x79, 0x63, 0x26 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.23 | 0xd56ff74a, 0x1305, 0x43ad, 0x9f, 0xd6, 0x17, 0x8d, 0x7b, 0x67, 0x50, 0x66 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.24 | 0xa6ebc379, 0x5753, 0x40b4, 0x81, 0xb4, 0x9c, 0xdc, 0x79, 0x6c, 0xe9, 0x5d | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with one protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.25 | 0x41b1e88c, 0x0162, 0x4dfd, 0xb1, 0x14, 0x89, 0x97, 0xeb, 0xed, 0x64, 0x11 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. No new handle should be created. |
| 5.1.3.16.26 | 0x2d864f91, 0xdddc, 0x4f34, 0xb9, 0x4d, 0x90, 0x0a, 0xef, 0x44, 0x9c, 0xd3 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. No new handle should be created. |
| 5.1.3.16.27 | 0x6e1e752c, 0x9320, 0x4d73, 0x87, 0x30, 0xce, 0x76, 0x65, 0x27, 0x24, 0x20 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. No new handle should be created. |
| 5.1.3.16.28 | 0xbd4c5e34, 0x43d5, 0x4145, 0xb5, 0x29, 0x36, 0xf9, 0xf5, 0x2d, 0xb2, 0x58 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The handle should be located via the protocol. |
| 5.1.3.16.29 | 0x74d0c8f7, 0x1e32, 0x4b4c, 0x87, 0x71, 0xbd, 0xce, 0x1d, 0x7d, 0xe8, 0xce | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The handle should be located via the protocol. |
| 5.1.3.16.30 | 0xc27c0e00, 0x4d66, 0x44b8, 0xad, 0x3c, 0x50, 0x94, 0x62, 0x30, 0xaf, 0x31 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The handle should be located via the protocol. |
| 5.1.3.16.31 | 0xb97d0b30, 0xc4a2, 0x44f4, 0xb4, 0xf4, 0x94, 0x3c, 0xd9, 0x82, 0x10, 0x7a | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.32 | 0xbb4f764c, 0x301e, 0x4781, 0x9b, 0x70, 0x23, 0x0b, 0xaf, 0x4e, 0xf5, 0xda | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.33 | 0x4c51e23d, 0x18c8, 0x4f8a, 0xa8, 0x54, 0xe2, 0xbf, 0x57, 0xcb, 0x15, 0xfe | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1 should be located via the handle. |
| 5.1.3.16.34 | 0x96bbdd38, 0x6e66, 0x417d, 0xa8, 0x7e, 0xf1, 0x0f, 0x2f, 0xa6, 0x3c, 0xd6 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.35 | 0x9647fb47, 0xb854, 0x495b, 0xbc, 0xff, 0xf8, 0xed, 0x80, 0xe9, 0xe5, 0xd8 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.36 | 0x8902c01f, 0x9215, 0x4902, 0xa3, 0x70, 0xd3, 0x11, 0xda, 0xfc, 0xc2, 0xa8 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. TestProtocol1’s functions should be accessed and be executed correctly. |
| 5.1.3.16.37 | 0xe851fe59, 0xf599, 0x4b56, 0xa3, 0xa8, 0xf1, 0xde, 0x3f, 0x29, 0xd6, 0xbf | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.38 | 0x45b4418e, 0x997e, 0x4050, 0xbc, 0xc4, 0x70, 0xed, 0x4b, 0xf0, 0x67, 0x9e | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.39 | 0x6621263d, 0x39b8, 0x410c, 0xa7, 0x9b, 0x35, 0xcf, 0x38, 0xaf, 0xa3, 0xdb | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.40 | 0x295381f4, 0x3106, 0x408b, 0xa0, 0x88, 0x4e, 0xa3, 0x1c, 0x8b, 0x57, 0x9b | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. A new handle should be created. |
| 5.1.3.16.41 | 0x092c02d7, 0xf796, 0x4a45, 0xa9, 0xc8, 0x01, 0xc3, 0x69, 0xa2, 0x93, 0x78 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. A new handle should be created. |
| 5.1.3.16.42 | 0x3e9922bb, 0xc501, 0x402b, 0xa0, 0x01, 0xf3, 0x2e, 0xc9, 0xeb, 0x37, 0x72 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. A new handle should be created. |
| 5.1.3.16.43 | 0x1b5a97be, 0xa885, 0x4878, 0x94, 0xf4, 0x62, 0x51, 0x82, 0x8e, 0xea, 0xb0 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto a new handle. The handle should be located via each protocol. |
| 5.1.3.16.44 | 0x031f8b77, 0xf024, 0x4979, 0x99, 0x5f, 0x19, 0x8a, 0x82, 0xac, 0x4c, 0x0f | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The handle should be located via each protocol. |
| 5.1.3.16.45 | 0x65008362, 0x42ee, 0x4599, 0x8b, 0x51, 0xd0, 0xcc, 0x3d, 0x05, 0x14, 0xf3 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. The handle should be located via each protocol. |
| 5.1.3.16.46 | 0xe79a6e38, 0x3451, 0x4f7c, 0x96, 0xc9, 0x05, 0xaa, 0x94, 0x7d, 0x1a, 0x45 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on new handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. Each protocol should be located via the handle. |
| 5.1.3.16.47 | 0x2239ef0b, 0x833a, 0x4525, 0x9a, 0x9f, 0x00, 0x2a, 0x31, 0xbf, 0x3a, 0x01 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. Each protocol should be located via the handle. |
| 5.1.3.16.48 | 0xad472682, 0xdc2a, 0x4cca, 0x8a, 0x53, 0x47, 0xcb, 0x65, 0x44, 0x92, 0xcf | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on new handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto a new handle. Each protocol should be located via the handle. |
| 5.1.3.16.49 | 0x86b364b6, 0xef09, 0x4e65, 0xb5, 0x6a, 0xb8, 0x87, 0x92, 0xc2, 0xc2, 0xbb | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.50 | 0x6fa7054c, 0xd436, 0x42d6, 0x8b, 0x73, 0x79, 0xaf, 0xf6, 0x63, 0xa4, 0x1d | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.51 | 0x241337ae, 0x527d, 0x4a10, 0x8b, 0x56, 0x30, 0xdd, 0xa1, 0x52, 0x42, 0xf4 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with multiple protocols on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.52 | 0xf1d61967, 0xba05, 0x4d4b, 0xa1, 0x90, 0x55, 0x39, 0x23, 0x3a, 0xfa, 0x92 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. No new handle should be created. |
| 5.1.3.16.53 | 0x9b2ee3a0, 0x7f21, 0x4b94, 0xa0, 0x11, 0x5a, 0x2e, 0x8f, 0xd9, 0x96, 0x9d | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. No new handle should be created. |
| 5.1.3.16.54 | 0x946a0349, 0x1233, 0x452e, 0xa0, 0x10, 0xa3, 0x19, 0xfe, 0x02, 0x4c, 0xb4 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. No new handle should be created. |
| 5.1.3.16.55 | 0xd342993b, 0x753e, 0x466b, 0x9f, 0x92, 0x4f, 0x97, 0xf7, 0x6e, 0x74, 0x72 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, TestProtocol3 onto an existing handle. The handle should be located via each protocol. |
| 5.1.3.16.56 | 0x2e2cfed3, 0xba41, 0x4d40, 0x8e, 0xdd, 0xc5, 0xc5, 0xa0, 0x3d, 0xe9, 0xc1 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The handle should be located via each protocol. |
| 5.1.3.16.57 | 0x48783e17, 0x8143, 0x4af9, 0xa2, 0x28, 0x96, 0x55, 0x37, 0x00, 0xe2, 0x53 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. The handle should be located via each protocol. |
| 5.1.3.16.58 | 0x835818d1, 0x1c63, 0x408e, 0xb9, 0xf7, 0x34, 0x54, 0xe9, 0x06, 0x59, 0xe2 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs one protocol on an existing handle at EFI\_TPL\_APPLICATION | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. Each protocol should be located via the handle. |
| 5.1.3.16.59 | 0x03169da7, 0xfc5f, 0x43f6, 0x97, 0x53, 0x4a, 0x7e, 0x50, 0x90, 0xeb, 0x13 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_CALLBACK | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. Each protocol should be located via the handle. |
| 5.1.3.16.60 | 0xf45687b9, 0xec94, 0x4cc1, 0x98, 0xb6, 0x39, 0xc7, 0x8a, 0x0e, 0x8f, 0xee | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs multiple protocols on an existing handle at EFI\_TPL\_NOTIFY | 1. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 onto an existing handle. Each protocol should be located via the handle. |
| 5.1.3.16.61 | 0xcd6ff9e0, 0xc307, 0x4b0f, 0x8b, 0xb1, 0xdb, 0x3c, 0x4a, 0x07, 0x0e, 0xc9 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_ALREADY\_STARTED with same device path at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.16.62 | 0xd6a218f1, 0xda1c, 0x4030, 0xbc, 0xdf, 0x1b, 0xdc, 0x1f, 0x9f, 0xd5, 0x92 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_ALREADY\_STARTED with same device path at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.16.63 | 0xe310ae92, 0xf894, 0x4fdd, 0xbe, 0xd4, 0xbf, 0x1b, 0x70, 0x0f, 0x4c, 0xad | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() returns EFI\_ALREADY\_STARTED with same device path at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. The return code should be EFI\_ALREADY\_STARTED. |
| 5.1.3.16.64 | 0x571c7046, 0x58f0, 0x45a8, 0x86, 0x8d, 0xf1, 0x16, 0xd7, 0x02, 0xe7, 0x54 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. No new handle should be created. |
| 5.1.3.16.65 | 0xbabbef02, 0x5645, 0x4284, 0xb7, 0x18, 0x18, 0xbe, 0xaa, 0x51, 0x52, 0xbf | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. No new handle should be created. |
| 5.1.3.16.66 | 0x093b4b63, 0xcbad, 0x425a, 0xb0, 0xc5, 0xe6, 0xc1, 0x27, 0x4a, 0xba, 0x06 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. No new handle should be created. |
| 5.1.3.16.67 | 0xccf096ed, 0x327c, 0x44f7, 0xb2, 0xf1, 0x8d, 0xe4, 0x8d, 0x21, 0xfc, 0x54 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_APPLICATION | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. Each protocol should not be located. |
| 5.1.3.16.68 | 0x386fcc7f, 0xf776, 0x4284, 0x90, 0x60, 0x16, 0x96, 0xa4, 0x4e, 0x37, 0x73 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_CALLBACK | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. Each protocol should not be located. |
| 5.1.3.16.69 | 0x8bb68afb, 0x4656, 0x4bce, 0x80, 0x67, 0x60, 0x70, 0xda, 0x89, 0x04, 0x13 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() installs same device path at EFI\_TPL\_NOTIFY | 1. Call InstallProtocolInterface() to install a device path onto a new handle.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1, TestProtocol2, and the same device path as the one installed before onto another new handle. Each protocol should not be located. |
| 5.1.3.16.70 | 0x42662a65, 0x4966, 0x4d14, 0x90, 0x53, 0xc9, 0x7d, 0x57, 0x0e, 0xcc, 0x3a | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.71 | 0x288f4c75, 0xc1dc, 0x438d, 0x92, 0xe3, 0x13, 0xf4, 0x02, 0xff, 0xfe, 0x24 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.72 | 0x6c1e2c2c, 0x7004, 0x4764, 0xb5, 0xce, 0x07, 0xe5, 0x0b, 0x08, 0xca, 0x38 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.73 | 0xe25facbd, 0xd42f, 0x44f4, 0x8a, 0xa6, 0x2d, 0x17, 0x94, 0x34, 0x03, 0x61 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.74 | 0xf40536b7, 0x0b97, 0x477d, 0x91, 0x86, 0x40, 0x64, 0x01, 0x60, 0x95, 0xa4 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.75 | 0xd1fc105e, 0x8c44, 0x408a, 0xbc, 0x58, 0x42, 0xfa, 0x71, 0x8c, 0x64, 0xe6 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. The return code should be EFI\_SUCCESS. |
| 5.1.3.16.76 | 0xa1479f29, 0x960b, 0x493c, 0xb9, 0xd3, 0xfc, 0x07, 0x45, 0x90, 0x66, 0xcd | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_APPLICATION | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.16.77 | 0xbe2a26f3, 0xaa13, 0x43d9, 0x84, 0x8d, 0x0c, 0x09, 0xfd, 0x7f, 0xfe, 0x1b | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_CALLBACK | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.16.78 | 0x6c3b6ba1, 0xcd59, 0x4385, 0x96, 0x35, 0x29, 0x78, 0xf7, 0x24, 0x98, 0x97 | BS.InstallMultipleProtocolInterfaces – InstallMultipleProtocolInterfaces() notifies the register function at EFI\_TPL\_NOTIFY | 1. Call RegisterProtocolNotify() to register some notify functions for TestProtocol1 and TestProtocol2.  2. Call InstallMultipleProtocolInterfaces() to install TestProtocol1 & TestProtocol2 at the same time. All events notify functions should be invoked, and each was invoked once. |
| 5.1.3.16.79 | 0x4242e59c, 0x7370, 0x4a87, 0x83, 0x8c, 0x66, 0xdf, 0xf0, 0x66, 0xe0, 0x1e | BS.InstallMultipleProt  ocolInterfaces –  InstallMultipleProtoco  **lInterfaces()** returns  EFI\_INVALID\_PARAMETER  when handle is **NULL** | 1. Call  InstallMultipleProto  **colInterfaces()** with an  NULL handle. The return  code should be  EFI\_INVALID\_PARAMETE  **R**. |

### UninstallMultipleProtocolInterfaces()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.3.17.1 | 0x2f6ac49a, 0x0f2d, 0x4392, 0xa0, 0xa6, 0x91, 0x80, 0xc9, 0xd2, 0x31, 0x77 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_INVALID\_PARAMETER with a non‑existent protocol | 1. Call UnInstallMultipleProtocolInterfaces() to attempt to uninstall multiple protocol instances at the same time, among them is a protocol instance that does not exist on the handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.3.17.2 | 0x914d9c49, 0x0e54, 0x429a, 0x88, 0xc7, 0x93, 0xdb, 0xdc, 0x7d, 0xe0, 0x35 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() does not uninstall any interfaces with a non‑existent protocol | 1. Call UnInstallMultipleProtocolInterfaces() to attempt to uninstall multiple protocol instances at the same time, among them is a protocol instance that does not exist on the handle. All the other protocol instances should not be uninstalled from the handle during this call. |
| 5.1.3.17.3 | 0x9b15125f, 0xec64, 0x4626, 0xbf, 0x69, 0x99, 0xc0, 0x2c, 0x20, 0x5f, 0xd5 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.4 | 0xb9b20241, 0x96ce, 0x4742, 0xb1, 0x7b, 0x91, 0x9e, 0xdb, 0x96, 0x31, 0x85 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.5 | 0xd33209ff, 0x9d19, 0x4d8e, 0xa6, 0xb7, 0x67, 0x1f, 0x10, 0xa1, 0x1a, 0x7a | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.6 | 0x5076952f, 0x17c6, 0x4e8a, 0xb2, 0x49, 0x14, 0x0c, 0xd2, 0x87, 0x82, 0x38 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.17.7 | 0x6caad6f1, 0xe004, 0x45f2, 0x8a, 0x13, 0xd6, 0x3c, 0xe5, 0xb3, 0x36, 0xe7 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.17.8 | 0x797bfd7c, 0xa7ce, 0x4fc7, 0x9b, 0xc8, 0x17, 0x17, 0x00, 0x80, 0xd4, 0xdc | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. The handle should still exist. |
| 5.1.3.17.9 | 0x89837cb3, 0x93a0, 0x4b57, 0xbe, 0x97, 0xc7, 0x24, 0x19, 0x09, 0x38, 0x11 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.10 | 0x829c1f46, 0xc17b, 0x4a2d, 0x96, 0x52, 0x56, 0xcc, 0x78, 0x0d, 0xc4, 0xa8 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.11 | 0x89717ad9, 0x3bec, 0x4ab4, 0xa3, 0x21, 0x5e, 0xac, 0xb9, 0x74, 0xa7, 0x53 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.12 | 0x90862ff0, 0x93a4, 0x43fe, 0xac, 0x10, 0x4a, 0xf3, 0x39, 0x4d, 0x8f, 0xa4 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not be located from the handle. |
| 5.1.3.17.13 | 0xf686a16d, 0x8f7d, 0x419d, 0x85, 0x21, 0x77, 0xda, 0x3f, 0x76, 0x6d, 0x73 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not be located from the handle. |
| 5.1.3.17.14 | 0xf95014de, 0x823b, 0x47a0, 0x90, 0x90, 0xeb, 0x8a, 0xdd, 0x95, 0x6f, 0x8d | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol1 should not be located from the handle. |
| 5.1.3.17.15 | 0xeecfa186, 0xb839, 0x4dd2, 0x90, 0x52, 0x15, 0xb5, 0x08, 0x86, 0x10, 0x0a | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol2 should still exist on the handle. |
| 5.1.3.17.16 | 0x2d914b4e, 0xe621, 0x4b8e, 0x89, 0xdf, 0x1b, 0x20, 0x65, 0x63, 0x7d, 0x11 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol2 should still exist on the handle. |
| 5.1.3.17.17 | 0xe854db23, 0x0e8d, 0x436e, 0x92, 0x89, 0xe2, 0xae, 0x58, 0xa6, 0xd6, 0x83 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls non-opened protocol at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 from the handle. TestProtocol2 should still exist on the handle. |
| 5.1.3.17.18 | 0x2d0ec682, 0xe6b7, 0x46e5, 0x8e, 0x23, 0x40, 0xfd, 0x1b, 0x22, 0x46, 0x0a | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with all protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.19 | 0x182f395c, 0x92a9, 0x4122, 0xae, 0x28, 0x91, 0xd1, 0x57, 0xd6, 0x0a, 0x0e | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with all protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.20 | 0x0eafb9e0, 0xfab2, 0x4a07, 0x95, 0xf0, 0x42, 0x61, 0xaa, 0x7a, 0xdb, 0x43 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with all protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.21 | 0x63dd3860, 0x4f05, 0x4f97, 0xa8, 0x2c, 0xca, 0xfa, 0xfc, 0x25, 0xc0, 0x19 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.22 | 0x3ee0e86e, 0xcbae, 0x46d2, 0x95, 0x74, 0x23, 0x1f, 0x68, 0xc8, 0xeb, 0xa6 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.23 | 0xab66814a, 0x96ca, 0x4bd6, 0xb7, 0x3b, 0x72, 0x64, 0x9a, 0xc7, 0x98, 0x2e | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.24 | 0xabdfff35, 0x3c96, 0x4fc3, 0x96, 0xe2, 0x45, 0x84, 0x30, 0x20, 0xb2, 0xb4 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.25 | 0xb21f77dc, 0x6bab, 0x4be6, 0x83, 0xa1, 0xaa, 0xfb, 0x6b, 0x58, 0xa3, 0xaa | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.26 | 0x7ce55ebf, 0x02d4, 0x41fb, 0x89, 0xcd, 0x68, 0xae, 0xbe, 0x73, 0xd9, 0x8c | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.27 | 0x0f0c7f75, 0x6373, 0x4a9e, 0x82, 0xfa, 0x63, 0x8d, 0x18, 0xad, 0x8d, 0x5f | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.28 | 0x8dc31981, 0xd08f, 0x45bf, 0xa1, 0xb0, 0xcd, 0xdb, 0xca, 0x1f, 0x23, 0x03 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.29 | 0x21f85a43, 0x2402, 0x45b1, 0xa6, 0x2a, 0x52, 0x07, 0x5b, 0x09, 0xfa, 0x75 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls all protocols at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 and TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.30 | 0xdb5ad6f9, 0xeda1, 0x4c61, 0xa8, 0x9c, 0xc5, 0x4b, 0x1e, 0xe2, 0xc2, 0x4c | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.31 | 0x8b8801d0, 0xe0b2, 0x41f3, 0xab, 0x90, 0xb1, 0xe2, 0xdc, 0xd5, 0xd2, 0x9b | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.32 | 0x5e941370, 0xd65c, 0x4f5a, 0xa1, 0x63, 0x98, 0x26, 0xd7, 0x4a, 0x2a, 0x43 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.33 | 0x9e0fa47a, 0x1038, 0x48f9, 0xac, 0x67, 0x64, 0x00, 0x76, 0xc7, 0xca, 0xa3 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.34 | 0xa5d03ea1, 0xd059, 0x436b, 0x9d, 0xd4, 0xf9, 0x3b, 0xf6, 0xe8, 0xc5, 0xcf | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.35 | 0xe9020be2, 0x07cb, 0x49c2, 0x92, 0x60, 0x72, 0xf3, 0x03, 0xac, 0x2c, 0xd5 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.36 | 0xdd900c24, 0xcafa, 0x43ae, 0xa2, 0xdd, 0x3d, 0x6b, 0xc8, 0x9c, 0x75, 0x0a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.37 | 0xd4edb27f, 0x6ba2, 0x485c, 0x85, 0xc1, 0x5b, 0x61, 0xb7, 0x70, 0xc2, 0x7e | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.38 | 0xb29b4a3b, 0x7aa3, 0x4840, 0x80, 0xc5, 0x18, 0xd8, 0x72, 0x56, 0xe6, 0x69 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.39 | 0x1366ce7c, 0xc588, 0x4e13, 0x91, 0x1d, 0x56, 0xb9, 0x2b, 0x24, 0x56, 0x45 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.40 | 0xb9f4ddf8, 0x388a, 0x48df, 0xb6, 0x13, 0x1f, 0xf9, 0x57, 0x70, 0x2e, 0x71 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.41 | 0x33dfbc47, 0xe974, 0x404e, 0xa0, 0x55, 0x5b, 0x7c, 0x06, 0x84, 0x7a, 0x95 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_HANDLE\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_HANDLE\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.42 | 0x04f5c8a0, 0xfb6d, 0x4bff, 0x85, 0x13, 0x62, 0xfc, 0x36, 0x3d, 0xca, 0x6b | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.43 | 0x55675511, 0x86c1, 0x4605, 0x85, 0xd4, 0xd5, 0x08, 0x0d, 0x7e, 0xe5, 0xc1 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.44 | 0x4a756cdd, 0x2034, 0x48be, 0x91, 0xd5, 0xb1, 0x39, 0x3c, 0xf4, 0x17, 0xeb | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.45 | 0xbed332bb, 0x7e6f, 0x4484, 0xb7, 0x68, 0x92, 0xe0, 0x2f, 0x03, 0x1c, 0x2e | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.46 | 0x7f3e829a, 0x8aa8, 0x4f54, 0x91, 0x11, 0x2f, 0xa8, 0xfa, 0xce, 0xca, 0xae | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.47 | 0xbbe591cc, 0xc1f8, 0x44ac, 0x96, 0x4d, 0xec, 0x95, 0x55, 0x60, 0x92, 0x04 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.48 | 0xe29553ba, 0xff64, 0x4c70, 0xa5, 0x8b, 0x7e, 0xcd, 0x35, 0xe6, 0x3c, 0x8b | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.49 | 0x81a05ca7, 0x53a2, 0x4cea, 0x9b, 0x83, 0x47, 0xa7, 0x01, 0xbd, 0x0b, 0x88 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.50 | 0xb497e879, 0x7273, 0x4827, 0xb1, 0x7c, 0x12, 0x09, 0x27, 0xfd, 0x65, 0x75 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.51 | 0x82d2a7f1, 0x6b7e, 0x475e, 0xa1, 0x55, 0x79, 0x38, 0xb1, 0xda, 0xae, 0x25 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.52 | 0x5f578aa8, 0x74c0, 0x4cba, 0xbc, 0x0e, 0x38, 0x8a, 0x71, 0xf8, 0xc7, 0xd3 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.53 | 0xc3e5a292, 0xb6fc, 0x41ff, 0xba, 0x39, 0xbe, 0xbc, 0x39, 0x13, 0xdb, 0x00 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened GET\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 GET\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.54 | 0x6c67d8c2, 0x38f5, 0x4674, 0xb2, 0x88, 0x12, 0x63, 0x23, 0x84, 0x21, 0x84 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.55 | 0xeb211a93, 0xa179, 0x4894, 0xb4, 0x6b, 0x47, 0xc8, 0xce, 0xe3, 0x1d, 0xff | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.56 | 0x0025c42e, 0x8a4f, 0x4dc5, 0x83, 0xe1, 0xf5, 0x1a, 0xe5, 0x7a, 0x4a, 0xaf | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.57 | 0x40abad92, 0x6ce5, 0x4caa, 0xad, 0xa1, 0x49, 0x7c, 0x8c, 0xb0, 0x18, 0xd9 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.58 | 0xa6a482ae, 0x9a8a, 0x4ace, 0x89, 0x24, 0x50, 0x40, 0x5b, 0xb8, 0x92, 0x7b | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.59 | 0x88ac2d9d, 0x7d4d, 0x4ca3, 0x94, 0x39, 0x54, 0x6d, 0x63, 0x0a, 0x67, 0x07 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should not exist. |
| 5.1.3.17.60 | 0xb325707b, 0x0e09, 0x4315, 0xad, 0x51, 0x71, 0xe9, 0x61, 0x60, 0x2a, 0xdd | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.61 | 0x624ec4ef, 0x1715, 0x47c4, 0xa4, 0xcb, 0x14, 0x10, 0x12, 0xd7, 0x56, 0x76 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.62 | 0x2678e3eb, 0xd510, 0x4632, 0x9e, 0xd7, 0xc1, 0xba, 0xd3, 0x12, 0x94, 0x04 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should not exist. |
| 5.1.3.17.63 | 0x9f6a0688, 0xe31b, 0x4df6, 0x8d, 0x7c, 0x91, 0xef, 0x8f, 0xb4, 0xae, 0xfa | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.64 | 0xda7d27db, 0xa358, 0x4f49, 0xb1, 0x24, 0x90, 0x97, 0x53, 0xe1, 0xe6, 0xda | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.65 | 0xa0b02f70, 0xdc35, 0x49dc, 0x94, 0x3a, 0xe6, 0xe4, 0xe7, 0x7a, 0x0f, 0x40 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened TEST\_PROTOCOL at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 TEST\_PROTOCOL.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should not exist. |
| 5.1.3.17.66 | 0x6d5d96e5, 0x87a3, 0x4fe3, 0x86, 0xcb, 0x89, 0x7f, 0x48, 0xae, 0x39, 0x06 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.67 | 0x87af92f4, 0x0886, 0x42bd, 0x9a, 0xfe, 0xb7, 0x3e, 0x56, 0xbd, 0x71, 0x88 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.68 | 0x0767027f, 0xa432, 0x4a7f, 0xa3, 0xb6, 0xd8, 0x9d, 0xdd, 0x68, 0x6e, 0xe8 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.69 | 0xc1088f51, 0x8698, 0x4315, 0x81, 0x7d, 0xd0, 0x6b, 0xbd, 0x7a, 0xca, 0x99 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.70 | 0x0126d268, 0x232e, 0x4d9c, 0xb4, 0x8e, 0xc5, 0xef, 0x56, 0x2e, 0x19, 0x25 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.71 | 0x59913cd8, 0xb53a, 0x4854, 0xa6, 0x4d, 0x9f, 0x98, 0xd2, 0x1a, 0x1a, 0xa6 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.72 | 0xd33680d1, 0xc401, 0x4439, 0xac, 0xde, 0x5b, 0xb1, 0xa2, 0xda, 0xf6, 0x95 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.73 | 0x9ecbe3f6, 0x5c1e, 0x472d, 0x86, 0x22, 0xff, 0x1c, 0x8f, 0xcf, 0xbe, 0x6a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.74 | 0x00f7a9f3, 0x5910, 0x4fea, 0x87, 0xd1, 0xf0, 0x80, 0xaa, 0x2b, 0x7b, 0x56 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.75 | 0xe44995b9, 0x2c57, 0x4f99, 0x82, 0xa5, 0xb9, 0xee, 0xc7, 0x18, 0xcd, 0x79 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.76 | 0xc5f403a8, 0x06a1, 0x49d1, 0x86, 0x1f, 0x4c, 0xa7, 0x4b, 0x4f, 0x45, 0x44 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.77 | 0x7538063b, 0x1934, 0x4408, 0x87, 0x33, 0x57, 0xf1, 0xb6, 0x54, 0x33, 0x47 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.78 | 0x285ea572, 0xbede, 0x4238, 0x85, 0xd6, 0x6c, 0x71, 0x0c, 0x3f, 0xcc, 0x28 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.79 | 0x059b49dc, 0x7694, 0x441c, 0xa8, 0xa2, 0xe3, 0xd0, 0x31, 0xcd, 0x82, 0xa0 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.80 | 0x1fa7aa80, 0x84d2, 0x4eb5, 0xb7, 0xcb, 0x0f, 0xe2, 0x41, 0x5b, 0x31, 0x30 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_CHILD\_CONTROLLER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_CHILD\_CONTROLLER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.81 | 0x6af7091b, 0x2db6, 0x4f09, 0xa1, 0xfe, 0xdd, 0x5e, 0x87, 0xf4, 0x82, 0xbb | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.82 | 0xf589893d, 0x3d46, 0x4be3, 0xaa, 0x9a, 0x42, 0x1e, 0x3d, 0xcd, 0xfd, 0x35 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.83 | 0xe05ca4d7, 0xa705, 0x4270, 0x99, 0xbb, 0x10, 0x8d, 0x8c, 0x1f, 0xc8, 0x0c | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.84 | 0x621782bb, 0x2da2, 0x4344, 0xae, 0x2b, 0x69, 0xc0, 0xe8, 0xe6, 0x8f, 0xdf | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.85 | 0x28749f75, 0xc7c3, 0x4e55, 0xbc, 0xa1, 0xb2, 0xfb, 0x80, 0x77, 0x26, 0x0c | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.86 | 0x193a9bdd, 0x6b07, 0x44e7, 0xb6, 0x53, 0x60, 0x42, 0x78, 0xca, 0xdb, 0x1a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.87 | 0x5460bae6, 0x94af, 0x4bd9, 0x97, 0x8f, 0x46, 0x71, 0xda, 0x2a, 0x63, 0xa5 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.88 | 0x748b6ed2, 0xf1f7, 0x4b40, 0xaa, 0x7e, 0xc0, 0xbc, 0xfc, 0x25, 0x28, 0x5e | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.89 | 0xbb86b8cd, 0x124e, 0x4bde, 0x89, 0xa6, 0xe3, 0xc7, 0x8d, 0x12, 0x48, 0x2b | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.90 | 0xf800d1fe, 0xb548, 0x4d37, 0xb0, 0x22, 0x1e, 0x45, 0xd7, 0xe2, 0xae, 0xb0 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.91 | 0xc2ab2631, 0x012d, 0x4d14, 0x81, 0x4f, 0x1c, 0xda, 0xf2, 0xa6, 0x3b, 0xfa | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.92 | 0xd995de48, 0xe12e, 0x4854, 0x86, 0x6c, 0x59, 0xd2, 0xf7, 0x6f, 0x6e, 0xb0 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.93 | 0x5c04c757, 0x9313, 0x4afa, 0xaf, 0x23, 0xe9, 0xae, 0x6f, 0x74, 0x28, 0xc5 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.94 | 0xb72382d7, 0xb6c7, 0x4532, 0x97, 0x7c, 0x6b, 0xfc, 0xe0, 0x42, 0xe4, 0xcc | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.95 | 0x09522d19, 0x6020, 0x4b2e, 0xa9, 0x64, 0xe0, 0x39, 0xf5, 0xfd, 0x36, 0x10 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.96 | 0x0ffd3c72, 0xe720, 0x4181, 0x88, 0x15, 0x3a, 0x7e, 0x68, 0x83, 0x9c, 0x1c | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.97 | 0xd6a17500, 0x9dcd, 0x48e3, 0xa1, 0x60, 0x81, 0x09, 0x53, 0xb8, 0x2f, 0x24 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.98 | 0x1e4e4e42, 0x9a65, 0x4780, 0x84, 0x8b, 0x0f, 0xd2, 0xe5, 0xc1, 0x77, 0x9a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.99 | 0x7b51f145, 0x4444, 0x49a2, 0xaf, 0x26, 0xc5, 0x98, 0xd9, 0xee, 0x18, 0x65 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.100 | 0x6963ae6e, 0x0740, 0x4bae, 0x8c, 0x2a, 0xe6, 0x99, 0x13, 0xbe, 0x2b, 0x40 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.101 | 0x98baf1ed, 0xb864, 0x4858, 0x89, 0x55, 0x39, 0x39, 0x6e, 0x94, 0x04, 0x09 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.102 | 0xe6c1e016, 0x6faf, 0x4ee0, 0x83, 0xa9, 0x7d, 0x73, 0x5c, 0x3f, 0x4b, 0xbc | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.103 | 0x10205361, 0x03c6, 0x4c8a, 0x89, 0x53, 0x8d, 0x8f, 0xc0, 0x00, 0xac, 0x4a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.104 | 0x6fbe1f14, 0xe6f5, 0x4e57, 0x95, 0xd5, 0xa4, 0x6d, 0xd9, 0x86, 0x76, 0x3f | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.105 | 0xe1b6ee4c, 0x79a9, 0x432d, 0xb7, 0xda, 0x68, 0x57, 0x05, 0xf0, 0x4d, 0x13 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.106 | 0xdfb2e951, 0xc3d8, 0x4f27, 0x87, 0x9d, 0xfc, 0xd6, 0x1a, 0x6d, 0x77, 0xe9 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.107 | 0xeb1621e3, 0x498e, 0x4b15, 0x82, 0xc5, 0x7b, 0x91, 0x71, 0xb5, 0xd0, 0x0a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.108 | 0x4bc1f888, 0xad45, 0x4708, 0xb6, 0x5d, 0xde, 0x51, 0xa7, 0x0d, 0xb8, 0xd2 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.109 | 0x458919a9, 0x41a3, 0x47a5, 0xa0, 0x90, 0xbd, 0xaf, 0xd2, 0x14, 0x1a, 0x59 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.110 | 0xdea8772d, 0x6898, 0x4605, 0x8e, 0x7b, 0xc1, 0x84, 0x08, 0x03, 0xbf, 0x95 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.111 | 0x9d70878c, 0xfe99, 0x47a1, 0xae, 0x69, 0x74, 0x26, 0x67, 0x71, 0x72, 0x59 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.112 | 0x52490623, 0x3656, 0x4885, 0x8d, 0xed, 0x03, 0xa3, 0x3e, 0x51, 0xe6, 0x45 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.113 | 0xb68e1e7c, 0x84a7, 0x4f2f, 0xbc, 0x6f, 0x21, 0x44, 0xf9, 0x6a, 0x06, 0xb5 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() returns EFI\_ACCESS\_DENIED with opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_ACCESS\_DENIED. |
| 5.1.3.17.114 | 0x73a6e8ac, 0xd67e, 0x41bd, 0xad, 0x5b, 0x1b, 0xca, 0x32, 0x67, 0xda, 0x67 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.115 | 0x06c1eafd, 0xf83a, 0x4a77, 0x90, 0x9b, 0xfb, 0x44, 0x53, 0x9b, 0x2f, 0xfe | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.116 | 0x24822324, 0xbd2e, 0x4487, 0xbc, 0x9b, 0x85, 0x36, 0x15, 0xb7, 0xaf, 0xb5 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The handle should still exist. |
| 5.1.3.17.117 | 0x190a11f5, 0x10ab, 0x40c3, 0x98, 0x19, 0x79, 0x75, 0xc3, 0x5f, 0xe6, 0xdd | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.118 | 0x22f6d0c0, 0xf42f, 0x4867, 0x88, 0x75, 0xdd, 0x3f, 0x8d, 0x77, 0x8e, 0x22 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.119 | 0x6b48156e, 0x6adc, 0x4ba7, 0xbd, 0x5b, 0xc4, 0x83, 0x08, 0x37, 0x28, 0x50 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol1 should still exist. |
| 5.1.3.17.120 | 0x0705d119, 0x04b6, 0x4cfa, 0x9e, 0x1e, 0x00, 0x4e, 0xd0, 0x54, 0xd9, 0x05 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.121 | 0x111c2fe1, 0x1c44, 0x42c8, 0x88, 0x76, 0x48, 0x0f, 0xd3, 0x0c, 0xa1, 0x5a | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.122 | 0x132ccf99, 0x64f8, 0x4d31, 0xa5, 0x46, 0x36, 0xde, 0x50, 0xdf, 0xb1, 0xbc | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. TestProtocol2 should still exist. |
| 5.1.3.17.123 | 0x0670739d, 0xf6a6, 0x4cb6, 0xa4, 0x22, 0xb8, 0xd6, 0xed, 0x2e, 0x53, 0xb2 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_APPLICATION | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.124 | 0xcf9ddc59, 0x3d57, 0x4dfe, 0xa6, 0x3a, 0x51, 0x3d, 0x26, 0x14, 0x0e, 0xa8 | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_CALLBACK | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.125 | 0x7031defc, 0xdaba, 0x48ab, 0x80, 0x84, 0x34, 0xf3, 0xbd, 0xd8, 0xff, 0x8e | BS.UninstallMultipleProtocolInterfaces – UninstallMultipleProtocolInterfaces() uninstalls opened BY\_DRIVER | EXCLUSIVE at EFI\_TPL\_NOTIFY | 1. Install TestProtocol1 & TestProtocol2 onto new handle.  2. Call OpenProtocol() to open TestProtocol1 BY\_DRIVER | EXCLUSIVE.  3. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle.  4. Call CloseProtocol() to close TestProtocol1.  5. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocol1 & TestProtocol2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.126 | 0x49245471, 0xcd0c, 0x4b67, 0x86, 0x2e, 0x40, 0xdf, 0x7b, 0x7e, 0xa5, 0x2d | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with two NULL at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.127 | 0x4d809155, 0xadba, 0x425d, 0x89, 0x0a, 0x03, 0xbc, 0x2d, 0xfb, 0x91, 0x58 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with two NULL at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.128 | 0x9e5bb648, 0xec5f, 0x4fb5, 0xad, 0x5f, 0xcf, 0xc1, 0x36, 0x56, 0xbc, 0xd2 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() returns EFI\_SUCCESS with two NULL at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The return code should be EFI\_SUCCESS. |
| 5.1.3.17.129 | 0xb4aedbe9, 0xa3bf, 0x4a57, 0x99, 0x35, 0x27, 0xed, 0x5b, 0xd1, 0x74, 0xc9 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The handle should not exist. |
| 5.1.3.17.130 | 0x1471a8dd, 0x6290, 0x429f, 0x8e, 0xe0, 0x6c, 0x96, 0xb7, 0xcb, 0x17, 0x62 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The handle should not exist. |
| 5.1.3.17.131 | 0x05142fe9, 0x964e, 0x47fd, 0x80, 0xdf, 0x99, 0x0c, 0x12, 0x56, 0x79, 0x2c | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. The handle should not exist. |
| 5.1.3.17.132 | 0x5bf9b76d, 0x543e, 0x43e5, 0xae, 0x72, 0x70, 0xaa, 0x21, 0x0b, 0x7f, 0x51 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface1 should not exist. |
| 5.1.3.17.133 | 0x2ec74865, 0x37c0, 0x4c4e, 0xa5, 0x34, 0x9a, 0x95, 0x4c, 0x89, 0x1a, 0xe9 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface1 should not exist. |
| 5.1.3.17.134 | 0x67249190, 0x20dc, 0x460f, 0xbd, 0x71, 0xb1, 0x07, 0xef, 0x0e, 0x1a, 0xaa | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface1 should not exist. |
| 5.1.3.17.135 | 0xc7f4b9f2, 0xc755, 0x4bb4, 0xa2, 0x92, 0xc6, 0xa4, 0x52, 0x91, 0xf8, 0xbd | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_APPLICATION | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface2 should not exist. |
| 5.1.3.17.136 | 0x1e93f309, 0x862d, 0x4add, 0x89, 0xb9, 0xc3, 0xa7, 0x58, 0x61, 0x98, 0x69 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_CALLBACK | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface2 should not exist. |
| 5.1.3.17.137 | 0x445c2395, 0x8bda, 0x4e5e, 0xab, 0x07, 0x82, 0x3b, 0x18, 0x7e, 0x52, 0xd8 | BS.UninstallMultipleProtocolInterfaces – UnInstallMultipleProtocolInterfaces() uninstalls two NULL interfaces at EFI\_TPL\_NOTIFY | 1. Install TestProtocolNoInterface1 & TestProtocolNoInterface2 onto new handle.  2. Call UnInstallMultipleProtocolInterfaces() to remove TestProtocolNoInterface1 & TestProtocolNoInterface2 from the handle. TestProtocolNoInterface2 should not exist. |

## Image Services Test

Reference Document:

*UEFI Specification*, Image Services Section.

* Image Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
|  | Boot | Loads an EFI image into memory. |
| **Error! Reference source not found.** | Boot | Transfers control to a loaded image’s entry point. |
| **Error! Reference source not found.** | Boot | Unloads an image. |
| EFI\_IMAGE\_ENTRY\_POINT | Boot | Prototype of an EFI Image’s entry point. |
| Exit() | Boot | Exits the image’s entry point. |
|  | Boot | Terminates boot services. |

### LoadImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.4.1.1 | 0x8d5f5a0d, 0x225e, 0x4383, 0x9d, 0x14, 0x27, 0x46, 0xd7, 0x48, 0xb7, 0xa3 | BS.LoadImage – LoadImage() returns EFI\_INVALID\_PARAMETER with invalid **ParentImageHandle**. | 1. Call LoadImage() with a **ParentImageHandle** value of NULL or an invalid image handle, The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.4.1.2 | 0xb04da351, 0xe5a5, 0x43a3, 0x88, 0x98, 0x41, 0x37, 0xbb, 0xba, 0x7e, 0x86 | BS.LoadImage – LoadImage() returns EFI\_INVALID\_PARAMETER with NULL **FilePath**. | 1. Call LoadImage() with a **FilePath** value of NULL, The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.4.1.3 | 0x755f66bd, 0xad6e, 0x4fa3, 0xb5, 0xaf, 0xd9, 0xdd, 0x22, 0xa8, 0x38, 0x58 | BS.LoadImage – LoadImage() returns EFI\_NOT\_FOUND with irrelevant **FilePath**. | 1. Call LoadImage() with the **FilePath** that could not be parsed to locate the proper protocol for loading the image file. The return code must be EFI\_NOT\_FOUND. |
| 5.1.4.1.4 | 0x4556a0d5, 0xb928, 0x4777, 0x8e, 0xce, 0x6d, 0xbd, 0x80, 0x88, 0xf8, 0x78 | BS.LoadImage – LoadImage() returns EFI\_NOT\_FOUND with a non‑existent **FilePath**. | 1. Call LoadImage() with a **FilePath** that actually does not exist in the system. The return code must be EFI\_NOT\_FOUND. |
| 5.1.4.1.5 | 0xcc78f02e, 0x8b50, 0x4f9d, 0xb2, 0x92, 0x59, 0x10, 0xac, 0x2a, 0x22, 0x02 | BS.LoadImage – LoadImage() returns EFI\_INVALID\_PARAMETER with NULL **ImageHandle**. | 1. Call LoadImage() with the NULL **ImageHandle**, The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.4.1.6 | 0x279ca318, 0x4859, 0x4c3f, 0xb7, 0x75, 0x06, 0x58, 0x7d, 0xdc, 0x7e, 0x56 | BS.LoadImage – LoadImage() returns EFI\_LOAD\_ERROR with 0 length **Buffer**. | 1. Call LoadImage() with the **SourceSize** as 0, The return code must be EFI\_LOAD\_ERROR. |
| 5.1.4.1.7 | 0x2881c2cc, 0x28aa, 0x4335, 0x8a, 0x9f, 0x5c, 0x90, 0x5d, 0x5f, 0x9d, 0xfc | BS.LoadImage – LoadImage() loads image from disk device that supports Simple File System Protocol. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver onto disk device.  2. Call LoadImage() to load each image. The return code should be EFI\_SUCCESS. |
| 5.1.4.1.8 | 0x8bdfd438, 0x06b0, 0x43a6, 0xab, 0x5b, 0x51, 0x83, 0x39, 0xfd, 0x8f, 0x87 | BS.LoadImage – LoadImage() loads image from disk device that supports Simple File System Protocol. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver onto disk device.  2. Call LoadImage() to load each image. EFI\_LOADED\_IMAGE\_PROTOCOL should be located from each return **ImageHandle**. |
| 5.1.4.1.9 | 0xa44b3d57, 0xa2a3, 0x41ee, 0xb5, 0xa3, 0x59, 0x5f, 0xab, 0xfc, 0x5c, 0x76 | BS.LoadImage – LoadImage() loads image from disk device that supports Simple File System Protocol. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver onto disk device.  2. Call LoadImage() to load each image. The memory type of code and data for EFI application must be **EfiLoaderCode** and **EfiLoaderData**. For EFI boot services must be **EfiBootServicesCode** and **EfiBootServicesData**. For EFI runtime services must be **EfiRuntimeServicesCode** and **EfiRuntimeServicesData**. |
| 5.1.4.1.10 | 0x7d5540a9, 0x9bbd, 0x4f33, 0xaf, 0xf3, 0x84, 0xbc, 0xc5, 0xbe, 0x83, 0x0a | BS.LoadImage – LoadImage() loads image from memory. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver, and then load them to memory.  2. Call LoadImage() to load each image. The return code should be EFI\_SUCCESS. |
| 5.1.4.1.11 | 0xb382d195, 0x2231, 0x4c6a, 0xa3, 0x42, 0x3d, 0xde, 0x8f, 0x7c, 0x39, 0xe0 | BS.LoadImage – LoadImage() loads image from memory. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver, and then load them to memory.  2. Call LoadImage() to load each image. EFI\_LOADED\_IMAGE\_PROTOCOL should be located from each return **ImageHandle**. |
| 5.1.4.1.12 | 0xd59292f3, 0x68bd, 0x4b2e, 0xb0, 0xa5, 0x9b, 0x8c, 0x39, 0x52, 0xcf, 0x9e | BS.LoadImage – LoadImage() loads image from memory. | 1. Create an EFI application, an EFI boot services driver, and an EFI runtime services driver, and then load them to memory.  2. Call LoadImage() to load each image. The memory type of code and data for EFI application must be **EfiLoaderCode** and **EfiLoaderData**. For EFI boot services must be **EfiBootServicesCode** and **EfiBootServicesData**. For EFI runtime services must be **EfiRuntimeServicesCode** and **EfiRuntimeServicesData**. |
| 5.1.4.1.13 | 0x1272dcf7, 0xdd42, 0x4f3f, 0x90, 0x55, 0x7d, 0x6f, 0x3e, 0x8b, 0xba, 0x1f | BS.LoadImage – LoadImage() ignores **FilePath** with non-NULL **SourceBuffer**. | 1. Create an EFI application and an EFI boot services driver onto the disk device, and then load the Application to memory.  2. Call LoadImage() with a **FilePath** value of the path of the EFI boot services driver, and the **SourceBuffer** to the EFI application’s memory. The return code should be EFI\_SUCCESS. |
| 5.1.4.1.14 | 0x21759ccc, 0x092c, 0x4a43, 0x8a, 0xcc, 0x8f, 0xa7, 0xb0, 0x69, 0x91, 0x29 | BS.LoadImage – LoadImage() ignores **FilePath** with non-NULL **SourceBuffer**. | 1. Create an EFI application and an EFI boot services driver onto the disk device, and then load the Application to memory.  2. Call LoadImage() with a **FilePath** value of the path of the EFI boot services driver, and the **SourceBuffer** to the EFI application’s memory. EFI\_LOADED\_IMAGE\_PROTOCOL should be located from the return **ImageHandle**. |
| 5.1.4.1.15 | 0x90f0c29a, 0x19f4, 0x4350, 0xa5, 0xc1, 0x1a, 0xe6, 0x9e, 0x45, 0x09, 0xaf | BS.LoadImage – LoadImage() ignores **FilePath** with non-NULL **SourceBuffer**. | 1. Create an EFI application and an EFI boot services driver onto the disk device, and then load the Application to memory.  2. Call LoadImage() with a **FilePath** value of the path of the EFI boot services driver, and the **SourceBuffer** to the EFI application’s memory. The memory type of code and data should be **EfiLoaderCode** and **EfiLoaderData**. |
| 5.1.4.1.16 | 0xfc86a302, 0xd59b, 0x4f58, 0x9f, 0x8f, 0x83, 0xab, 0x31, 0x4c, 0x5f, 0x0a | BS.LoadImage – LoadImage() does not return EFI\_SUCCESS with corrupt image file. | 1. Call LoadImage() with the images whose format was corrupt or not understood by the EFI loader. The return code should not be EFI\_SUCCESS. |
| 5.1.4.1.17 | 0xb51a788f, 0xa7f1, 0x4332, 0x9b, 0xaf, 0x64, 0xe6, 0x4d, 0x74, 0x42, 0xd9 | BS.LoadImage – LoadImage() returns EFI\_OUT\_OF\_RESOURCES with very large image. | 1. Call LoadImage() with a very large image. The return code should be EFI\_OUT\_OF\_RESOURCES. |
| 5.1.4.1.18 | 0x37126638, 0x5217, 0x4f39, 0x9d, 0x82, 0x40, 0xa3, 0x74, 0xb5, 0x74, 0xf6 | BS.LoadImage – LoadImage() loads image via EFI\_LOAD\_FILE\_PROTOCOL. | 1. Create a EFI\_LOAD\_FILE\_PROTOCOL in a test driver and start it.  2. Create three device paths related to the EFI\_LOAD\_FILE\_PROTOCOL and bind with an EFI application, an EFI boot services driver, and an EFI runtime services driver.  3. Call LoadImage() to load those images. The return code should be EFI\_SUCCESS. |
| 5.1.4.1.19 | 0x0c0a89fc, 0x9b1f, 0x443a, 0xb0, 0x62, 0x5a, 0xfa, 0xb5, 0x19, 0xac, 0x12 | BS.LoadImage – LoadImage() loads image via EFI\_LOAD\_FILE\_PROTOCOL. | 1. Create a EFI\_LOAD\_FILE\_PROTOCOL in a test driver and start it.  2. Create three device paths related to the EFI\_LOAD\_FILE\_PROTOCOL and bind with an EFI application, an EFI boot services driver, and an EFI runtime services driver.  3. Call LoadImage() to load those images. EFI\_LOADED\_IMAGE\_PROTOCOL should be located from the image handle. |
| 5.1.4.1.20 | 0x55383e9d, 0xc035, 0x4b36, 0x93, 0x9e, 0xb5, 0x6b, 0x1e, 0x81, 0xdc, 0xb9 | BS.LoadImage – LoadImage() loads image via EFI\_LOAD\_FILE\_PROTOCOL. | 1. Create a EFI\_LOAD\_FILE\_PROTOCOL in a test driver and start it.  2. Create three device paths related to the EFI\_LOAD\_FILE\_PROTOCOL and bind with an EFI application, an EFI boot services driver, and an EFI runtime services driver.  3. Call LoadImage() to load those images. The memory type of code and data for EFI application must be **EfiLoaderCode** and **EfiLoaderData**. For EFI boot services must be **EfiBootServicesCode** and **EfiBootServicesData**. For EFI runtime services must be **EfiRuntimeServicesCode** and **EfiRuntimeServicesData**. |
| 5.1.4.1.21 | 0x589fe1c3, 0xf0f3, 0x486e, 0x90, 0x45, 0x3, 0xba, 0x6d, 0xe2, 0x3b, 0x8c | BS.LoadImage - LoadImage() load valid hii image from memory; return code should be EFI\_SUCCESS | 1. Create a valid hii image and then load it to memory  2. Call LoadImage() to load the image; the return code should be EFI\_SUCCESS. |
| 5.1.4.1.22 | 0x1d8b160c, 0x7601, 0x47c9, 0x81, 0x2, 0x68, 0xc0, 0xf8, 0x1, 0x31, 0x4b | BS.LoadImage - LoadImage() load valid hii image from memory, return code should be EFI\_SUCCESS | 1. Create a valid hii image and  2. Call LoadImage() to load hii image. EFI\_HII\_PACKAGE\_LIST\_PROTOCOL should be installed on ImageHandle. |
| 5.1.4.1.23 | 0xf5268bb3, 0xff27, 0x492b, 0x91, 0x4f, 0xec, 0x98, 0x20, 0xa2, 0x14, 0xc8 | BS.LoadImage - LoadImage() load invalid hii image or Application/BsDriver/RuntimeDriver image from memory; return code should be EFI\_SUCCESS | 1. Create invalid hii or Application/BsDriver/RuntimeDriver images  2. Call LoadImage() to load each image; the return code should be EFI\_SUCCESS. |
| 5.1.4.1.24 | 0xa40cacae, 0x81d7, 0x4eb6, 0xad, 0x4f, 0x2e, 0xda, 0x48, 0x92, 0xe1, 0xc | BS.LoadImage - LoadImage() Invoke BS.HandleProtocol() and verify whether EFI\_HII\_PACKAGE\_LIST\_PROTOCOL installed on the ImageHandle, and the return value should be EFI\_UNSUPPORTED | 1. Verify whether the ImageHandle installed on EFI\_HII\_PACKAGE\_LIST\_PROTOCOL and return value should be EFI\_ UNSUPPORTED. |

### StartImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.4.2.1 | 0x67ba6fae, 0x9758, 0x4edb, 0x9d, 0x4d, 0x1a, 0xe8, 0xc9, 0x82, 0x0f, 0x1e | BS.StartImage – StartImage() returns EFI\_INVALID\_PARAMETER with invalid **ImageHandle**. | 1. Call StartImage() with NULL or invalid image handle. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.4.2.2 | 0xb217ffee, 0xac38, 0x4590, 0x92, 0x2b, 0x56, 0x6c, 0x2f, 0xb8, 0x04, 0x7b | BS.StartImage – StartImage() starts an EFI application. | 1. Create an EFI application that installs and uninstalls Protocol1, and opens Protocol2.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI application. The return code should be EFI\_SUCCESS. |
| 5.1.4.2.3 | 0x6999d70b, 0x3226, 0x41c1, 0x85, 0xef, 0x0a, 0x47, 0x31, 0x31, 0xd3, 0x0a | BS.StartImage – StartImage() starts an EFI application. | 1. Create an EFI application that installs and uninstalls Protocol1, and opens Protocol2.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI application. The notify function should be invoked. |
| 5.1.4.2.4 | 0x63223117, 0x0d3a, 0x468b, 0x8f, 0xb5, 0x1a, 0x8c, 0xbf, 0x51, 0xd6, 0x29 | BS.StartImage – StartImage() starts an EFI application. | 1. Create an EFI application that installs and uninstalls Protocol1, and opens Protocol2.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI application. Protocol2 should be opened. |
| 5.1.4.2.5 | 0x1015f20e, 0x1d8f, 0x4793, 0xa7, 0xbc, 0x3a, 0xff, 0xe7, 0xdd, 0xfb, 0xdc | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.2.6 | 0x943ddc91, 0xf767, 0x4b77, 0x95, 0x31, 0xc6, 0x30, 0xac, 0xbe, 0xf6, 0x18 | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. The notify function should be invoked. |
| 5.1.4.2.7 | 0x80c0983a, 0x2ed4, 0x4492, 0xbd, 0x2b, 0x38, 0xa3, 0xaf, 0xa5, 0xde, 0x9e | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. Protocol1 should be located. |
| 5.1.4.2.8 | 0x0c2676e7, 0x66e8, 0x48ea, 0xa9, 0x35, 0x98, 0xd8, 0x25, 0x3f, 0x87, 0xd9 | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, and open Protocol2.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. Protocol2 should be opened. |
| 5.1.4.2.9 | 0x98c88bc2, 0x52c4, 0x41ac, 0xb5, 0xc2, 0x0b, 0xae, 0x7e, 0x13, 0x90, 0xe0 | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_DEVICE\_ERROR.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.2.10 | 0x9bfcca9b, 0xee53, 0x42a4, 0x98, 0x2a, 0x7b, 0x26, 0x27, 0x28, 0x46, 0xb5 | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_DEVICE\_ERROR.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. Protocol2 should be released the open reference. |
| 5.1.4.2.11 | 0x3298c357, 0xee05, 0x46c6, 0x89, 0x1f, 0xa7, 0xc9, 0xd6, 0x5e, 0x24, 0xfe | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_DEVICE\_ERROR. The driver exits with **ExitData**.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. **ExitData** returned by StartImage() should be not NULL. |
| 5.1.4.2.12 | 0x4ae6d40c, 0x53ca, 0x414b, 0xa3, 0x05, 0x9f, 0x3b, 0xb4, 0x4c, 0xf4, 0x8a | BS.StartImage – StartImage() starts an EFI boot services driver. | 1. Create an EFI boot services driver that installs Protocol1, opens Protocol2, and returns EFI\_DEVICE\_ERROR. The driver exits with **ExitData**.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI boot services driver. **ExitDataSize** returned by StartImage() should be unchanged. |
| 5.1.4.2.13 | 0x6b0d4a31, 0x929c, 0x4911, 0xac, 0xec, 0x4a, 0x0a, 0x9a, 0x94, 0x68, 0x33 | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.2.14 | 0x27cef30a, 0xf4d9, 0x434f, 0xbd, 0xf4, 0x81, 0xbf, 0x56, 0xa8, 0x1e, 0xf4 | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. The notify function should be invoked. |
| 5.1.4.2.15 | 0x989d7749, 0xba06, 0x4d68, 0x93, 0x83, 0xe3, 0xf1, 0x7b, 0x15, 0xc7, 0x47 | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_SUCCESS.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. Protocol1 should be located. |
| 5.1.4.2.16 | 0x60a9841b, 0x6b46, 0x4663, 0x92, 0xb2, 0xef, 0xa4, 0x0a, 0xaa, 0x77, 0xd2 | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that install Protocol1, and open Protocol2.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. Protocol2 should be opened. |
| 5.1.4.2.17 | 0xd43b34e0, 0x2faf, 0x469a, 0xaf, 0xfc, 0xf0, 0x16, 0x0f, 0x98, 0xd6, 0xf5 | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_NOT\_FOUND.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. The return code should be EFI\_NOT\_FOUND. |
| 5.1.4.2.18 | 0xb2521b21, 0x00b8, 0x47a1, 0xba, 0x65, 0x9f, 0x73, 0x73, 0xe4, 0xaf, 0xde | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_NOT\_FOUND.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. Protocol2 should be released the open reference. |
| 5.1.4.2.19 | 0x696f4976, 0x33d4, 0x4e9a, 0xb6, 0xe7, 0xd8, 0x34, 0x62, 0x90, 0xf3, 0x4f | BS.StartImage – StartImage() starts an EFI runtime services driver. | 1. Create an EFI runtime services driver that installs Protocol1, opens Protocol2, and returns EFI\_NOT\_FOUND. The driver exits with **ExitData**.  2. Register a notification for Protocol1’s installation.  3. Load and Start the EFI runtime services driver. **ExitData** returned by StartImage() should be not NULL. |
| 5.1.4.2.20 | 0xa1b8f0d0, 0xcb12, 0x406c, 0x8c, 0x2f, 0x08, 0x27, 0x5f, 0x71, 0x91, 0x70 | BS.StartImage – StartImage() returns EFI\_INVALID\_PARAMETER with same image handle twice. | 1. Call StartImage() to start an image handle.  2. Call StartImage() with the same image handle again. The return code should be EFI\_INVALID\_PARAMETER. |

### UnloadImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.4.3.1 | 0xe315da57, 0x5da8, 0x41dd, 0x9f, 0x0d, 0x8f, 0xf1, 0x3b, 0xa1, 0x6e, 0x1c | BS.UnloadImage – UnloadImage() returns EFI\_INVALID\_PARAMETER with invalid **ImageHandle**. | 1. Call UnloadImage() with NULL or invalid image handle. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.4.3.2 | 0x839b440a, 0xd3bb, 0x40e8, 0x8a, 0x98, 0x3c, 0x8b, 0xbb, 0xe7, 0x7b, 0xbc | BS.UnloadImage – UnloadImage() unloads unstarted EFI application at EFI\_TPL\_APPLICATION. | 1. Load an EFI application.  2. Call UnloadImage() to unload the EFI application. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.3 | 0xb4b209c2, 0xddbf, 0x4b2a, 0xa3, 0xda, 0x60, 0xc5, 0x5a, 0xd9, 0x19, 0xd3 | BS.UnloadImage – UnloadImage() unloads unstarted EFI application at EFI\_TPL\_CALLBACK. | 1. Load an EFI application.  2. Call UnloadImage() to unload the EFI application. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.4 | 0x7b343dd7, 0xc5e9, 0x42c3, 0x91, 0x29, 0x7f, 0xab, 0x0d, 0x11, 0x02, 0x3d | BS.UnloadImage – UnloadImage() unloads unstarted EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver.  2. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.5 | 0xf1a04ed0, 0x40f9, 0x4b6f, 0xb8, 0x89, 0x3b, 0x49, 0x52, 0x08, 0x83, 0xe1 | BS.UnloadImage – UnloadImage() unloads unstarted EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver.  2. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.6 | 0x3134d2cc, 0x5ad8, 0x407e, 0x86, 0x99, 0xfd, 0x14, 0x22, 0x2e, 0x8a, 0x40 | BS.UnloadImage – UnloadImage() unloads unstarted EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver.  2. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.7 | 0x6843ffe5, 0x6ebe, 0x4164, 0xbb, 0xaf, 0x7e, 0x82, 0xa1, 0x11, 0xcf, 0x6d | BS.UnloadImage – UnloadImage() unloads unstarted EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver.  2. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.8 | 0xa78edb49, 0xe488, 0x415d, 0x83, 0x1d, 0xda, 0x9c, 0x25, 0x06, 0xec, 0x89 | BS.UnloadImage – UnloadImage() unloads started EFI application at EFI\_TPL\_APPLICATION. | 1. Load an EFI application.  2. Start the EFI application.  3. Call UnloadImage() to unload the EFI application. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.4.3.9 | 0x77bfbb63, 0x10c4, 0x4cdf, 0x95, 0x26, 0x1a, 0x69, 0x3b, 0xb8, 0x60, 0x39 | BS.UnloadImage – UnloadImage() unloads started EFI application at EFI\_TPL\_CALLBACK. | 1. Load an EFI application.  2. Start the EFI application.  3. Call UnloadImage() to unload the EFI application. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.4.3.10 | 0xf50493b0, 0x9653, 0x409b, 0x83, 0xa9, 0xc0, 0x13, 0x3a, 0x34, 0xa4, 0x20 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.11 | 0x5a612e62, 0x9982, 0x4f87, 0xa3, 0xa1, 0x16, 0xaf, 0x5f, 0x8d, 0xbd, 0x87 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.12 | 0xec5c4ee0, 0x9a37, 0x488e, 0x8e, 0xee, 0xb0, 0x61, 0xa7, 0x3c, 0xc5, 0x03 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver that uninstalls Protocol1 in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should not be located. |
| 5.1.4.3.13 | 0x51ab01a4, 0x6a66, 0x468f, 0xae, 0xe4, 0x4d, 0x5e, 0xb5, 0x88, 0x00, 0x76 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver that uninstalls Protocol1 in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should not be located. |
| 5.1.4.3.14 | 0xe7dd55e2, 0x2461, 0x40e6, 0x8d, 0x97, 0x6d, 0x9e, 0x2a, 0xf1, 0xe1, 0x67 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver that does not close Protocol2 in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol2 could still be located. |
| 5.1.4.3.15 | 0x8c83ad3d, 0xb796, 0x45b6, 0xa8, 0x0c, 0xe4, 0x89, 0xed, 0xa5, 0x34, 0x7f | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which does not close Protocol2 in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol1 could still be located. |
| 5.1.4.3.16 | 0x86de7316, 0xc7a1, 0x4553, 0xa0, 0xf6, 0x52, 0x41, 0x98, 0x51, 0xfb, 0x3f | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.3.17 | 0xf9d2a7c4, 0x5f7f, 0x4e7e, 0x98, 0x27, 0x39, 0xf5, 0x78, 0x07, 0x6b, 0x83 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.3.18 | 0x7069cedb, 0xc81c, 0x4d24, 0xac, 0xa4, 0x0f, 0xd2, 0x0d, 0x81, 0x5d, 0x13 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which uninstalls Protocol1 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should not be located. |
| 5.1.4.3.19 | 0x6b493911, 0x11b7, 0x4468, 0xb2, 0x56, 0xe5, 0xb8, 0xcb, 0xdf, 0xbf, 0x4d | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which uninstalls Protocol1 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should not be located. |
| 5.1.4.3.20 | 0x1bb5bf2c, 0x98e2, 0x4bef, 0xbe, 0x43, 0x9b, 0xb8, 0x92, 0x99, 0xd5, 0xf0 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which does not close Protocol2 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol2 should still be opened. |
| 5.1.4.3.21 | 0xb55e7fa8, 0x39b0, 0x4eab, 0x84, 0xdd, 0xcd, 0x5f, 0xac, 0x63, 0x65, 0xa9 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which does not close Protocol2 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI boot services driver.  3. Call UnloadImage() to unload the EFI boot services driver. Protocol2 should still be opened. |
| 5.1.4.3.22 | 0xbe80ffe7, 0xcd56, 0x4e7a, 0xae, 0xb1, 0xd5, 0x05, 0x2d, 0xe7, 0x3a, 0x66 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_UNSUPPORTED. |
| 5.1.4.3.23 | 0x25611b63, 0x6439, 0x4bcb, 0xb4, 0xd8, 0xb5, 0x0a, 0x34, 0xf9, 0x0e, 0x45 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_UNSUPPORTED. |
| 5.1.4.3.24 | 0x5a21983a, 0xc872, 0x4e12, 0x97, 0x36, 0xe5, 0x33, 0xe7, 0x8d, 0xad, 0xfe | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which installs Protocol1 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should still be located. |
| 5.1.4.3.25 | 0xe29713dc, 0xcb25, 0x4abc, 0xb7, 0xec, 0x3c, 0xbb, 0xfc, 0xe6, 0xf3, 0xcf | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which installs Protocol1 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. Protocol1 should still be located. |
| 5.1.4.3.26 | 0x7a648f75, 0x6bb8, 0x4b57, 0xa5, 0xe3, 0x82, 0x1a, 0xe9, 0xa3, 0x2a, 0xd8 | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI boot services driver which opens Protocol2 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. Protocol2 should still be opened. |
| 5.1.4.3.27 | 0xa05b3b2b, 0x0d6c, 0x469c, 0xa3, 0x25, 0x97, 0x4f, 0xa4, 0xc2, 0x59, 0x2d | BS.UnloadImage – UnloadImage() unloads started EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI boot services driver which opens Protocol2 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI boot services driver. Protocol2 should still be opened. |
| 5.1.4.3.28 | 0x81866024, 0x8bfb, 0x4489, 0x83, 0x58, 0xc8, 0xcc, 0x4c, 0x4a, 0xd1, 0x79 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.29 | 0x4fe0c243, 0x1691, 0x4c99, 0x90, 0xf9, 0xaa, 0xb0, 0x19, 0xd2, 0xb5, 0xa9 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_SUCCESS. |
| 5.1.4.3.30 | 0x07331a90, 0xfb7b, 0x45f9, 0x82, 0x9d, 0x4e, 0x95, 0x0a, 0x3b, 0x5b, 0x0c | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which uninstalls Protocol1 in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should not be located. |
| 5.1.4.3.31 | 0x6ff0ddac, 0xd358, 0x4e0d, 0xb7, 0x07, 0x84, 0xc6, 0xa9, 0xf6, 0x13, 0x2f | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which uninstalls Protocol1 in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should not be located. |
| 5.1.4.3.32 | 0x7ea89cd8, 0x1dfb, 0x4949, 0xac, 0xe0, 0x0a, 0x2c, 0x19, 0x8c, 0x51, 0x3d | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which does not close Protocol2 in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |
| 5.1.4.3.33 | 0x40a4f27e, 0x4854, 0x4e52, 0x8a, 0x4f, 0x72, 0xb3, 0xb4, 0x0e, 0xaf, 0xdb | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which does not close Protocol2 in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |
| 5.1.4.3.34 | 0xea461fd1, 0xa5de, 0x4f17, 0xbc, 0xa3, 0x6c, 0x5c, 0xa9, 0xaf, 0x2f, 0xf7 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI boot services driver. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.3.35 | 0x221ab8d1, 0xd19c, 0x4877, 0xaa, 0x13, 0x36, 0xb9, 0x93, 0xfd, 0x8b, 0x3c | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.3.36 | 0x657d6565, 0xf26b, 0x468a, 0xb7, 0x37, 0x68, 0xd1, 0x09, 0xd9, 0xfa, 0xc3 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which uninstalls Protocol1 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should not be located. |
| 5.1.4.3.37 | 0xb792ec09, 0x49c5, 0x42f6, 0xba, 0xe3, 0x71, 0x76, 0xe6, 0x4c, 0xe8, 0xad | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driverthat uninstalls Protocol1 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should not be located. |
| 5.1.4.3.38 | 0xca0fd0c5, 0x37a4, 0x4483, 0xbb, 0xb3, 0xca, 0x5a, 0x50, 0x4d, 0xbc, 0x1d | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which does not close Protocol2 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |
| 5.1.4.3.39 | 0x121c720e, 0x8d87, 0x49bd, 0xac, 0x98, 0x87, 0x39, 0x51, 0xea, 0xd4, 0x5e | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which does not close Protocol2 and returns EFI\_DEVICE\_ERROR in Unload() function.  2. Start the EFI runtime services driver.  3. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |
| 5.1.4.3.40 | 0xbf69d01d, 0x2bcf, 0x4a9b, 0xb5, 0x51, 0xf7, 0xa4, 0x6d, 0x13, 0x6c, 0xba | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_UNSUPPORTED. |
| 5.1.4.3.41 | 0xf5f305cb, 0x4828, 0x476b, 0xa2, 0x18, 0x77, 0x9c, 0xe8, 0x04, 0x04, 0x4f | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. The return code should be EFI\_UNSUPPORTED. |
| 5.1.4.3.42 | 0xe6c5f338, 0x8654, 0x452a, 0xb7, 0x69, 0xa9, 0xb3, 0x2f, 0x0a, 0x37, 0x6b | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which installs Protocol1 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should still be located. |
| 5.1.4.3.43 | 0xa390f3e7, 0x90d9, 0x439b, 0xa8, 0x39, 0x66, 0x5c, 0xc9, 0x12, 0x2d, 0x4f | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driver which installs Protocol1 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. Protocol1 should still be located. |
| 5.1.4.3.44 | 0x026166c4, 0x14df, 0x4b40, 0x82, 0xd0, 0x4f, 0x0a, 0x9d, 0x4f, 0x97, 0xd3 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Load an EFI runtime services driver which opens Protocol2 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |
| 5.1.4.3.45 | 0x8cbea92b, 0x2cbf, 0x4660, 0x97, 0x0f, 0x95, 0x0a, 0x3c, 0x46, 0xd1, 0x67 | BS.UnloadImage – UnloadImage() unloads started EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Load an EFI runtime services driverthat opens Protocol2 in the entry point, and sets up the Unload() function in DriverBinding.Start() function.  2. Call UnloadImage() to unload the EFI runtime services driver. Protocol2 should still be opened. |

## EFI\_IMAGE\_ENTRY\_POINT

This is the entry point of EFI image. No test case is designed to verify it.

### 

### Exit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.4.5.1 | 0xe2a045da, 0xec4f, 0x4b61, 0xbb, 0x44, 0x18, 0xab, 0xce, 0x47, 0x80, 0xff | BS.Exit – Exit() returns EFI\_INVALID\_PARAMETER with invalid **ImageHandle**. | 1. Call Exit()with NULL or invalid image handle. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.4.5.2 | 0x8300df83, 0xdfdc, 0x4933, 0xa1, 0xc1, 0x19, 0x32, 0x1f, 0x24, 0xd5, 0xf5 | BS.Exit – Exit() exits an unstarted EFI application at EFI\_TPL\_APPLICATION. | 1. Call LoadImage() to load an EFI application.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.3 | 0xfea31754, 0x871d, 0x45e2, 0xb5, 0xdc, 0xbc, 0xbb, 0x7f, 0x99, 0x1d, 0xa9 | BS.Exit – Exit() exits an unstarted EFI application at EFI\_TPL\_CALLBACK. | 1. Call LoadImage() to load an EFI application.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.4 | 0x8dd098c6, 0x9755, 0x4b7c, 0xbe, 0x51, 0xbc, 0xfa, 0x15, 0xfb, 0x34, 0x13 | BS.Exit – Exit() exits an unstarted EFI boot services driver at EFI\_TPL\_APPLICATION. | 1. Call LoadImage() to load an EFI boot services driver.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.5 | 0xa557943e, 0x7aa0, 0x42c0, 0x9a, 0x87, 0x2f, 0xde, 0x4e, 0x32, 0x1d, 0xa9 | BS.Exit – Exit() exits an unstarted EFI boot services driver at EFI\_TPL\_CALLBACK. | 1. Call LoadImage() to load an EFI boot services driver.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.6 | 0x7446e86b, 0xcb74, 0x47b1, 0xab, 0x9a, 0x58, 0x37, 0x6a, 0xa7, 0x7a, 0xbd | BS.Exit – Exit() exits an unstarted EFI runtime services driver at EFI\_TPL\_APPLICATION. | 1. Call LoadImage() to load an EFI runtime services driver.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.7 | 0x0b8c9ac6, 0xc469, 0x465e, 0xa8,0xc6, 0x50, 0xfa, 0xab, 0xeb, 0x86, 0x2b | BS.Exit – Exit() exits an unstarted EFI runtime services driver at EFI\_TPL\_CALLBACK. | 1. Call LoadImage() to load an EFI runtime services driver.  2. Call Exit() to unload the unstarted image. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.8 | 0xbcfbdc03, 0x1b40, 0x4637, 0xb2, 0x9f, 0xbb, 0x4b, 0x1c, 0x98, 0xf4, 0xc7 | BS.Exit – Exit() returns EFI\_INVALID\_PARAMETER with started image at EFI\_TPL\_CALLBACK. | 1. Call LoadImage() to load an EFI application, an EFI boot services driver, and an EFI runtime services driver.  2. Call StartImage() to start them.  3. Call Exit() to unload the started images. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.4.5.9 | 0x245f4a63, 0x30bb, 0x4feb, 0xa2, 0x80, 0x80, 0x66, 0xa7, 0x00, 0x9d, 0xb8 | BS.Exit – Exit() returns EFI\_INVALID\_PARAMETER with started image at EFI\_TPL\_APPLICATION. | 1. Call LoadImage() to load an EFI application, an EFI boot services driver, and an EFI runtime services driver.  2. Call StartImage() to start them.  3. Call Exit() to unload the started images. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.1.4.5.10 | 0x9ee96cf8, 0xaefd, 0x4eb4, 0xab, 0x62, 0x0b, 0x57, 0x3d, 0x9f, 0x7f, 0x67 | BS.Exit – Exit() exits an EFI application in its entry point. | 1. Call LoadImage() to load an EFI application in which Exit() is invoked with a successful exit code in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.11 | 0xb8a2b65d, 0xfe9c, 0x4eee, 0xab, 0x58, 0xd6, 0xf5, 0x4d, 0x38, 0x74, 0x29 | BS.Exit – Exit() exits an EFI application in its entry point. | 1. Call LoadImage() to load an EFI application in which Protocol3 is installed and uninstalled, and Exit() is invoked with a successful exit code in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.12 | 0x6ad85f56, 0xcf1d, 0x468c, 0xa9, 0x35, 0x10, 0xc4, 0x72, 0x72, 0xbf, 0x19 | BS.Exit – Exit() exits an EFI application in its entry point. | 1. Call LoadImage() to load an EFI application in which Protocol4 is opened, and Exit() is invoked with a successful exit code in its entry point.  2. Call StartImage() to start it. Protocol4 should not be opened. |
| 5.1.4.5.13 | 0x73d43440, 0x619a, 0x45d7, 0x9d, 0x37, 0xaa, 0xb7, 0xca, 0x34, 0x4f, 0x4d | BS.Exit – Exit() exits an EFI application in its entry point. | 1. Call LoadImage() to load an EFI application in which Exit() is invoked with a successful exit code, and after Exit a variable is set in its entry point.  2. Call StartImage() to start it. The variable should not be set. |
| 5.1.4.5.14 | 0xbd9dae62, 0xab61, 0x40b0, 0x8f, 0xbc, 0xdd, 0xc8, 0x39, 0xcc, 0x18, 0x62 | BS.Exit – Exit() exits an EFI application in its entry point with error code. | 1. Call LoadImage() to load an EFI application in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.5.15 | 0x6059ace5, 0xb01c, 0x4886, 0xb9, 0xf3, 0xd0, 0x72, 0x61, 0x2c, 0xfc, 0x44 | BS.Exit – Exit() exits an EFI application in its entry point with error code. | 1. Call LoadImage() to load an EFI application in which Protocol3 is installed and uninstalled, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.16 | 0xfae6a2d2, 0x0b34, 0x48af, 0x97, 0x0c, 0xe6, 0x84, 0xa5, 0x05, 0x9b, 0x0d | BS.Exit – Exit() exits an EFI application in its entry point with error code. | 1. Call LoadImage() to load an EFI application in which Protocol4 is opened, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. Protocol4 should not be opened. |
| 5.1.4.5.17 | 0x7ef5b4f4, 0xd07a, 0x4610, 0x91, 0xc9, 0x4f, 0x2b, 0x6a, 0x2e, 0xd0, 0x68 | BS.Exit – Exit() exits an EFI application in its entry point with error code. | 1. Call LoadImage() to load an EFI application in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return **ExitData** should be the same as in EFI application. |
| 5.1.4.5.18 | 0x4e3985c7, 0x65ac, 0x4cd2, 0x89, 0xba, 0x57, 0x81, 0xad, 0xd5, 0xd1, 0x47 | BS.Exit – Exit() exits an EFI application in its entry point with error code. | 1. Call LoadImage() to load an EFI application in which Exit() is invoked with a successful exit code, and after Exit a variable is set in its entry point.  2. Call StartImage() to start it. The variable should not be set. |
| 5.1.4.5.19 | 0xb35676e3, 0xcd57, 0x4df0, 0xba, 0x3a, 0xd3, 0x24, 0x77, 0x44, 0xca, 0x4f | BS.Exit – Exit() exits an EFI boot services driver in its entry point. | 1. Call LoadImage() to load an EFI boot services driver in which Exit() is invoked with a successful exit code in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.20 | 0x66e31a54, 0xb900, 0x410f, 0xbe, 0xa2, 0x25, 0x8e, 0x6b, 0x98, 0x3e, 0xf8 | BS.Exit – Exit() exits an EFI boot services driver in its entry point. | 1. Call LoadImage() to load an EFI boot services driver in which Protocol3 is installed, and Exit() is invoked with a successful exit code in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.21 | 0x8a01c7fb, 0xee3c, 0x4e7f, 0x8b, 0xc9, 0xfb, 0xe0, 0x3d, 0x69, 0xaf, 0x3f | BS.Exit – Exit() exits an EFI boot services driver in its entry point. | 1. Call LoadImage() to load an EFI boot services driver in which Protocol3 is installed, and Exit() is invoked with a successful exit code in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. Protocol3 should be located. |
| 5.1.4.5.22 | 0xec2e0e5a, 0xac2e, 0x4f31, 0x9f, 0x39, 0xc7, 0x0a, 0xb1, 0x76, 0x0e, 0x82 | BS.Exit – Exit() exits an EFI boot services driver in its entry point. | 1. Call LoadImage() to load an EFI boot services driver in which Protocol4 is opened, and Exit() is invoked with success exit code in its entry point.  2. Call StartImage() to start it. Protocol4 should be opened. |
| 5.1.4.5.23 | 0xea28a835, 0xcfaa, 0x4d4a, 0x8f, 0xf3, 0x13, 0xea, 0x84, 0x7e, 0x8f, 0xf2 | BS.Exit – Exit() exits an EFI boot services driver in its entry point. | 1. Call LoadImage() to load an EFI boot services driver in which Exit() is invoked with a successful exit code, and after Exit an variable is set in its entry point.  2. Call StartImage() to start it. The variable should not be set. |
| 5.1.4.5.24 | 0x17a5a71f, 0xc831, 0x469a, 0xbf, 0x84, 0x72, 0xc6, 0xc3, 0xd5, 0xd5, 0xac | BS.Exit – Exit() exits an EFI boot services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI boot services driver in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.5.25 | 0xd9143e4b, 0xab3d, 0x4a80, 0xa6, 0xee, 0xe3, 0xd8, 0x92, 0x50, 0x8b, 0x47 | BS.Exit – Exit() exits an EFI boot services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI boot services driver in which Protocol3 is installed, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.26 | 0xce9000ba, 0xb4a8, 0x4f89, 0xaf, 0x2a, 0x99, 0x4a, 0x8c, 0xf8, 0x7b, 0xcd | BS.Exit – Exit() exits an EFI boot services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI boot services driver in which Protocol4 is opened, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. Protocol4 should be opened. |
| 5.1.4.5.27 | 0xb9868240, 0x9b8d, 0x4e5d, 0x8b, 0x22, 0x21, 0xce, 0x0a, 0xee, 0x0a, 0x91 | BS.Exit – Exit() exits an EFI boot services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI boot services driver in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return ExitData should be the same as in EFI application. |
| 5.1.4.5.28 | 0x5a639776, 0x7d9c, 0x4775, 0xaa, 0x37, 0x2d, 0xb9, 0x55, 0x28, 0x64, 0xea | BS.Exit – Exit() exits an EFI runtime services driver in its entry point. | 1. Call LoadImage() to load an EFI runtime services driver in which Exit() is invoked with a successful exit code in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_SUCCESS. |
| 5.1.4.5.29 | 0x85aedeeb, 0x351b, 0x4359, 0x8d, 0xb6, 0xbc, 0x4d, 0x58, 0x87, 0x64, 0x31 | BS.Exit – Exit() exits an EFI runtime services driver in its entry point. | 1. Call LoadImage() to load an EFI runtime services driver in which Protocol3 is installed, and Exit() is invoked with a successful exit code in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.30 | 0x89f38a82, 0x295a, 0x4388, 0x8a, 0x25, 0x3e, 0x23, 0xe1, 0xeb, 0x96, 0xef | BS.Exit – Exit() exits an EFI runtime services driver in its entry point. | 1. Call LoadImage() to load an EFI runtime services driver in which Protocol3 is installed, and Exit() is invoked with a successful exit code in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. Protocol3 should be located. |
| 5.1.4.5.31 | 0x957ab7aa, 0x0eef, 0x48cc, 0xb2, 0x25, 0xa0, 0x11, 0xd8, 0x81, 0xe6, 0x81 | BS.Exit – Exit() exits an EFI runtime services driver in its entry point. | 1. Call LoadImage() to load an EFI runtime services driver in which Protocol4 is opened, and Exit() is invoked with a successful exit code in its entry point.  2. Call StartImage() to start it. Protocol4 should be opened. |
| 5.1.4.5.32 | 0x04fb22ab, 0x6cf6, 0x411f, 0x85, 0x90, 0x28, 0x9c, 0x02, 0x03, 0xcc, 0x36 | BS.Exit – Exit() exits an EFI runtime services driver in its entry point. | 1. Call LoadImage() to load an EFI runtime services driver in which Exit() is invoked with a successful exit code, and after Exit an variable is set in its entry point.  2. Call StartImage() to start it. The variable should not be set. |
| 5.1.4.5.33 | 0x683163f8, 0x1e56, 0x49e3, 0xa7, 0x9e, 0x9f, 0xea, 0x90, 0x46, 0x4a, 0x18 | BS.Exit – Exit() exits an EFI runtime services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI runtime services driver in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return code should be EFI\_DEVICE\_ERROR. |
| 5.1.4.5.34 | 0x047da922, 0xfdcc, 0x4be2, 0xbb, 0x14, 0x29, 0x79, 0x18, 0xf8, 0x03, 0x1c | BS.Exit – Exit() exits an EFI runtime services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI runtime services driver in which Protocol3 is installed, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Register a notify function to Protocol3’s installation.  3. Call StartImage() to start it. The notify function should be invoked. |
| 5.1.4.5.35 | 0x1a133e13, 0xcb01, 0x4297, 0xaf, 0x19, 0x03, 0xd7, 0x46, 0x06, 0x8b, 0xaa | BS.Exit – Exit() exits an EFI runtime services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI runtime services driver in which Protocol4 is opened, and Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. Protocol4 should be opened. |
| 5.1.4.5.36 | 0x85c85f4d, 0x519b, 0x4b98, 0xbc, 0x7a, 0x94, 0x47, 0xcc, 0x27, 0xf6, 0x1e | BS.Exit – Exit() exits an EFI runtime services driver in its entry point with error code. | 1. Call LoadImage() to load an EFI runtime services driver in which Exit() is invoked with exit code EFI\_DEVICE\_ERROR in its entry point.  2. Call StartImage() to start it. The return ExitData should be same as in EFI application. |

### ExitBootServices()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.4.6.1 | 0xa5bb81fa, 0x1063, 0x4358, 0x97, 0xaf, 0xad, 0x57, 0xd4, 0x2b, 0xf0, 0x55 | BS.ExitBootServices – ExitBootServices() returns EFI\_INVALID\_PARAMETER with invalid MapKey | 1. Call ExitBootServices() with invalid MapKey, The return code should be EFI\_INVALID\_PARAMETER. |

## Misc Boot Services Test

Reference Document:

*UEFI Specification*, Miscellaneous Boot Services Section.

* Miscellaneous Boot Services Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| SetWatchdogTimer() | Boot | Resets and sets a watchdog timer used during boot services time. |
|  | Boot | Stalls the processor. |
|  | Boot | Copies the contents of one buffer to another buffer. |
|  | Boot | Fills a buffer with a specified value. |
| GetNextMonotonicCount() | Boot | Returns a monotonically increasing count for the platform. |
| InstallConfigurationTable() | Boot | Adds, updates, or removes a configuration table from the EFI System Table. |
| CalculateCrc32() | Boot | Computes and returns a 32-bit CRC for a data buffer. |

### SetWatchdogTimer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.5.1.1 | 0x9f677836, 0x5175, 0x4fdf, 0x85, 0x2e, 0xe8, 0xfd, 0x46, 0x53, 0xb2, 0x1c | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_APPLICATION | 1. Call SetWatchdogTimer() with Timeout is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.2 | 0xea8d88ac, 0x05b1, 0x4d69, 0xbb, 0xc1, 0xa0, 0x72, 0x04, 0x2f, 0xb8, 0x98 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_CALLBACK | 1. Call SetWatchdogTimer() with Timeout is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.3 | 0xa6d41372, 0x4cce, 0x4e11, 0x8d, 0x84, 0xc3, 0x35, 0x46, 0x0a, 0xe1, 0xaf | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_NOTIFY | 1. Call SetWatchdogTimer() with Timeout is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.4 | 0x4cd2a140, 0x94e1, 0x448c, 0x99, 0xe7, 0xd4, 0xf5, 0x3b, 0xd8, 0x45, 0x44 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_APPLICATION | 1. Call SetWatchdogTimer() with Timeout is 5 seconds.  2. Call Stall() with 3.5 seconds.  3. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.5 | 0x3d3bee76, 0x3be8, 0x40dd, 0xbd, 0x34, 0xc3, 0x8a, 0xfe, 0x2b, 0xbd, 0xeb | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_CALLBACK | 1. Call SetWatchdogTimer() with Timeout is 5 seconds.  2. Call Stall() with 3.5 seconds.  3. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.6 | 0x79bcdd1e, 0x1ce2, 0x4a08, 0xaf, 0x85, 0xe8, 0xe8, 0xc1, 0xda, 0x88, 0xbe | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_NOTIFY | 1. Call SetWatchdogTimer() with Timeout is 5 seconds.  2. Call Stall() with 3.5 seconds.  3. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.7 | 0x021fae0d, 0xcca8, 0x4658, 0x92, 0xab, 0x40, 0x37, 0xc2, 0x23, 0xe8, 0x0f | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_APPLICATION | 1. Call SetWatchdogTimer() with Timeout is 5 seconds.  2. Call Stall() with 6.5 seconds. The system should be reset in stall. |
| 5.1.5.1.8 | 0x13dcf833, 0x8209, 0x43d3, 0xb6, 0x70, 0x30, 0x8c, 0x35, 0x2b, 0x51, 0x1f | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_CALLBACK | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call Stall() with 6.5 seconds. The system should be reset in stall. |
| 5.1.5.1.9 | 0xa2e5497c, 0xac0a, 0x428a, 0xbc, 0x6d, 0xf5, 0x12, 0xfb, 0xc0, 0x70, 0x70 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer at EFI\_TPL\_NOTIFY | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call Stall() with 6.5 seconds. The system should be reset in stall. |
| 5.1.5.1.10 | 0x6cf828d1, 0x1871, 0x4bfe, 0x8c, 0x07, 0x71, 0x14, 0x03, 0x7a, 0x0d, 0x7f | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.11 | 0x0af6cd64, 0x1ad9, 0x4e60, 0x97, 0x38, 0x41, 0x4a, 0xe4, 0x73, 0x77, 0x10 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.12 | 0xd6c8200e, 0xf3e0, 0x46ed, 0xb0, 0x14, 0xfe, 0x35, 0x7d, 0xe4, 0xa1, 0xa7 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.13 | 0xf2eb72b7, 0x07ec, 0x4d8e, 0xb6, 0x0f, 0x2c, 0x60, 0xf8, 0x53, 0xbb, 0x62 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.14 | 0xf0e7c390, 0x9d0f, 0x42ca, 0x91, 0x15, 0x42, 0x31, 0x30, 0x1a, 0x54, 0x50 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.15 | 0xf60fc2cb, 0x12df, 0x4147, 0xb0, 0x87, 0x77, 0x8e, 0x9e, 0xdb, 0xa3, 0xb9 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds. The return code must be EFI\_SUCCESS. |
| 5.1.5.1.16 | 0x6c75d979, 0x2e6f, 0x4185, 0x84, 0xa3, 0x6b, 0xd0, 0x90, 0x36, 0x15, 0x4a | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 8.5 seconds.  4. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.17 | 0xe728070e, 0x3393, 0x4798, 0xa2, 0x1a, 0x8e, 0x53, 0x40, 0xb3, 0xfc, 0x61 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 8.5 seconds.  4. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.18 | 0xe70ae9bb, 0x403b, 0x42ff, 0x8f, 0x64, 0xa4, 0xdf, 0xf9, 0x24, 0x29, 0xed | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 8.5 seconds.  4. Call SetWatchdogTimer() to disable the watchdog timer. The system should not be reset. |
| 5.1.5.1.19 | 0xf799cc16, 0xaccb, 0x4d6d, 0xa8, 0x61, 0x90, 0x6c, 0x6a, 0xea, 0x65, 0x09 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 11.5 seconds. The system should be reset in stall. |
| 5.1.5.1.20 | 0xbb913ccf, 0x026f, 0x4e83, 0xa3, 0x86, 0x24, 0x81, 0xa1, 0xe5, 0x87, 0x6a | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 11.5 seconds. The system should be reset in stall. |
| 5.1.5.1.21 | 0x135894cb, 0xc6e3, 0x4345, 0xb0, 0x3b, 0xfd, 0x36, 0x97, 0x10, 0x3f, 0x03 | BS.SetWatchdogTimer – SetWatchdogTimer() enables the watchdog timer twice at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() again with **Timeout** is 10 seconds.  3. Call Stall() with 11.5 seconds. The system should be reset in stall. |
| 5.1.5.1.22 | 0x0143203e, 0x56b4, 0x40a3, 0x9e, 0x82, 0xfe, 0xb9, 0x38, 0xb2, 0x68, 0xa0 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.23 | 0x3cb96e47, 0xec97, 0x4bd1, 0x85, 0x03, 0xa6, 0xcf, 0x2f, 0xd6, 0x15, 0x15 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.24 | 0xb7d32717, 0xc4af, 0x41ca, 0xab, 0xf7, 0xc3, 0xd2, 0xf8, 0xd2, 0xa9, 0xb1 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.25 | 0x2d2ef875, 0x4ca4, 0x49c1, 0xb4, 0xb3, 0x42, 0x30, 0x4c, 0xdb, 0x4d, 0x01 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.26 | 0xae9638a4, 0xad2e, 0x426b, 0xb3, 0x2f, 0x25, 0x1d, 0x02, 0x09, 0xf6, 0x1b | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.27 | 0x6d1ada77, 0x43fa, 0x4502, 0x87, 0x71, 0xea, 0xbf, 0x48, 0xff, 0x9b, 0x90 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.28 | 0x2fdd96ef, 0x8b9f, 0x4a4e, 0xa3, 0xb7, 0xae, 0x13, 0xf8, 0x17, 0xbd, 0x2b | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer twice at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.29 | 0x55b55a8a, 0x0adb, 0x4ad0, 0xac, 0x45, 0x83, 0xf4, 0xf9, 0x55, 0x6d, 0x61 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer twice at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.30 | 0x67f3f8fc, 0x56dd, 0x49b9, 0xad, 0x13, 0x17, 0x84, 0x4e, 0xf6, 0x54, 0xeb | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer twice at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again. The return code should be EFI\_SUCCESS. |
| 5.1.5.1.31 | 0x745345a0, 0x216b, 0x42c0, 0xb2, 0xf5, 0xa7, 0xae, 0x0d, 0x27, 0x75, 0x46 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_APPLICATION. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again.  4. Call Stall() with 6 seconds. The system should not be reset. |
| 5.1.5.1.32 | 0x52279d8d, 0x1a05, 0x4c97, 0x8e, 0x09, 0x16, 0xf7, 0x15, 0x3c, 0xac, 0x3f | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_CALLBACK. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again.  4. Call Stall() with 6 seconds. The system should not be reset. |
| 5.1.5.1.33 | 0x6d2dfb29, 0x4989, 0x4b89, 0xb7, 0x0a, 0x77, 0xfe, 0x56, 0x2a, 0x0a, 0x79 | BS.SetWatchdogTimer – SetWatchdogTimer() disables the watchdog timer at EFI\_TPL\_NOTIFY. | 1. Call SetWatchdogTimer() with **Timeout** is 5 seconds.  2. Call SetWatchdogTimer() with **Timeout** is 0 seconds to disable it.  3. Call SetWatchdogTimer() with **Timeout** is 0 seconds again.  4. Call Stall() with 6 seconds. The system should not be reset. |

### Stall()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.5.2.1 | 0x9c41568f, 0xa409, 0x4951, 0x9a, 0xc8, 0xd2, 0x70, 0xfa, 0x62, 0xf8, 0xfa | BS.Stall – Stall() returns EFI\_SUCCESS with 10 seconds at EFI\_TPL\_APPLICATION. | 1. Call Stall() with **Microseconds** is 10000000. The return code should be EFI\_SUCCESS. |
| 5.1.5.2.2 | 0x10c23746, 0xd001, 0x400a, 0xbe, 0xf8, 0x57, 0x7f, 0x48, 0x59, 0x0d, 0x7a | BS.Stall – Stall() returns EFI\_SUCCESS with 10 seconds at EFI\_TPL\_CALLBACK. | 1. Call Stall() with **Microseconds** is 10000000. The return code should be EFI\_SUCCESS. |
| 5.1.5.2.3 | 0x4d35fc36, 0xca2d, 0x45db, 0xb9, 0x24, 0x16, 0x77, 0x10, 0xc3, 0x2c, 0xe1 | BS.Stall – Stall() returns EFI\_SUCCESS with 10 seconds at EFI\_TPL\_NOTIFY. | 1. Call Stall() with **Microseconds** is 10000000. The return code should be EFI\_SUCCESS. |
| 5.1.5.2.4 | 0x93313097, 0x5d74, 0x4b92, 0x85, 0x9a, 0xab, 0x54, 0xe1, 0x10, 0xdc, 0xdc | BS.Stall – Stall() stalls the specified duration with 10 seconds at EFI\_TPL\_APPLICATION. | 1. Call Stall() with **Microseconds** is 10000000. The duration should be about 10 seconds. |
| 5.1.5.2.5 | 0xe169d151, 0x3067, 0x424d, 0x9e, 0x5e, 0x0d, 0xd7, 0x41, 0xc8, 0xab, 0x30 | BS.Stall – Stall() stalls the specified duration with 10 seconds at EFI\_TPL\_CALLBACK. | 1. Call Stall() with **Microseconds** is 10000000. The duration should be about 10 seconds. |
| 5.1.5.2.6 | 0x8bcca221, 0x796d, 0x4954, 0x97, 0xd8, 0xbd, 0x13, 0x3b, 0x50, 0xd6, 0x46 | BS.Stall – Stall() stalls the specified duration with 10 seconds at EFI\_TPL\_NOTIFY. | 1. Call Stall() with **Microseconds** is 10000000. The duration should be about 10 seconds. |

### CopyMem()

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| Number | GUID | Assertion | Test Description |
| 5.1.5.3.1 | 0xa26a435c, 0x2e00, 0x4b1a, 0xa7, 0xe1, 0xaa, 0x2a, 0x44, 0xb8, 0x9a, 0xc7 | BS.CopyMem – CopyMem() copies non overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** not overlapped. The source and destination should have the same contents. |
| 5.1.5.3.2 | 0xf0629f29, 0x244c, 0x4360, 0x8f, 0x33, 0xf8, 0x19, 0xbb, 0x73, 0xad, 0x9d | BS.CopyMem – CopyMem() copies non overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** not overlapped. The source and destination should have the same contents. |
| 5.1.5.3.3 | 0x4cff47d5, 0x21e5, 0x4e5c, 0xba, 0x2e, 0xba, 0xee, 0xec, 0x3c, 0xc8, 0x1f | BS.CopyMem – CopyMem() copies non overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** not overlapped. The source and destination should have the same contents. |
| 5.1.5.3.4 | 0xba9e7483, 0xdaaa, 0x455b, 0xa8, 0x1e, 0x4a, 0x9a, 0x39, 0xb2, 0x0d, 0xba | BS.CopyMem – CopyMem() copies fully overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** fully overlapped. The source contents should not be changed. |
| 5.1.5.3.5 | 0x8bed91fa, 0x816b, 0x4024, 0x83, 0xeb, 0xb1, 0x67, 0x81, 0xeb, 0x43, 0xa0 | BS.CopyMem – CopyMem() copies fully overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** fully overlapped. The source contents should not be changed. |
| 5.1.5.3.6 | 0x45f085aa, 0xaf0e, 0x4fa3, 0xb1, 0xfc, 0x62, 0xef, 0x34, 0xc9, 0x7f, 0x8e | BS.CopyMem – CopyMem() copies fully overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** fully overlapped. The source contents should not be changed. |
| 5.1.5.3.7 | 0x319cc445, 0xae39, 0x42bb, 0x99, 0x67, 0x15, 0x0a, 0xc1, 0x62, 0x45, 0xfb | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** in which the top half of source and the bottom half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.8 | 0x46180798, 0x50af, 0x4ac0, 0xa1, 0xe5, 0x74, 0x50, 0x61, 0xf3, 0x17, 0x3f | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** in which the top half of source and the bottom half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.9 | 0xcf0ea49d, 0xb03f, 0x41c8, 0xae, 0xd6, 0x0e, 0x37, 0x6f, 0x80, 0x30, 0x7c | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** in which the top half of source and the bottom half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.10 | 0x1ac0daf5, 0x5dc0, 0x4315, 0xa2, 0xe5, 0x7f, 0x80, 0x18, 0x5e, 0x1d, 0x2c | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** in which the top of source and the bottom of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.11 | 0x0e16a1dd, 0x0aff, 0x451d, 0x80, 0xd6, 0xe3, 0x9c, 0x43, 0x4f, 0xe6, 0xa3 | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** in which the top of source and the bottom of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.12 | 0x268e92a3, 0x7073, 0x428f, 0xbc, 0xfe, 0x32, 0x29, 0xe9, 0x10, 0x66, 0x61 | BS.CopyMem – CopyMem() copies top source overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** in which the top of source and the bottom of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.13 | 0x951403c5, 0x8252, 0x4013, 0x83, 0xd8, 0x51, 0xd0, 0x7e, 0x1d, 0x27, 0x66 | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.14 | 0xc855adf4, 0x3b1f, 0x4317, 0x92, 0xd8, 0x72, 0x56, 0x7b, 0x00, 0xa8, 0xe2 | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.15 | 0x34ac7d4a, 0x00ae, 0x4a95, 0xa3, 0x18, 0xea, 0x5a, 0x47, 0x1f, 0xde, 0xf2 | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.16 | 0xafb876cf, 0xe9c3, 0x4980, 0xb7, 0x40, 0xe4, 0x6d, 0x03, 0x9b, 0xfd, 0xf7 | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.17 | 0x88d469f3, 0x5538, 0x426f, 0x9e, 0x4f, 0x28, 0x3f, 0xe2, 0x7c, 0x25, 0x8b | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.18 | 0x939a7d40, 0x21c1, 0x4472, 0xa7, 0x2e, 0xdd, 0x3f, 0xe2, 0x43, 0x33, 0xe0 | BS.CopyMem – CopyMem() copies bottom source overlapped memory at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Source** and **Destination** in which the bottom half of source and the top half of destination are overlapped. Only 1 byte is not overlapped. The destination contents should be the same as the source before CopyMem(). |
| 5.1.5.3.19 | 0xb3c59c5b, 0x3e34, 0x466e, 0xb4, 0x30, 0x1c, 0x24, 0x8b, 0x1b, 0x41, 0x24 | BS.CopyMem – CopyMem() does not copy memory with **Length** is 0 at EFI\_TPL\_APPLICATION. | 1. Call CopyMem() with the **Length** is 0. The contents in the **Destination** should not be changed. |
| 5.1.5.3.20 | 0x86b68d03, 0x1543, 0x48aa, 0x82, 0xdb, 0xf9, 0x85, 0x6e, 0xcc, 0x71, 0xa6 | BS.CopyMem – CopyMem() does not copy memory with **Length** is 0 at EFI\_TPL\_CALLBACK. | 1. Call CopyMem() with the **Length** is 0. The contents in the **Destination** should not be changed. |
| 5.1.5.3.21 | 0x040d9af9, 0x6e5a, 0x4ddb, 0xa9, 0x93, 0x36, 0xfc, 0x8a, 0xe6, 0x2f, 0xaa | BS.CopyMem – CopyMem() does not copy memory with **Length** is 0 at EFI\_TPL\_NOTIFY. | 1. Call CopyMem() with the **Length** is 0. The contents in the **Destination** should not be changed. |

### SetMem()

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| Number | GUID | Assertion | Test Description |
| 5.1.5.4.1 | 0x9130e120, 0xa8ad, 0x499d, 0x97, 0xb8, 0xed, 0xbe, 0x59, 0x02, 0x64, 0x3a | BS.SetMem – SetMem() sets the specified value at EFI\_TPL\_APPLICATION. | 1. Call SetMem() to set a buffer to a predefined value. The buffer should be filled with the predefined value. |
| 5.1.5.4.2 | 0xc03d5d65, 0xb103, 0x4c35, 0xb3, 0xff, 0xe5, 0x2a, 0xf3, 0xc6, 0x06, 0x3d | BS.SetMem – SetMem() sets the specified value at EFI\_TPL\_CALLBACK. | 1. Call SetMem() to set a buffer to a predefined value. The buffer should be filled with the predefined value. |
| 5.1.5.4.3 | 0xabb87276, 0x13bc, 0x47fa, 0xa5, 0x22, 0xe3, 0xa1, 0x5b, 0x1a, 0x9d, 0xdb | BS.SetMem – SetMem() sets the specified value at EFI\_TPL\_NOTIFY. | 1. Call SetMem() to set a buffer to a predefined value. The buffer should be filled with the predefined value. |
| 5.1.5.4.4 | 0x0db11970, 0xcd34, 0x4a38, 0xaa, 0x89, 0xb4, 0xb8, 0xd5, 0xc2, 0x19, 0x78 | BS.SetMem – SetMem() does not set memory with **Size** is 0 at EFI\_TPL\_APPLICATION. | 1. Call SetMem() with **Size** is 0. The contents in the buffer should not be changed. |
| 5.1.5.4.5 | 0x37833e1b, 0xd882, 0x4614, 0xa8, 0x58, 0xfb, 0x96, 0x88, 0xf9, 0x9b, 0x1d | BS.SetMem – SetMem() does not set memory with **Size** is 0 at EFI\_TPL\_CALLBACK. | 1. Call SetMem() with **Size** is 0. The contents in the buffer should not be changed. |
| 5.1.5.4.6 | 0x198b78c3, 0xaf1e, 0x4d41, 0xa4, 0x41, 0xd1, 0xaf, 0x67, 0x0b, 0xa7, 0xbf | BS.SetMem – SetMem() does not set memory with **Size** is 0 at EFI\_TPL\_NOTIFY. | 1. Call SetMem() with **Size** is 0. The contents in the buffer should not be changed. |
| 5.1.5.4.7 | 0xfb7fb608, 0x6d80, 0x47bd, 0x89, 0x7c, 0x17, 0xbf, 0x76, 0xde, 0x8f, 0x1c | BS.SetMem – SetMem() sets not 4-byte aligned memory at EFI\_TPL\_APPLICATION. | 1. Call SetMem() to set a buffer to a predefined value. The **Buffer** is not 4-byte aligned. The buffer should be filled with the predefined value. |
| 5.1.5.4.8 | 0x54927bc1, 0xbf3c, 0x4711, 0xa9, 0x1e, 0xb1, 0xe0, 0x1a, 0xa3, 0xcd, 0x64 | BS.SetMem – SetMem() sets not 4-byte aligned memory at EFI\_TPL\_CALLBACK. | 1. Call SetMem() to set a buffer to a predefined value. The **Buffer** is not 4-byte aligned. The buffer should be filled with the predefined value. |
| 5.1.5.4.9 | 0x78c81526, 0xe99c, 0x4596, 0xbe, 0x1e, 0x5f, 0x34, 0x3f, 0x2b, 0x2a, 0x03 | BS.SetMem – SetMem() sets not 4-byte aligned memory at EFI\_TPL\_NOTIFY. | 1. Call SetMem() to set a buffer to a predefined value. The **Buffer** is not 4-byte aligned. The buffer should be filled with the predefined value. |

### GetNextMonotonicCount()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.5.5.1 | 0x0b749aae, 0xb782, 0x4cf3, 0xaf, 0x4e, 0xa4, 0x3a, 0xc7, 0x34, 0x5e, 0x79 | BS.GetNextMonotonicCount – GetNextMonotonicCount() returns EFI\_INVALID\_PARAMETER with **Count** is NULL. | 1. Call GetNextMonotonicCount() with **Count** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.5.5.2 | 0xfdb43f9c, 0x91aa, 0x4628, 0xb9, 0xf7, 0xab, 0xaa, 0xf6, 0x9c, 0xc2, 0x99 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the current count at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the current count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.3 | 0xd2f8b66f, 0x0b7f, 0x437e, 0x9c, 0x98, 0xea, 0x72, 0x67, 0xe1, 0xbc, 0xa9 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the current count at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the current count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.4 | 0x31ee957c, 0x2ac5, 0x4e81, 0xaa, 0x21, 0x48, 0xd3, 0xff, 0x9c, 0x26, 0xcb | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the current count at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the current count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.5 | 0x730b532e, 0xb45f, 0x4a33, 0xab, 0x22, 0x50, 0x97, 0xe9, 0x9f, 0x1d, 0xc4 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.6 | 0x60f6eb2f, 0x8445, 0x4c51, 0xa3, 0xaf, 0xcf, 0xc9, 0x3f, 0xb4, 0x4e, 0x5e | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.7 | 0x07e69104, 0xda46, 0x47b1, 0xb5, 0x8f, 0xa7, 0x41, 0xf7, 0x9a, 0x6b, 0x78 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.8 | 0xca4ef318, 0xd9a1, 0x4868, 0xb6, 0xd7, 0xf9, 0x96, 0x41, 0xa1, 0xe2, 0xe8 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return **Count** should be the previous **Count** + 1. |
| 5.1.5.5.9 | 0x6ba5a056, 0xb175, 0x452a, 0x9b, 0x2a, 0x28, 0x3b, 0x1c, 0xc3, 0x28, 0xfb | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return **Count** should be the previous **Count** + 1. |
| 5.1.5.5.10 | 0xe0f339b3, 0xa5ce, 0x42d3, 0xbe, 0x07, 0x67, 0x7b, 0xfa, 0x65, 0x45, 0xd9 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the increasing count at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the current count.  2. GetNextMonotonicCount() to get the count again. The return **Count** should be the previous **Count** + 1. |
| 5.1.5.5.11 | 0x1e49030e, 0x9c2e, 0x4df5, 0xb1, 0x52, 0x46, 0xb3, 0x57, 0xa4, 0xe5, 0x06 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.12 | 0x2e10dcf6, 0xe693, 0x492e, 0x9e, 0x34, 0xe6, 0x94, 0x58, 0x31, 0x46, 0xde | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.13 | 0x7eaae4e3, 0x50b5, 0x4031, 0xa2, 0xab, 0xcf, 0x9c, 0x76, 0xb1, 0x9b, 0xde | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the count. The return codes should be EFI\_SUCCESS. |
| 5.1.5.5.14 | 0x0878d690, 0x406e, 0x4167, 0xab, 0x44, 0x67, 0x65, 0xec, 0xe0, 0xcc, 0x95 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.15 | 0x958d838a, 0x21a7, 0x4e5b, 0xa0, 0xe6, 0x75, 0x57, 0x74, 0x55, 0xeb, 0xed | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.16 | 0x9611aa6e, 0x85bc, 0x4e20, 0xac, 0x54, 0x68, 0x78, 0xd4, 0xbd, 0xa7, 0x54 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The return code should be EFI\_SUCCESS. |
| 5.1.5.5.17 | 0xf48d1c2d, 0x1eba, 0x4e4c, 0xa1, 0x6d, 0x74, 0x8a, 0x01, 0xab, 0xe6, 0xc1 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_APPLICATION. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The high 32-bit of return count should be the previous 32-bit value + 1. |
| 5.1.5.5.18 | 0xe8b96ea0, 0x6413, 0x4947, 0xad, 0x1a, 0x31, 0xee, 0xf8, 0x68, 0xa3, 0x72 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_CALLBACK. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The high 32-bit of return count should be the previous 32-bit value + 1. |
| 5.1.5.5.19 | 0x0ec16c83, 0x177d, 0x461a, 0x96, 0x22, 0x42, 0x50, 0x8c, 0x99, 0xd9, 0x66 | BS.GetNextMonotonicCount – GetNextMonotonicCount() gets the high 32-bit after reset at EFI\_TPL\_NOTIFY. | 1. Call GetNextMonotonicCount() to get the count. Record the high 32-bit value of return count.  2. Reset the system.  3. Call GetNextMonotonicCount() to get the count. The high 32-bit of return count should be the previous 32-bit value + 1. |

### InstallConfigurationTable()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.5.6.1 | 0x12855ef2, 0x5ec3, 0x46ee, 0x84, 0x3a, 0xe5, 0xa8, 0xf3, 0xd5, 0x7b, 0xa4 | BS.InstallConfigurationTable – InstallConfigurationTable() returns EFI\_INVALID\_PARAMETER with **Guid** is NULL. | 1. Call InstallConfigurationTable() with the **Guid** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.5.6.2 | 0x7a96cefe, 0x452c, 0x4ea1, 0x8c, 0x75, 0xd9, 0x03, 0x4e, 0x92, 0xed, 0x84 | BS.InstallConfigurationTable – InstallConfigurationTable() returns EFI\_NOT\_FOUND with **Guid** is not present. | 1. Call InstallConfigurationTable() with the **Guid** is not present in the System Table and **Table** is NULL. The return code must be EFI\_NOT\_FOUND. |
| 5.1.5.6.3 | 0x31f1c3b2, 0x08ca, 0x404f, 0x8f, 0x4a, 0xbe, 0x94, 0x2c, 0xab, 0x1c, 0x49 | BS.InstallConfigurationTable –InstallConfigurationTable() adds a new table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.4 | 0xb4d87dcf, 0xa731, 0x4fa7, 0xa9, 0xf1, 0xd8, 0xcf, 0xf2, 0x31, 0x76, 0xff | BS.InstallConfigurationTable – InstallConfigurationTable() adds a new table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.5 | 0xce67f821, 0x1add, 0x44b9, 0xa2, 0x9d, 0x9d, 0x25, 0x4c, 0x08, 0x83, 0x78 | BS.InstallConfigurationTable – InstallConfigurationTable() adds a new table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.6 | 0xd7580a1c, 0xd410, 0x4fe8, 0x93, 0xfc, 0x0b, 0xfe, 0x0b, 0xe8, 0x0d, 0xee | BS.InstallConfigurationTable – InstallConfigurationTable() gets an existing table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.7 | 0x3dc7344c, 0x55aa, 0x4b75, 0xbe, 0x44, 0xca, 0x3a, 0x37, 0xf0, 0xfb, 0x3d | BS.InstallConfigurationTable – InstallConfigurationTable() gets an existing table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.8 | 0xeb2460f0, 0x07cc, 0x43a5, 0x8d, 0xa9, 0x79, 0xed, 0x3d, 0x1f, 0x08, 0xd0 | BS.InstallConfigurationTable – InstallConfigurationTable() gets an existing table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The return codes should be EFI\_SUCCESS. |
| 5.1.5.6.9 | 0xe0e73667, 0x8cb8, 0x4839, 0xa9, 0x7a, 0x99, 0x0e, 0xb4, 0x3b, 0xfc, 0xfd | BS.InstallConfigurationTable – After added system table has corrected CRC32 at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The system table should have a correct CRC32 value. |
| 5.1.5.6.10 | 0xea5a3a8e, 0x9579, 0x4a3c, 0x84, 0xb3, 0x0f, 0xb9, 0x22, 0x00, 0x99, 0x18 | BS.InstallConfigurationTable – After added system table has corrected CRC32 at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The system table should have a correct CRC32 value. |
| 5.1.5.6.11 | 0xa1cefe6d, 0xe33d, 0x418f, 0x9f, 0xff, 0x29, 0x3e, 0x75, 0xb1, 0x65, 0xe5 | BS.InstallConfigurationTable – After added system table has corrected CRC32 at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The system table should have a correct CRC32 value. |
| 5.1.5.6.12 | 0xad025b1b, 0x06e0, 0x4ba9, 0x84, 0xc9, 0x25, 0x0c, 0x70, 0xa1, 0x64, 0x35 | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The list of tables should be at **EfiRuntimeServicesData**. |
| 5.1.5.6.13 | 0xc393e4e6, 0x56eb, 0x46d0, 0x9f, 0xbb, 0xe2, 0x9e, 0xea, 0x06, 0x33, 0xd2 | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The list of tables should be at **EfiRuntimeServicesData**. |
| 5.1.5.6.14 | 0xc068f1a8, 0x0f7a, 0x4b5e, 0xa5, 0x9f, 0xce, 0x17, 0xa4, 0x52, 0xf4, 0xba | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() to get the configuration table. The list of tables should be at **EfiRuntimeServicesData**. |
| 5.1.5.6.15 | 0xa8e90505, 0x82c6, 0x48b5, 0x93, 0xda, 0xbf, 0xb0, 0x11, 0x9b, 0x52, 0x0f | BS.InstallConfigurationTable – InstallConfigurationTable() updates an existing table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.16 | 0x6538a9d9, 0x8146, 0x411e, 0xab, 0xa7, 0x90, 0xe5, 0x6e, 0xb5, 0x33, 0x27 | BS.InstallConfigurationTable – InstallConfigurationTable() updates an existing table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.17 | 0x30a1994a, 0xaf85, 0x41fe, 0x8d, 0xd9, 0x60, 0x83, 0x01, 0x76, 0x96, 0x3d | BS.InstallConfigurationTable – InstallConfigurationTable() updates an existing table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.18 | 0xded94f21, 0x2f3d, 0x45aa, 0x86, 0x87, 0xd2, 0x2e, 0x94, 0x2b, 0xa4, 0x3e | BS.InstallConfigurationTable – InstallConfigurationTable() gets the updated table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The updated table should be gotten. |
| 5.1.5.6.19 | 0xccd943d1, 0x356a, 0x49da, 0x9e, 0x18, 0xf1, 0x94, 0x64, 0x83, 0x76, 0x7b | BS.InstallConfigurationTable – InstallConfigurationTable() gets the updated table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The updated table should be gotten. |
| 5.1.5.6.20 | 0x8e1d8ebb, 0x82af, 0x4f46, 0xa4, 0xdc, 0x99, 0x9b, 0x9a, 0x84, 0xb9, 0x6b | BS.InstallConfigurationTable – InstallConfigurationTable() gets the updated table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The updated table should be gotten. |
| 5.1.5.6.21 | 0x1b6c204d, 0x953c, 0x4c6e, 0x98, 0xbf, 0xdc, 0x84, 0x46, 0x04, 0x05, 0x65 | BS.InstallConfigurationTable – After updated system table has corrected CRC32 at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. System table should have a correct CRC32 value. |
| 5.1.5.6.22 | 0xd5cfb42f, 0xc615, 0x4d56, 0x80, 0x54, 0xe5, 0xc1, 0xdd, 0x48, 0xde, 0xf1 | BS.InstallConfigurationTable – After updated system table has corrected CRC32 at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. System table should have a correct CRC32 value. |
| 5.1.5.6.23 | 0x4615f33a, 0x57bf, 0x4706, 0x94, 0x88, 0x60, 0xb2, 0x30, 0xae, 0x9e, 0xf5 | BS.InstallConfigurationTable – After updated system table has corrected CRC32 at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. System table should have a correct CRC32 value. |
| 5.1.5.6.24 | 0x58fc9921, 0x329f, 0x416b, 0xad, 0xad, 0xc5, 0xdf, 0x03, 0xf7, 0xd4, 0xde | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The list of table should be **EfiRuntimeServicesData**. |
| 5.1.5.6.25 | 0x87451a4f, 0xf1e0, 0x4b21, 0x83, 0xcc, 0xa2, 0x9a, 0x3c, 0xfe, 0xde, 0xcf | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The list of table should be **EfiRuntimeServicesData**. |
| 5.1.5.6.26 | 0x0d42b29c, 0x2eee, 0x4634, 0x8e, 0x8e, 0x4d, 0x7f, 0x9f, 0xc7, 0xb3, 0x65 | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID to update the table.  3. Call InstallConfigurationTable() to get the table. The list of table should be **EfiRuntimeServicesData**. |
| 5.1.5.6.27 | 0xa6753a34, 0xfe86, 0x4905, 0x88, 0x50, 0x2c, 0xfb, 0x36, 0xf4, 0x03, 0xb9 | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.28 | 0x3ed6faf5, 0x0482, 0x43a2, 0x8a, 0x43, 0x61, 0xcd, 0x11, 0x1e, 0x03, 0x65 | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.29 | 0x57293d64, 0x128c, 0x4d07, 0x93, 0x73, 0x1d, 0xea, 0x16, 0x4c, 0x61, 0x96 | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The return code should be EFI\_SUCCESS. |
| 5.1.5.6.30 | 0x375247e6, 0x440b, 0x439f, 0xa5, 0x6c, 0x0b, 0xe8, 0x13, 0x39, 0xde, 0x2b | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The table should be removed from configuration tables. |
| 5.1.5.6.31 | 0x3ddfd695, 0x2338, 0x4582, 0xbf, 0x53, 0x63, 0xd2, 0xc3, 0x38, 0x87, 0x3e | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The table should be removed from configuration tables. |
| 5.1.5.6.32 | 0x0988164f, 0xb3e6, 0x40ca, 0x9f, 0x94, 0x19, 0xb2, 0x16, 0x65, 0xb1, 0x70 | BS.InstallConfigurationTable – InstallConfigurationTable() removes the existing table at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The table should be removed from configuration tables. |
| 5.1.5.6.33 | 0xfccbfa48, 0x68a6, 0x4d2f, 0xa6, 0x63, 0xf8, 0x40, 0x6e, 0x00, 0x79, 0x2e | BS.InstallConfigurationTable – After removed system table has corrected CRC32 at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. System table should have a correct CRC32 value. |
| 5.1.5.6.34 | 0xbb1f8b9c, 0x563e, 0x42d9, 0x88, 0x6c, 0x25, 0xa5, 0x1f, 0xbb, 0x26, 0x8f | BS.InstallConfigurationTable – After removed system table has corrected CRC32 at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. System table should have a correct CRC32 value. |
| 5.1.5.6.35 | 0xf4a0a3df, 0xddf9, 0x467d, 0xb0, 0xd3, 0x73, 0xc1, 0x43, 0xda, 0x59, 0x01 | BS.InstallConfigurationTable – After removed system table has corrected CRC32 at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. System table should have a correct CRC32 value. |
| 5.1.5.6.36 | 0xf2130268, 0x6c2f, 0x4629, 0x9e, 0xef, 0x21, 0xa0, 0x64, 0x95, 0x2e, 0x0b | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_APPLICATION. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The list of table should be **EfiRuntimeServicesData**. |
| 5.1.5.6.37 | 0x66333b3e, 0x26f9, 0x4334, 0x9f, 0x90, 0x66, 0x11, 0x05, 0x9d, 0x07, 0xb4 | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_CALLBACK. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The list of table should be **EfiRuntimeServicesData**. |
| 5.1.5.6.38 | 0x5fab38c1, 0x5089, 0x488b, 0xb7, 0x65, 0x4c, 0xe9, 0x76, 0xe4, 0x83, 0x6e | BS.InstallConfigurationTable – The list of tables is in runtime services data at EFI\_TPL\_NOTIFY. | 1. Call InstallConfigurationTable() to add a new configuration table.  2. Call InstallConfigurationTable() with same GUID and NULL table to remove the table. The list of table should be **EfiRuntimeServicesData**. |

### CalculateCrc32()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.1.5.7.1 | 0x3a1d2ad6, 0x743c, 0x47f0, 0x87, 0x51, 0x9f, 0x4a, 0x24, 0xc8, 0xcb, 0xf6 | BS.CalculateCrc32 – CalculateCrc32() returns EFI\_INVALID\_PARAMETER with **Data** is NULL. | 1. Call CalculateCrc32() with the **Data** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.5.7.2 | 0x44f81362, 0xb579, 0x4691, 0xa0, 0x84, 0x40, 0xc2, 0x24, 0x14, 0x0c, 0x84 | BS.CalculateCrc32 – CalculateCrc32() returns EFI\_INVALID\_PARAMETER with **Crc32** is NULL. | 1. Call CalculateCrc32() with the **Crc32** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.5.7.3 | 0xe76d175a, 0xc32f, 0x4279, 0xab, 0x4b, 0x3a, 0x80, 0x6c, 0x97, 0xf4, 0x6b | BS.CalculateCrc32 – CalculateCrc32() returns EFI\_INVALID\_PARAMETER with **DataSize** is 0. | 1. Call CalculateCrc32() when the **DataSize** is 0. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.1.5.7.4 | 0xffbcedcf, 0xcc49, 0x4b4b, 0xa1, 0x70, 0x2f, 0xa8, 0x57, 0x0b, 0x59, 0xd9 | BS.CalculateCrc32 – CalculateCrc32() gets correct value to system table at EFI\_TPL\_APPLICATION. | 1. Store the CRC32 value of the system table and set the CRC32 value of the system table to 0.  2. Call CalculateCrc32() to calculate the CRC32 value of the system table. The calculated value should be the same as the stored value.  3. Restore the CRC32 value of the system table. |
| 5.1.5.7.5 | 0xeb007e3c, 0xd916, 0x4ae6, 0x82, 0x9a, 0x4c, 0x5a, 0x4d, 0x28, 0x2c, 0x18 | BS.CalculateCrc32 – CalculateCrc32() gets correct value to system table at EFI\_TPL\_CALLBACK. | 1. Store the CRC32 value of the system table and set the CRC32 value of the system table to 0.  2. Call CalculateCrc32() to calculate the CRC32 value of the system table. The calculated value should be the same as the stored value.  3. Restore the CRC32 value of the system table. |
| 5.1.5.7.6 | 0x055b72de, 0x02e0, 0x4490, 0xb6, 0x52, 0x95, 0xeb, 0x9e, 0xea, 0x46, 0xc1 | BS.CalculateCrc32 – CalculateCrc32() gets correct value to system table at EFI\_TPL\_NOTIFY. | 1. Store the CRC32 value of the system table and set the CRC32 value of the system table to 0.  2. Call CalculateCrc32() to calculate the CRC32 value of the system table. The calculated value should be the same as the stored value.  3. Restore the CRC32 value of the system table. |

# Services Runtime Services Test

## Variable Services Test

Reference Document:

*UEFI Specification*, Variable Services Section.

* Variable Services Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| |  |  |  |  | | --- | --- | --- | --- | | Number | GUID | Assertion | Test Description | | 5.2.1.1.1 | 0xb0d54fee, 0x2787, 0x4d2d, 0xbf, 0x98, 0x73, 0xa0, 0xcd, 0x7f, 0xe9, 0x5d | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **VariableName** value of NULL. | 1. Call GetVariable() service with a **VariableName** value of NULL. The return code must be EFI\_INVALID\_PARAMETER. | | 5.2.1.1.2 | 0x390c5e26, 0x9b46, 0x4974, 0xb3, 0x2d, 0x2b, 0xb1, 0xd4, 0x05, 0xb0, 0xd7 | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **VendorGuid** value of NULL. | 1. Call GetVariable() service with a **VendorGuid** value of NULL. The return code must be EFI\_INVALID\_PARAMETER. | | 5.2.1.1.3 | 0x176354a6, 0x1088, 0x474f, 0xbf, 0x6f, 0x95, 0x8c, 0x1c, 0xc3, 0x40, 0x8f | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **DataSize** value of NULL. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable while the **DataSize** is NULL. The return code must be EFI\_INVALID\_PARAMETER. | | 5.2.1.1.4 | 0x400ab801, 0xf6c6, 0x4d04, 0xa0, 0x42, 0xa2, 0x15, 0x0b, 0xd5, 0xb6, 0x2a | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **Data** value of NULL. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable while the **Data** is NULL. The return code must be EFI\_INVALID\_PARAMETER. | | 5.2.1.1.5 | 0x9b704b3d, 0x05a4, 0x4147, 0xb2, 0x55, 0x35, 0xbc, 0x3d, 0xd6, 0xcc, 0x24 | RT.GetVariable – GetVariable() returns EFI\_NOT\_FOUND with a nonexistent variable. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to delete the test variable.  3. Call GetVariable() service to get the test variable. The return code must be EFI\_NOT\_FOUND.  4. Call SetVariable() services to insert two variables that are similar to the test variable.  5. Call GetVariable() service to get the test variable. The return code must be EFI\_NOT\_FOUND. | | 5.2.1.1.6 | 0xd3d915a5, 0xe7b0, 0x4417, 0x9c, 0x2e, 0x1a, 0xa8, 0x42, 0x4d, 0x22, 0x2c | RT.GetVariable – GetVariable() returns EFI\_NOT\_FOUND with a nonexistent **VendorGuid**. | 1. Call SetVariable() service to insert a test variable with GUID2.  2. Call GetVariable() service to get the variable with GUID1. The return code must be EFI\_NOT\_FOUND. | | 5.2.1.1.7 | 0x1562ce35, 0x83e7, 0x48a7, 0xad, 0x71, 0xfa, 0xa4, 0xbe, 0x17, 0x88, 0x46 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a **DataSize** value of 0. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable with a **DataSize** value of 0. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned **DataSize** should be the inserted value in step 1. | | 5.2.1.1.8 | 0x121c17d1, 0xbb0e, 0x4e2e, 0xb2, 0xa5, 0x03, 0x86, 0x2f, 0x46, 0xc0, 0x39 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a **DataSize** value of -1. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable with the inserted **DataSize** value of –1. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned **DataSize** should be the inserted value in step 1. | | 5.2.1.1.9 | 0xe542e81c, 0x2020, 0x4f3e, 0xa9, 0xb, 0x67, 0xd4, 0xa8, 0xd1, 0x70, 0xb4 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a *DataSize* value of 0. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with a *DataSize* value of 0 and NULL *Data*. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned *DataSize* should be the inserted value in step 1. | | 5.2.1.1.10 | 0xaa35cc00, 0xc55c, 0x42d8, 0xa6, 0xd4, 0x1e, 0xb4, 0x9d, 0xe3, 0xd7, 0x54 | RT.GetVariable – GetVariable() gets the existing variable without attributes at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable without *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Data* and *DataSize* must be the same as the data written before. | | 5.2.1.1.11 | 0x742a9651, 0x9783, 0x43b8, 0x8c, 0x18, 0x47, 0x04, 0xae, 0x41, 0xc3, 0x34 | RT.GetVariable – GetVariable() gets the existing variable without attributes at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable without *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Data* and *DataSize* must be the same as the data written before. | | 5.2.1.1.12 | 0x90e959d0, 0xbe2c, 0x45fd, 0x85, 0x32, 0x85, 0x21, 0xe4, 0xe0, 0xfb, 0x72 | RT.GetVariable – GetVariable() gets the existing variable with attributes at EFI\_TPL\_APPLICATION | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Attributes*, *Data* and *DataSize* must be the same as the data written before. | | 5.2.1.1.13 | 0x5c8b43b7, 0xec6f, 0x4621, 0xb8, 0x48, 0x6a, 0x40, 0x0f, 0xd8, 0xb3, 0x43 | RT.GetVariable – GetVariable() gets the existing variable with attributes at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Attributes*, *Data* and *DataSize* must be the same as the data written before. |   Get | Runtime | Returns the value of a variable. |
| GetNextVariableName() | Runtime | Enumerates the current variable names. |
|  | Runtime | Sets the value of a variable. |
| QueryVariableInfo() | Runtime | Queries the information about the variables. |

* GetVariable()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.1.1.1 | 0xb0d54fee, 0x2787, 0x4d2d, 0xbf, 0x98, 0x73, 0xa0, 0xcd, 0x7f, 0xe9, 0x5d | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **VariableName** value of NULL. | 1. Call GetVariable() service with a **VariableName** value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.1.2 | 0x390c5e26, 0x9b46, 0x4974, 0xb3, 0x2d, 0x2b, 0xb1, 0xd4, 0x05, 0xb0, 0xd7 | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **VendorGuid** value of NULL. | 1. Call GetVariable() service with a **VendorGuid** value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.1.3 | 0x176354a6, 0x1088, 0x474f, 0xbf, 0x6f, 0x95, 0x8c, 0x1c, 0xc3, 0x40, 0x8f | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **DataSize** value of NULL. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable while the **DataSize** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.1.4 | 0x400ab801, 0xf6c6, 0x4d04, 0xa0, 0x42, 0xa2, 0x15, 0x0b, 0xd5, 0xb6, 0x2a | RT.GetVariable – GetVariable() returns EFI\_INVALID\_PARAMETER with a **Data** value of NULL. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable while the **Data** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.1.5 | 0x9b704b3d, 0x05a4, 0x4147, 0xb2, 0x55, 0x35, 0xbc, 0x3d, 0xd6, 0xcc, 0x24 | RT.GetVariable – GetVariable() returns EFI\_NOT\_FOUND with a nonexistent variable. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to delete the test variable.  3. Call GetVariable() service to get the test variable. The return code must be EFI\_NOT\_FOUND.  4. Call SetVariable() services to insert two variables that are similar to the test variable.  5. Call GetVariable() service to get the test variable. The return code must be EFI\_NOT\_FOUND. |
| 5.2.1.1.6 | 0xd3d915a5, 0xe7b0, 0x4417, 0x9c, 0x2e, 0x1a, 0xa8, 0x42, 0x4d, 0x22, 0x2c | RT.GetVariable – GetVariable() returns EFI\_NOT\_FOUND with a nonexistent **VendorGuid**. | 1. Call SetVariable() service to insert a test variable with GUID2.  2. Call GetVariable() service to get the variable with GUID1. The return code must be EFI\_NOT\_FOUND. |
| 5.2.1.1.7 | 0x1562ce35, 0x83e7, 0x48a7, 0xad, 0x71, 0xfa, 0xa4, 0xbe, 0x17, 0x88, 0x46 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a **DataSize** value of 0. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable with a **DataSize** value of 0. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned **DataSize** should be the inserted value in step 1. |
| 5.2.1.1.8 | 0x121c17d1, 0xbb0e, 0x4e2e, 0xb2, 0xa5, 0x03, 0x86, 0x2f, 0x46, 0xc0, 0x39 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a **DataSize** value of -1. | 1. Call SetVariable() service to insert a test variable.  2. Call GetVariable() service to get the test variable with the inserted **DataSize** value of –1. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned **DataSize** should be the inserted value in step 1. |
| 5.2.1.1.9 | 0xe542e81c, 0x2020, 0x4f3e, 0xa9, 0xb, 0x67, 0xd4, 0xa8, 0xd1, 0x70, 0xb4 | RT.GetVariable – GetVariable() returns EFI\_BUFFER\_TOO\_SMALL with a *DataSize* value of 0. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with a *DataSize* value of 0 and NULL *Data*. The return code must be EFI\_BUFFER\_TOO\_SMALL, and the returned *DataSize* should be the inserted value in step 1. |
| 5.2.1.1.10 | 0xaa35cc00, 0xc55c, 0x42d8, 0xa6, 0xd4, 0x1e, 0xb4, 0x9d, 0xe3, 0xd7, 0x54 | RT.GetVariable – GetVariable() gets the existing variable without attributes at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable without *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Data* and *DataSize* must be the same as the data written before. |
| 5.2.1.1.11 | 0x742a9651, 0x9783, 0x43b8, 0x8c, 0x18, 0x47, 0x04, 0xae, 0x41, 0xc3, 0x34 | RT.GetVariable – GetVariable() gets the existing variable without attributes at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable without *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Data* and *DataSize* must be the same as the data written before. |
| 5.2.1.1.12 | 0x90e959d0, 0xbe2c, 0x45fd, 0x85, 0x32, 0x85, 0x21, 0xe4, 0xe0, 0xfb, 0x72 | RT.GetVariable – GetVariable() gets the existing variable with attributes at EFI\_TPL\_APPLICATION | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Attributes*, *Data* and *DataSize* must be the same as the data written before. |
| 5.2.1.1.13 | 0x5c8b43b7, 0xec6f, 0x4621, 0xb8, 0x48, 0x6a, 0x40, 0x0f, 0xd8, 0xb3, 0x43 | RT.GetVariable – GetVariable() gets the existing variable with attributes at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable. 2. Call GetVariable() service to get the test variable with *Attributes*. The returned status must be EFI\_SUCCESS, and the returned *Attributes*, *Data* and *DataSize* must be the same as the data written before. |

### GetVariable()

### GetNextVariableName()

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| Number | GUID | Assertion | Test Description |
| 5.2.1.2.1 | 0x5826847a, 0x9067, 0x4f9f, 0x88, 0x38, 0x0b, 0xf8, 0xec, 0x20, 0x17, 0x1c | RT.GetNextVariableName – GetNextVariableName() returns EFI\_INVALID\_PARAMETER with a **VariableNameSize** value of NULL. | 1. Call GetNextVariableName() service with a **VariableNameSize** value of NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.2.2 | 0x8e8258dc, 0x6634, 0x4de1, 0x85, 0x7a, 0x60, 0x45, 0x7e, 0xfa, 0x7c, 0x21 | RT.GetNextVariableName - GetNextVariableName() returns EFI\_INVALID\_PARAMETER with a **VariableName** value of NULL. | 1. Call GetNextVariableName() service with a **VariableName** value of NULL. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.2.3 | 0x99a357f0, 0xb6c5, 0x4aec, 0x96, 0x48, 0x34, 0x73, 0x2d, 0x2a, 0x49, 0x50 | RT.GetNextVariableName - GetNextVariableName() returns EFI\_INVALID\_PARAMETER with a **VendorGuid** value of NULL. | 1. Call GetNextVariableName() service with a **VendorGuid** value of NULL. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.2.4 | 0x51c19dba, 0xbaf6, 0x4854, 0xac, 0x09, 0x60, 0x45, 0x47, 0x88, 0x67, 0x98 | RT.GetNextVariableName – GetNextVariableName() returns EFI\_BUFFER\_TOO\_SMALL with a **VariableNameSize** value of 2. | 1. Call SetVariable() service to insert a test variable.  2. Call GetNextVariableName() service with a **VariableNameSize** value of 2. The returned status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.2.1.2.5 | 0xfe09ff82, 0xb289, 0x449f, 0xb0, 0x83, 0x98, 0x1d, 0x68, 0xd9, 0x17, 0xb1 | RT.GetNextVariableName – GetNextVariableName() returns EFI\_NOT\_FOUND after the entire variable list returned. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to delete the test variable.  3. Call GetNextVariableName() service to traverseall variables. The deleted test variable should not be returned.  4. The last returned status of GetNextVariableName() service should be EFI\_NOT\_FOUND. |
| 5.2.1.2.6 | 0x12071508, 0x16c7, 0x4e5e, 0xa4, 0x22, 0x59, 0xe0, 0x24, 0x1c, 0xc6, 0x28 | RT.GetNextVariableName – GetNextVariableName() gets the existing variable at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call GetNextVariableName() service to traverseall variables. The test variable should be returned in this loop. |
| 5.2.1.2.7 | 0xa85043bc, 0x4f0d, 0x47b3, 0x8e, 0x9d, 0x2d, 0xb6, 0xc8, 0xf8, 0xfa, 0xef | RT.GetNextVariableName – GetNextVariableName() gets the exist variable at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call GetNextVariableName() service to traverseall variables. The test variable should be returned in this loop. |

### SetVariable()

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| Number | GUID | Assertion | Test Description |
| 5.2.1.3.1 | 0x73af529b, 0x3ebe, 0x464a, 0xba, 0x6a, 0xfb, 0x04, 0x7b, 0x56, 0x4f, 0x74 | RT.SetVariable – SetVariable() returns EFI\_INVALID\_PARAMETER when the **VariableName** value is an empty string. | 1. Call SetVariable() service when the **VariableName** value is an empty string. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.3.2 | 0x39e95cbb, 0x6b89, 0x473e, 0x91, 0xba, 0x92, 0x08, 0x2d, 0x1b, 0x94, 0xad | RT.SetVariable – SetVariable() returns EFI\_INVALID\_PARAMETER with RA only **Attributes**. | 1. Call SetVariable() service with EFI\_VARIABLE\_RUNTIME\_ACCESS attributes. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.3.3 | 0xf6ef5087, 0x4962, 0x4d71, 0x80, 0x09, 0xdb, 0xe2, 0x78, 0x94, 0x53, 0xe6 | RT.SetVariable – SetVariable() returns EFI\_INVALID\_PARAMETER with NV|RA **Attributes**. | 1. Call SetVariable() service with EFI\_VARIABLE\_NON\_VOLATILE | EFI\_VARIABLE\_RUNTIME\_ACCESS attributes. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.3.4 | 0x65973462, 0x6877, 0x408f, 0x9b, 0xe1, 0x46, 0x69, 0x3e, 0xab, 0x03, 0x84 | RT.SetVariable – SetVariable() returns EFI\_INVALID\_PARAMETER with a variable that exceeds the maximum size. | 1. Call SetVariable() service to set a test variable with the size of (UINTN)-1. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.2.1.3.5 | 0x6c9cf2ea, 0xcabd, 0x4312, 0xb9, 0xcf, 0x0a, 0x96, 0xc4, 0xf1, 0xea, 0x8b | RT.SetVariable – SetVariable() sets a nonexistent variable at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable with GUID2.  2. Call SetVariable() service to insert a test variable with GUID1. The returned status must be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable with GUID1 and GUID2. The data of both variables should be the same as the values written before. |
| 5.2.1.3.6 | 0x3ae09eaf, 0x07cd, 0x4320, 0x92, 0xfd, 0xe9, 0xe6, 0x4b, 0x31, 0x6f, 0xe1 | RT.SetVariable – SetVariable() sets a nonexistent variable at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable with GUID2.  2. Call SetVariable() service to insert a test variable with GUID1. The returned status must be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable with GUID1 and GUID2. The data of both variables should be the same as the values written before. |
| 5.2.1.3.7 | 0x7ccde75b, 0x4ef2, 0x40ec, 0x9a, 0xcb, 0x84, 0x7b, 0xb5, 0x29, 0x73, 0xbe | RT.SetVariable – SetVariable() sets the existing variable with the data from EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the same data. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be unchanged. |
| 5.2.1.3.8 | 0x5b720ad1, 0xd0cc, 0x4be0, 0x93, 0x18, 0x20, 0x1b, 0xac, 0x32, 0x8d, 0x4f | RT.SetVariable – SetVariable() sets the existing variable with the data from EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the same data. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be unchanged. |
| 5.2.1.3.9 | 0x2dee62d3, 0xbab7, 0x4d91, 0x8b, 0x47, 0x3e, 0x38, 0x35, 0xd3, 0x88, 0xae | RT.SetVariable – SetVariable() sets the existing variable value which is different from the one at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the different data in which the left part of new data is the same as old data. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be changed to the new one. |
| 5.2.1.3.10 | 0x861a0691, 0x6590, 0x4a28, 0xae, 0x56, 0xaa, 0xcb, 0xf3, 0xf2, 0xbe, 0x99 | RT.SetVariable – SetVariable() sets the existing variable value which is different from the one at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the different data in which the left part of new data is the same as the old data The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be changed to the new one. |
| 5.2.1.3.11 | 0x76198a1a, 0xc63a, 0x4a3b, 0x88, 0xb0, 0xc4, 0x45, 0x39, 0xdd, 0xff, 0x5d | RT.SetVariable – SetVariable() sets the existing variable with different data at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the different data in which the left part of old data is the same as the new data The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be changed to the new one. |
| 5.2.1.3.12 | 0xcefbdb2c, 0x0c7d, 0x4dcf, 0xae, 0x16, 0x32, 0xa8, 0x78, 0xca, 0x2d, 0x3e | RT.SetVariable – SetVariable() sets the existing variable with different data at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service to insert the test variable again with the different data in which the left part of old data is the same as the new data. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The data of the test variable should be changed to the new one. |
| 5.2.1.3.13 | 0xc457149c, 0x75d0, 0x48b5, 0xa1, 0x6c, 0x7e, 0x9f, 0x14, 0x4a, 0xab, 0x15 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert two similar variables.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned data should be those written before. |
| 5.2.1.3.14 | 0x89f533da, 0x20ee, 0x41f8, 0x8c, 0x60, 0xc3, 0xc4, 0x14, 0x19, 0x05, 0x15 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert two similar variables.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned data should be those written before. |
| 5.2.1.3.15 | 0xfc5f89d1, 0x4fce, 0x4fe9, 0xa2, 0xfd, 0xa2, 0xfe, 0x69, 0x5b, 0xaa, 0x35 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a similar variable, whose name is the test variable’s name plus character ‘A’.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the similar variable. The returned data should be unchanged. |
| 5.2.1.3.16 | 0xfa5f4961, 0xdfaf, 0x425f, 0x95, 0x14, 0x14, 0x52, 0x5c, 0x69, 0xc7, 0x83 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a similar variable, whose name is the test variable’s name + ‘A’.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the similar variable. The returned data should be unchanged. |
| 5.2.1.3.17 | 0x3cf290ca, 0x49e9, 0x43c0, 0x8a, 0x0c, 0x46, 0xea, 0x17, 0x53, 0x41, 0x08 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a similar variable, whose name is the test variable’s name minus character ‘A’.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get a similar variable. The returned data should be unchanged. |
| 5.2.1.3.18 | 0xc1f69f8f,  0xa6ed,  0x4823, 0x88,  0xd9, 0x9a,  0x23, 0x8e,  0x6a, 0x11,  0x00 | RT.SetVariable – SetVariable() sets similar existing variables at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a similar variable, whose name is the test variable’s name minus character ‘A’.  2. Call SetVariable() service to insert a test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the similar variable. The returned data should be unchanged. |
| 5.2.1.3.19 | 0x7b893a77, 0x70ca, 0x48e4, 0xad, 0x1d, 0xe4, 0x31, 0x15, 0xb1, 0xce, 0x5e | RT.SetVariable – SetVariable() removes all variables with a **DataSize** value of 0 at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service with a **DataSize** value of 0 to delete the test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.20 | 0x8fcc7182, 0x4f77, 0x4841, 0xbb, 0x81, 0x20, 0xe5, 0x30, 0x5e, 0xa9, 0xda | RT.SetVariable – SetVariable() removes all variables with a **DataSize** value of 0 at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service with a **DataSize** value of 0 to delete the test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.21 | 0x931b363e, 0x8ab4, 0x49db, 0x82, 0x21, 0x2f, 0xdd, 0x9d, 0xa4, 0x36, 0x6c | RT.SetVariable – SetVariable() removes all variables with **Attributes** values of 0 at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service with **Attributes** values of 0 to delete the test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.22 | 0x7eac83e5, 0x0e54, 0x4812, 0x9b, 0xb0, 0x6f, 0xf6, 0xdc, 0x7d, 0xeb, 0x8f | RT.SetVariable – SetVariable() removes all variables with **Attributes** values of 0 at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a test variable.  2. Call SetVariable() service with **Attributes** values of 0 to delete the test variable. The returned status should be EFI\_SUCCESS.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.23 | 0x6afdea5e, 0x1030, 0x48ab, 0x91, 0xdd, 0x7c, 0xd3, 0x53, 0x7c, 0xad, 0x3b | RT.SetVariable – checks Non-volatile variable exists after system reset at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a non-volatile test variable. The returned status must be EFI\_SUCCESS.  2. Reset the system.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_SUCCESS, and the returned data should be the same as the original data set. |
| 5.2.1.3.24 | 0x653f14cc, 0x8ecd, 0x4aaf, 0xad, 0xd6, 0x96, 0xc5, 0x07, 0x11, 0x2d, 0x67 | RT.SetVariable – checks Non-volatile variable exists after system reset at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a non-volatile test variable. The returned status must be EFI\_SUCCESS.  2. Reset the system.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_SUCCESS, and the returned data should be the same as the orginal data set. |
| 5.2.1.3.25 | 0xb93d2b03, 0x5943, 0x4c7d, 0x98, 0xec, 0xc5, 0xfe, 0x4c, 0x6e, 0x10, 0xc9 | RT.SetVariable – checks Volatile variable does not exist after system reset at EFI\_TPL\_APPLICATION. | 1. Call SetVariable() service to insert a volatile test variable. The returned status must be EFI\_SUCCESS.  2. Reset the system.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.26 | 0x9ec88dbe, 0xa0e4, 0x43a2, 0xaa, 0x2b, 0x60, 0xbd, 0xe6, 0xb0, 0x14, 0x1a | RT.SetVariable – Volatile variable does not exist after system reset at EFI\_TPL\_CALLBACK. | 1. Call SetVariable() service to insert a volatile test variable. The returned status must be EFI\_SUCCESS.  2. Reset the system.  3. Call GetVariable() service to get the test variable. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.27 | 0x98ca8089, 0x7f55, 0x4427, 0x8c, 0x15, 0xaf, 0xa6, 0x3d, 0x78, 0x48, 0xb0 | RT.SetVariable - With DataSize is 0 | 1. Call SetVariable() service to insert a volatile test variable. The returned status must be EFI\_SUCCESS.  2. Call SetVariable() service to remove this variable with DataSize being 0. The return status should be EFI\_SUCCESS.  3. Call SetVariable() service to remove this variable with DataSize being 0. The returned status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.28 | 0x008e18a5, 0xc345, 0x48ae, 0x91, 0x34, 0x61, 0xa6,  0x92, 0xe3, 0xb, 0x87 | RT.SetVariable **-** Must return EFI\_SUCCESS when creating one time-based Auth Variable. | Call SetVariable to create a time-based authenticated variable. The expected return status is EFI\_SUCCESS. |
| 5.2.1.3.29 | 0x20678b3e, 0xbcca, 0x4186, 0x84, 0xaf, 0x47, 0x16, 0xe7, 0xaf, 0xde, 0x85 | RT.SetVariable **-** The created time-based Auth Variable should pass the data validation. | Call GetVariable to retrieve the Auth Variable, and validate the Auth Variable data. |
| 5.2.1.3.30 | 0xaa6bf36f, 0xdae5, 0x43ed, 0x95, 0x4d, 0xc1, 0xc7, 0x97, 0x9d, 0x32, 0xa0 | RT.SetVariable **-**  The second Call SetVariable() with the same Data. The return status is EFI\_SECURITY\_VIOLATION. | The second Call SetVariable() with the same Data. The return status is EFI\_SECURITY\_VIOLATION. |
| 5.2.1.3.31 | 0x2bc131ec, 0x0530, 0x4994, 0xbb, 0x81, 0x15, 0x35, 0x5c, 0xef, 0xe5, 0x88 | RT.SetVariable **-** Call SetVariable()with modified/invalid Data. The expected status is EFI\_SECURITY\_VIOLATION | Call SetVariable() with modified/invalid Data. The expected status is EFI\_SECURITY\_VIOLATION  . |
| 5.2.1.3.32 | 0x0e49b21e, 0x409c, 0x4502, 0x9e, 0xc6, 0x55, 0xfe, 0x85, 0xf8, 0x54, 0x95 | RT.SetVariable - Call SetVariable() with new/valid Data. The expected status is EFI\_SUCCESS. | Call SetVariable() with new/valid Data. The expected status is EFI\_SUCCESS. |
| 5.2.1.3.33 | 0xadabac45, 0x1e0d, 0x40b0, 0x9b, 0xd1, 0x8c, 0x3a, 0xd7, 0xfb, 0x69, 0xd6 | RT.SetVariable **-** The renewed time-based Auth Variable should pass the data validation. | Call GetVariable to retrieve the renewed Auth Variable, and validate the Auth Variable data. |
| 5.2.1.3.34 | 0x6339807b, 0x0741, 0x45c4, 0x81, 0xa8, 0xe2, 0xde, 0x5a, 0x0b, 0xfb, 0x55 | RT.SetVariable **–** call SetVariable()with the old Data/timestamp. The expected status is EFI\_SECURITY\_VIOLATION. | Call SetVariable()with the old Data/timestamp. The expected status is EFI\_SECURITY\_VIOLATION |
| 5.2.1.3.35 | 0xa2d53dea, 0x8275, 0x4b9a, 0xbd, 0xa0, 0xac, 0x86, 0xfb, 0x4e, 0x0f, 0x30 | RT.SetVariable **–** call SetVariable()with the Data signed by another key, the expect status should be **EFI\_SECURITY\_VIOLATION** | Call SetVariable()with the Data signed by another key, the expect status should be EFI\_SECURITY\_VIOLATION |
| 5.2.1.3.36 | 0x28c7f0db, 0x2546, 0x4374, 0x8f, 0xf9, 0x75, 0x80, 0xc4, 0x68, 0x9b, 0x93 | RT.SetVariable **–** call SetVariable()to do the append operation, the expect status should be EFI\_SUCCESS | Call SetVariable()to do the append operation, the expect status should be EFI\_SUCCESS |
| 5.2.1.3.37 | 0x1e87dbe9, 0x234b, 0x4c82, 0x8c, 0x86, 0x2f, 0x26, 0xfa, 0xc6, 0x60, 0x2e | RT.SetVariable **–**The appended time base Auth Variable should pass the data validation | Call GetVariable()to retrieve the appended Auth Variable, and validate the Auth Variable data. |
| 5.2.1.3.38 | 0x3cc4add2, 0x0ed7, 0x4837, 0xb4, 0x63, 0xbc, 0x46, 0xd1, 0x3b, 0x2f, 0x65 | RT.SetVariable **–** call SetVariable()to do the delete operation. The expected status is EFI\_SUCCESS | Call SetVariable()to do the delete operation. The expected status is EFI\_SUCCESS |
| 5.2.1.3.39 | 0xfa50a705, 0x5d95, 0x4cad, 0xb4, 0x6c, 0xa0, 0x12, 0x9b, 0x68, 0x22, 0x8e | RT.SetVariable **–**The deleted time-based Auth Variable should not be found. | Call GetVariable()to retrieve the deleted Auth Variable. The return status should be EFI\_NOT\_FOUND. |
| 5.2.1.3.40 | 0x27e8e4de, 0x56ed, 0x4710, 0xa6, 0x3a, 0xc6, 0x35, 0xe3, 0x9d, 0x33, 0x64 | RT.SetVariable **-** must  return EFI\_SUCCESSwhen creating a time-based Auth Variable with one different key. | Call SetVariable()to create a time-based Auth Variable with one different key. The expected return status is EFI\_SUCCESS. |
| 5.2.1.3.41 | 0xba99e7f8, 0x8018, 0x46a2, 0xb2, 0xe5, 0x8b, 0xde, 0x42, 0xc1, 0xe6, 0xd5 | RT.SetVariable **–** call SetVariable()to do the append operation with the new data. The expected status is EFI\_SUCCESS | Call SetVariable()to do the append operation with the new data. The expected status is EFI\_SUCCESS |
| 5.2.1.3.42 | 0xc764906d, 0x73bb, 0x44b7, 0xae, 0x40, 0x0c, 0x51, 0xde, 0xc3, 0xc7, 0x51 | RT.SetVariable **–** call SetVariable() to set the Data with one old timestamp. The return status should be EFI\_SECURITY\_VIOLATION | Call SetVariable()to set the Data with one old timestamp. The return status should be EFI\_SECURITY\_VIOLATION |
| 5.2.1.3.43 | 0x1a28fa01, 0x135c, 0x4aeb, 0xa1, 0xb4, 0x68, 0x6a, 0x0b, 0x53, 0xb2, 0x9 | RT.SetVariable **–** call SetVariable()to do the delete operation. The expected status is EFI\_SUCCESS | Call **S**etVariable()to do the delete operation. The expected status is EFI\_SUCCESS |
| 5.2.1.3.44 | 0xe9893bcb,  0xef2b, 0x495c,  0x82, 0xf0,  0xd0, 0x63, 0x0d, 0xa7, 0x94, 0x76 | RT.SetVariable **–** must return  EFI\_SECURITY\_VIOLATION | Call SetVariable()to enroll an invalid time-based authenticated variable but several bits changed. |
| 5.2.1.3.45 | 0x2534abc0,  0x1f01, 0x48a0,  0x96, 0xde,  0xf8, 0xbb,  0xa7, 0x45,  0xc3, 0x64 | RT.SetVariable **–** must return  EFI\_SECURITY\_VIOLATION | Call SetVariable()to enroll a time-based authenticated variable with an invalid attribute. |
| 5.2.1.3.46 | 0x896f8325, 0xed28, 0x4af5, 0x96, 0xba, 0x3b, 0xe3, 0xf2, 0x97, 0x74, 0x8b | RT.SetVariable –  **SetVariable()** returns  EFI\_INVALID\_PARAMETER  When it wants to change the attribute of one existed variable  . | 1. Call **SetVariable()**  service to modify the attribute of one existed variable.  The returned status should be  **EFI\_INVALID\_PARAMETER**. |

### QueryVariableInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.1.4.1 | 0xad9578bf, 0x7a02, 0x4ef0, 0x8f, 0xe8, 0xd9, 0x45, 0x91, 0xa1, 0xe9, 0x31 | RT.QueryVariableInfo –Query variable info with a **MaximumVariableStorageSize** value of NULL. | 1. Call QueryVariableInfo service with a **MaximumVariableStorageSize** value of NULL. The returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.4.2 | 0x5d13a732, 0x60ea, 0x42d5, 0xa0, 0x01, 0x43, 0x63, 0xd9, 0xb1, 0x8b, 0xf4 | RT.QueryVariableInfo –Query variable info with a **RemainingVariableStorageSize** value of NULL. | 1. Call QueryVariableInfo service with a **RemainingVariableStorageSize** value of NULL. The returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.4.3 | 0xd3247b73, 0x5eb9, 0x4594, 0x8a, 0xb3, 0x27, 0xd9, 0x38, 0x4f, 0x3f, 0x13 | RT.QueryVariableInfo –Query variable info with **MaximumVariableSize** value of NULL. | 1. Call QueryVariableInfo service with a **MaximumVariableSize** value of NULL. The returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.4.4 | 0xe7f2eb9f, 0x1624, 0x45a9, 0xa2, 0x87, 0x3e, 0xa6, 0xf2, 0xf7, 0x4c, 0x5f | RT.QueryVariableInfo –Query variable info when **Attributes** is not a combination of EFI\_VARIABLE\_RUNTIME\_ACCESS  , EFI\_VARIABLE\_BOOTSERVICE\_ACCESS  andEFI\_VARIABLE\_NON\_VOLATILE**.** | 1. Call QueryVariableInfo service with **Attributes** values of 0. The returned code must be EFI\_UNSUPPORTED. |
| 5.2.1.4.5 | 0x2f9966ba, 0x0091, 0x4085, 0xbf, 0x9d, 0x09, 0xaa, 0x80, 0x9f, 0x94, 0x2e | RT.QueryVariableInfo –Query variable info with an invalid combination of **Attributes**. | 1. Call QueryVariableInfo service with the **Attributes**:  EFI\_VARIABLE\_NON\_VOLATILE  EFI\_VARIABLE\_RUNTIME\_ACCESS  EFI\_VARIABLE\_NON\_VOLATILE|EFI\_VARIABLE\_RUNTIME\_ACCESS  The returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.4.8 | 0xad6e6a8f, 0x3a05, 0x4183,0xb6, 0x90, 0x40, 0xa8, 0x91, 0xd8, 0x62, 0xae | RT.QueryVariableInfo – Query variable info with a valid **Attributes** in Run time. | For each TPL less than or equal to TPL\_CALLBACK and each **Attributes** of BA, NV|BA, BA|RA and NV|BA|RA do:  1. Call QueryVariableInfo with the **Attributes** selected. Check.(Number1)  2. Call SetVariable service to insert a variable. Check.  3. Call QueryVariableInfo with the **Attributes** selected. Check. (Number2)  4. Call SetVariable service to delete the variable inserted. Check.  5. Call QueryVariableInfo service with the **Attributes** selected. Check.(Number3)  For Number1, Number2, Number3, the following items need to be checked:  1. returned codes must be EFI\_SUCCESS.  2. returned \*MaximumVariableStorageSize must be the same.  3. returned \*MaximumVariableSize must be the same, and they all are equal to MAX\_VARIABLE\_SIZE.  4. Number2 returned \*RemainingVariableStorageSize must be the value of Number1 minus the size of the variable inserted in step 2.  5. Number3 returned \*RemainingVariableStorageSize must be the value of Number1 |

### HardwareErrorRecord

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.1.5.1 | 0xc8126edc, 0x7197, 0x4113, 0xb7, 0xb6, 0xd5, 0x3d, 0x53, 0xe6, 0x72, 0xea | HWErrRecTest – Func Test | 1. Call GetVariable() to check theHardwareErrorRecord support of platform.  2. Call QueryVariableInfo() to detect the storage size.  3. Get a useable HWErrRec variable name and call SetVariable() to set it with data.  4. Reset system, call GetVariable() to get the data.  5. Compare the data, they should be same. |
| 5.2.1.5.2 | 0xd8bd5c0a, 0x192f, 0x4501, 0xbc, 0x58, 0x89, 0xd3, 0x18, 0x60, 0x24, 0x5e | HWErrRecTest – Conf Test HardwareErrorRecord with invalid attributes. | 1. Call GetVariable() to check theHardwareErrorRecord support of platform.  2. Call QueryVariableInfo() to detect the storage size.  3. Get a useable HWErrRec variable name and call SetVariable() to set it with invalid attributes. The returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.5.3 | 0xe1259932, 0xf39c, 0x465b, 0xb4, 0xe3, 0xa1, 0xb2, 0x77, 0x8b, 0xa1, 0x04 | HWErrRecTest – Conf Test HardwareErrorRecord with twice deletion. | 1. Call GetVariable() to check theHardwareErrorRecord support of platform.  2. Call QueryVariableInfo() to detect the storage size.  3. Get a useable HWErrRec variable name and call SetVariable() to set it.  4. Delete the variable twice. The first time, the returned code must be EFI\_SUCCESS; the second time, the returned code must be EFI\_INVALID\_PARAMETER. |
| 5.2.1.5.4 | 0xf5b942c9, 0x1f0c, 0x4c45, 0x85, 0x72, 0xc4, 0x53, 0x79, 0x51, 0x50, 0xdf | HWErrRecTest – Conf TestRetrive the Hardware Error Record variables, check the name of them. | 1. Call GetVariable() to check the HardwareErrorRecord support of platform. 2. Call QueryVariableInfo() to detect the storage size.3. Retrive the Hardware Error Record variables, check the name of them |

## 

## Time Services Test

Reference Document:

*UEFI Specification,* Time Services Section

* Time Services Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| GetTime | Runtime | Returns the current time and date, and the time-keeping capabilities of the platform. |
| SetTime | Runtime | Sets the current local time and date information. |
| GetWakeupTime | Runtime | Returns the current wakeup alarm clock setting. |
| SetWakeupTime | Runtime | Sets the system wakeup alarm clock time. |

### GetTime()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.2.1.1 | 0x105de1dc, 0x32b2, 0x4d85, 0x9b, 0x30, 0xd4, 0x41, 0x80, 0x0f, 0xdc, 0x4c | RT.GetTime – GetTime() returns EFI\_INVALID\_PARAMETER with **Time** is NULL. | 1. Call GetTime() with **Time** is NULL. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.1.2 | 0x51437f55, 0x25e1, 0x43eb, 0xae, 0x76, 0x0d, 0x32, 0x1c, 0x12, 0xf6, 0x38 | RT.GetTime – GetTime() gets the system time at EFI\_TPL\_APPLICATION. | 1. Call GetTime() with valid parameters. The return code must be EFI\_SUCCESS. |
| 5.2.2.1.3 | 0x1a6e41f0, 0x361e, 0x4c46, 0xa2, 0xc4, 0x35, 0x42, 0xb3, 0x6f, 0xa5, 0xb6 | RT.GetTime – GetTime() gets the system time at EFI\_TPL\_CALLBACK. | 1. Call GetTime() with valid parameters. The return code must be EFI\_SUCCESS. |
| 5.2.2.1.4 | 0x3568b497, 0x6524, 0x4415, 0xac, 0xaa, 0xa8, 0xee, 0x24, 0x83, 0x9b, 0xdd | RT.GetTime – GetTime() gets the system time at EFI\_TPL\_APPLICATION. | 1. Call GetTime() with valid parameters. The return time should be valid. |
| 5.2.2.1.5 | 0xa2c13016, 0x01d4, 0x4ea7, 0xb0, 0x8e, 0xb7, 0x74, 0x22, 0x4d, 0x7e, 0xa5 | RT.GetTime – GetTime() gets the system time at EFI\_TPL\_CALLBACK. | 1. Call GetTime() with valid parameters. The return time should be valid. |
| 5.2.2.1.6 | 0x2cd14974, 0x4937, 0x4817, 0x91, 0xb0, 0x82, 0x2f, 0x40, 0xca, 0x22, 0xbc | RT.GetTime – GetTime() gets the system time with **Capabilities** is NULL at EFI\_TPL\_APPLICATION. | 1. Call GetTime() with a **Capabilities** value of NULL. The return code should be EFI\_SUCCESS. |
| 5.2.2.1.7 | 0x9bbabc14, 0xced2, 0x48fc, 0xbb, 0x9e, 0x79, 0x37, 0x49, 0xe8, 0x1f, 0xe2 | RT.GetTime – GetTime() gets the system time with **Capabilities** is NULL at EFI\_TPL\_CALLBACK. | 1. Call GetTime() with a **Capabilities** value of NULL. The return code should be EFI\_SUCCESS. |
| 5.2.2.1.8 | 0x938366e9, 0x3311, 0x4007, 0x87, 0xc3, 0xa2, 0x18, 0x7f, 0x05, 0x14, 0xe3 | RT.GetTime – GetTime() gets the system time with **Capabilities** is NULL at EFI\_TPL\_APPLICATION. | 1. Call GetTime() with a **Capabilities** value of NULL. The return time should be valid. |
| 5.2.2.1.9 | 0x565f4b15, 0xb132, 0x4c74, 0x97, 0xc2, 0xf3, 0xa6, 0xf5, 0xbf, 0xd2, 0x21 | RT.GetTime – GetTime() gets the system time with **Capabilities** is NULL at EFI\_TPL\_CALLBACK. | 1. Call GetTime() with a **Capabilities** value of NULL. The return time should be valid. |

### SetTime()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.2.2.1 | 0x6f96cde3, 0x6067, 0x4213, 0x81, 0xf8, 0x45, 0x90, 0x1d, 0x92, 0x1a, 0x12 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Year** is less than the low range. | 1. Call SetTime() with **Time.Year** is 1899. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.2 | 0x8ce9f594, 0x2d49, 0x4436, 0xb1, 0xd1, 0xe4, 0xd4, 0xbf, 0x55, 0x41, 0xdc | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Year** is greater than the upper range. | 1. Call SetTime() with **Time.Year** is 10000. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.3 | 0x972fadc8, 0x5cc4, 0x4cbe, 0xbe, 0xd6, 0x76, 0xca, 0xef, 0x2d, 0x1b, 0x1a | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Year** is invalid. | 1. Call SetTime() with **Time.Year** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.4 | 0xcaac8a85, 0x26c2, 0x43e7, 0x83, 0x40, 0x5a, 0x78, 0x85, 0x43, 0xef, 0x81 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Month** is less than the low range. | 1. Call SetTime() with **Time.Month** is 0. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.5 | 0x12470ee0, 0x19e1, 0x49ff, 0xbc, 0x1e, 0x8e, 0xb3, 0x6f, 0xab, 0xf0, 0xfc | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Month** is greater than the upper range. | 1. Call SetTime() with **Time.Month** is 13. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.6 | 0xae7293c9, 0x0cbd, 0x4317, 0xb6, 0xeb, 0x33, 0xe1, 0x83, 0x46, 0x8d, 0x9e | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Month** is invalid. | 1. Call SetTime() with **Time.Month** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.7 | 0xb8048c3c, 0xbf1f, 0x477d, 0xb7, 0x17, 0x55, 0x41, 0xfc, 0xa7, 0xb5, 0x61 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Day** is less than the low range. | 1. Call SetTime() with **Time.Day** is 0. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.8 | 0x0d2c6265, 0xad3a, 0x4554, 0xb0, 0x16, 0x6c, 0xb7, 0xff, 0x59, 0x1f, 0x78 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Day** is greater than the upper range. | 1. Call SetTime() with **Time.Day** is 32. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.9 | 0x0467b0c4, 0xdf8c, 0x4bfc, 0xa8, 0x4b, 0xef, 0xa6, 0x90, 0x5b, 0xde, 0xd9 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Day** is invalid. | 1. Call SetTime() with **Time.Day** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.10 | 0x1e433b44, 0xa599, 0x4dcd, 0x9c, 0x38, 0xe7, 0xc0, 0x97, 0xf2, 0x56, 0x4b | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Day** is greater than the upper range. | 1. Call SetTime() with **Time.Month** is 4 and **Time.Day** is 31. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.11 | 0xc9bfb088, 0x07ba, 0x413c, 0xa4, 0x72, 0xbd, 0x17, 0x92, 0xdd, 0xc6, 0xec | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Hour** is greater than the upper range. | 1. Call SetTime() with **Time.Hour** is 24. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.12 | 0xd7b3ca07, 0xa484, 0x4604, 0x83, 0x37, 0x6f, 0x13, 0x4f, 0x88, 0xb3, 0x5a | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Hour** is invalid. | 1. Call SetTime() with **Time.Hour** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.13 | 0xc645baaa, 0x3eb6, 0x4577, 0x97, 0x5d, 0x21, 0x05, 0x04, 0x83, 0x64, 0x2b | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Minute** is greater than the upper range. | 1. Call SetTime() with **Time.Minute** is 60. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.14 | 0xa42f7c8e, 0xfa7a, 0x4026, 0xb9, 0x6b, 0x66, 0xe3, 0xf2, 0xe9, 0x93, 0x55 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Minute** is invalid. | 1. Call SetTime() with **Time.Minute** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.15 | 0xd37d5f03, 0x6dbb, 0x4724, 0x9e, 0xc1, 0xed, 0x13, 0x6b, 0x17, 0x22, 0xe9 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Second** is greater than the upper range. | 1. Call SetTime() with **Time.Second** is 60. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.16 | 0xcd47c7aa, 0x6522, 0x45ed, 0xa7, 0xb4, 0x29, 0x6d, 0x57, 0x43, 0xc7, 0x78 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Second** is invalid. | 1. Call SetTime() with **Time.Second** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.17 | 0x14bccf9f, 0xda75, 0x46db, 0xb1, 0xfc, 0x7e, 0x67, 0x3b, 0x37, 0x25, 0x6e | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Nanosecond** is greater than the upper range. | 1. Call SetTime() with **Time.Nanosecond** is 1000000000. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.18 | 0x966cf8d6, 0xf952, 0x4770, 0xa1, 0x9e, 0xf8, 0x78, 0xbc, 0x60, 0xbc, 0xeb | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **Nanosecond** is invalid. | 1. Call SetTime() with **Time.Nanosecond** is -1. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.19 | 0x59a9febb, 0xf6d1, 0x4b13, 0xae, 0xcd, 0xf3, 0x65, 0xc2, 0x11, 0xa4, 0xed | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **TimeZone** is less than the low range. | 1. Call SetTime() with **Time.TimeZone** is -1441. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.20 | 0x5786f2c1, 0x48a7, 0x4856, 0x89, 0xe7, 0xba, 0xce, 0xc0, 0x85, 0xf3, 0xf9 | RT.SetTime - SetTime() returns EFI\_INVALID\_PARAMETER with **TimeZone** is greater than the upper range. | 1. Call SetTime() with **Time.TimeZone** is 1441. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.21 | 0xd3a1cbdd, 0x1df5, 0x4d24, 0x97, 0x53, 0xc3, 0xae, 0xa2, 0x7a, 0xab, 0x46 | RT.SetTime – SetTime() returns EFI\_INVALID\_PARAMETER with invalid leap day. | 1. Call SetTime() with **Time** is 2001/2/29. The return code must be EFI\_INVALID\_PARAMETER. |
| 5.2.2.2.22 | 0x29151ae4, 0x7a5e, 0x42d9, 0x84, 0xf8, 0xe9, 0xc5, 0x67, 0x87, 0xb7, 0xe8 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Year** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Year**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.23 | 0x75e988ee, 0xec78, 0x4190, 0x9a, 0x09, 0xb1, 0x31, 0x5c, 0x20, 0x25, 0xa5 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Year** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Year**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.24 | 0x3b96a20c, 0x2b1f, 0x44ea, 0xba, 0xa9, 0xf9, 0x6f, 0xee, 0x13, 0x1d, 0x05 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Year** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Year**.  2. Call GetTime() to verify the updated **Year**. The return **Time** should be set before. |
| 5.2.2.2.25 | 0xe664e1d7, 0xb733, 0x410d, 0xbc, 0x53, 0xd4, 0xcf, 0xf2, 0x46, 0x43, 0x55 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Year** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Year**.  2. Call GetTime() to verify the updated **Year**. The return **Time** should be set before. |
| 5.2.2.2.26 | 0x4e123824, 0x8636, 0x4426, 0x81, 0xe6, 0x16, 0x75, 0x62, 0x8c, 0xde, 0x69 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Month** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Month**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.27 | 0x8f0bfe23, 0xb6ec, 0x4ea2, 0x8e, 0x03, 0x0a, 0x7a, 0x5e, 0x36, 0x45, 0xb3 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Month** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Month**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.28 | 0x2d5cdbe5, 0x1055, 0x4ef6, 0x8e, 0x90, 0x0c, 0x99, 0x3f, 0x93, 0xf6, 0x98 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Month** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Month**.  2. Call GetTime() to verify the updated **Month**. The return **Time** should be set before. |
| 5.2.2.2.29 | 0xda4b19e7, 0xf605, 0x4fb9, 0xa1, 0x81, 0xcc, 0xd3, 0x35, 0x29, 0x0b, 0xfe | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **Month** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Month**.  2. Call GetTime() to verify the updated **Month**. The return **Time** should be set before. |
| 5.2.2.2.30 | 0x7af90ce7, 0x1fed, 0x4101, 0x82, 0xdc, 0xcc, 0x63, 0x4c, 0xdf, 0x20, 0x4e | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the daylight at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Daylight**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.31 | 0xfa81d174, 0x5743, 0x485f, 0xb2, 0x48, 0xaa, 0xea, 0xdd, 0x7c, 0x1e, 0x51 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the daylight at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Daylight**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.32 | 0xb39bc904, 0x55e7, 0x4b9b, 0xb4, 0xd8, 0x27, 0x4a, 0xdd, 0x71, 0xd6, 0x25 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the daylight at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.Daylight**.  2. Call GetTime() to verify the updated **Daylight**. The return **Time** should be set before. |
| 5.2.2.2.33 | 0x54daf29b, 0x48e6, 0x4fa4, 0xad, 0x00, 0xb8, 0xd6, 0x48, 0xaf, 0x7d, 0x88 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the daylight at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.Daylight**.  2. Call GetTime() to verify the updated **Daylight**. The return **Time** should be set before. |
| 5.2.2.2.34 | 0xcdbbda04, 0x4f7c, 0x4ba5, 0x8b, 0xcf, 0xc0, 0x50, 0xe5, 0xa9, 0x76, 0xc7 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **TimeZone** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.TimeZone**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.35 | 0xf749b4f1, 0x537d, 0x4ddf, 0x85, 0x45, 0xc0, 0xa4, 0x19, 0x93, 0xce, 0xe4 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **TimeZone** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.TimeZone**. The return code should be EFI\_SUCCESS. |
| 5.2.2.2.36 | 0xea99dec5, 0xb879, 0x4c8d, 0xbf, 0xd1, 0xf6, 0x3f, 0xe7, 0x58, 0x99, 0xbf | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **TimeZone** at EFI\_TPL\_APPLICATION. | 1. Call SetTime() to update the **Time.TimeZone**.  2. Call GetTime() to verify the updated **TimeZone**. The return **Time** should be set before. |
| 5.2.2.2.37 | 0xd9c645b9, 0x52de, 0x415c, 0xab, 0xdc, 0x72, 0x26, 0xce, 0x6a, 0x30, 0xb1 | RT.SetTime – SetTime() returns EFI\_SUCCESS to update the **TimeZone** at EFI\_TPL\_CALLBACK. | 1. Call SetTime() to update the **Time.TimeZone**.  2. Call GetTime() to verify the updated **TimeZone**. The return **Time** should be set before. |

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### GetWakeupTime()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.2.3.1 | 0xbb9fd931, 0xd3c0, 0x43cd, 0xb0, 0xa7, 0xfe, 0x17, 0xdc, 0xd7, 0x4d, 0x53 | RT.GetWakeupTime – GetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Enabled** is NULL. | 1. Call GetWakeupTime() with **Enabled** is NULL. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.3.2 | 0x200b6e00, 0x9e1b, 0x4891, 0x83, 0x01, 0xef, 0x46, 0x9f, 0x31, 0x17, 0x08 | RT.GetWakeupTime – GetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Pending** is NULL. | 1. Call GetWakeupTime() with **Pending** is NULL. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.3.3 | 0x209435c5, 0xfa4f, 0x405d, 0x80, 0xa6, 0x9e, 0xdc, 0x9d, 0x38, 0x8c, 0xc6 | RT.GetWakeupTime – GetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Time** is NULL. | 1. Call GetWakeupTime() with **Time** is NULL. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.3.4 | 0xe553c375, 0xd529, 0x4610, 0xad, 0xb5, 0x3a, 0x56, 0xc3, 0xec, 0xcb, 0xe9 | RT.GetWakeupTime – GetWakeupTime() returns EFI\_SUCCESS at EFI\_TPL\_APPLICATION. | 1. Call GetWakeupTime() with valid parameters. The return code must be EFI\_UNSUPPORTED or EFI\_SUCCESS. |
| 5.2.2.3.5 | 0x36414d2a, 0xf932, 0x43ca, 0xab, 0x08, 0x41, 0x8e, 0x59, 0xd9, 0xa4, 0xa2 | RT.GetWakeupTime – GetWakeupTime() returns EFI\_SUCCESS at EFI\_TPL\_CALLBACK. | 1. Call GetWakeupTime() with valid parameters. The return code must be EFI\_UNSUPPORTED or EFI\_SUCCESS. |
| 5.2.2.3.6 | 0x6092de6c, 0x062f, 0x4adb, 0xab, 0x4b, 0xb4, 0xda, 0x69, 0xd2, 0x8e, 0xd8 | RT.GetWakeupTime – GetWakeupTime() gets the wakeup status at EFI\_TPL\_APPLICATION. | 1. Call GetWakeupTime() with valid parameters. If the **Enabled** is TRUE, the return time should be valid. |
| 5.2.2.3.7 | 0x8061bae9, 0x341c, 0x48ab, 0xad, 0x37, 0x15, 0x5c, 0x6b, 0x0f, 0x13, 0x34 | RT.GetWakeupTime – GetWakeupTime() gets the wakeup status at EFI\_TPL\_CALLBACK. | 1. Call GetWakeupTime() with valid parameters. If the **Enabled** is TRUE, the return time should be valid. |

### SetWakeupTime()

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| Number | GUID | Assertion | Test Description |
| 5.2.2.4.1 | 0x41d27daf, 0xe088, 0x441c, 0xb2, 0x05, 0x6d, 0xd7, 0xa4, 0xac, 0x08, 0xb1 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Year** is less than the low range. | 1. Call SetWakeupTime() with **Time.Year** is 1997. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.2 | 0xe2dbc697, 0xc56a, 0x4c58, 0xa2, 0x74, 0x58, 0x99, 0x94, 0x1c, 0x7e, 0x02 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Year** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Year** is 2100. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.3 | 0x2ef795b9, 0xdfac, 0x4334, 0xa2, 0x43, 0x55, 0xbe, 0x0d, 0x0c, 0x3b, 0x44 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Year** is invalid. | 1. Call SetWakeupTime() with **Time.Year** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.4 | 0x8f7fe2f6, 0xd96d, 0x4765, 0x96, 0x42, 0x05, 0xae, 0x30, 0x66, 0xd8, 0xb9 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Month** is less than the low range. | 1. Call SetWakeupTime() with **Time.Month** is 0. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.5 | 0xc398668f, 0x03c2, 0x4cac, 0x81, 0x18, 0x7c, 0xbe, 0xab, 0xd1, 0xb9, 0x67 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Month** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Month** is 13. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.6 | 0x57a4eedd, 0xafa6, 0x4233, 0xb2, 0xeb, 0x79, 0xe4, 0x5e, 0x3d, 0xc0, 0x2d | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Month** is invalid. | 1. Call SetWakeupTime() with **Time.Month** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.7 | 0x61dd2e73, 0x0c29, 0x436a, 0x80, 0x73, 0x3c, 0xe4, 0xde, 0xc7, 0x0d, 0xf2 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Day** is less than the low range. | 1. Call SetWakeupTime() with **Time.Day** is 0. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.8 | 0x7c532de7, 0x3d59, 0x4a43, 0x9c, 0xf1, 0x8c, 0x35, 0x51, 0x70, 0xbc, 0x86 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Day** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Day** is 32. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.9 | 0xb07ea402, 0x8403, 0x4c42, 0xa4, 0x11, 0x23, 0x2c, 0x37, 0xf9, 0xc5, 0x27 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Day** is invalid. | 1. Call SetWakeupTime() with **Time.Day** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.10 | 0xc86e5f11, 0x2e97, 0x4cee, 0x9c, 0xc8, 0xd3, 0xf5, 0x7f, 0xa6, 0x46, 0x75 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Day** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Month** is 4 and **Time.Day** is 31. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.11 | 0x0ef3f79c, 0x9399, 0x47f8, 0xab, 0x3b, 0xa6, 0x6c, 0x2f, 0x78, 0x1f, 0x9e | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Hour** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Hour** is 24. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.12 | 0x9f61f3ac, 0x059b, 0x4658, 0x98, 0x2d, 0x61, 0x6e, 0xab, 0x25, 0xcb, 0x6d | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Hour** is invalid. | 1. Call SetWakeupTime() with **Time.Hour** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.13 | 0xa05b10e8, 0x098e, 0x4c02, 0xad, 0x30, 0xef, 0xac, 0x58, 0xf4, 0x07, 0x56 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Minute** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Minute** is 60. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.14 | 0xbca1c0cf, 0xe121, 0x42fc, 0xba, 0x49, 0x2b, 0xd0, 0xad, 0x74, 0x3d, 0x60 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Minute** is invalid. | 1. Call SetWakeupTime() with **Time.Minute** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.15 | 0x89c7e1f1, 0x98cb, 0x4f3c, 0x96, 0xc7, 0x03, 0x59, 0x22, 0xd0, 0xce, 0x34 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Second** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Second** is 60. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.16 | 0x59b0d53d, 0xffac, 0x4c1a, 0xb9, 0xb0, 0x2c, 0xe6, 0xfc, 0x93, 0x8f, 0x0e | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Second** is invalid. | 1. Call SetWakeupTime() with **Time.Second** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.17 | 0x98737393, 0x45af, 0x4945, 0xa7, 0xd2, 0xe2, 0x92, 0xfd, 0x4e, 0x8d, 0x20 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Nanosecond** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.Nanosecond** is 1000000000. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.18 | 0xc9eff904, 0x5d44, 0x451c, 0x94, 0xd2, 0x66, 0x73, 0xe1, 0x8e, 0x65, 0x05 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **Nanosecond** is invalid. | 1. Call SetWakeupTime() with **Time.Nanosecond** is -1. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.19 | 0x4cf4b039, 0xf2aa, 0x4f8a, 0x9c, 0xec, 0x0a, 0x80, 0x2c, 0xea, 0xd7, 0x5f | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **TimeZone** is less than the low range. | 1. Call SetWakeupTime() with **Time.TimeZone** is -1441. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.20 | 0xabd093eb, 0x7d84, 0x4ebc, 0xb3, 0x24, 0xc2, 0x85, 0x79, 0x5b, 0xde, 0x34 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with **TimeZone** is greater than the upper range. | 1. Call SetWakeupTime() with **Time.TimeZone** is 1441. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.21 | 0x0fce1f4c, 0x41f6, 0x4de4, 0x80, 0xa7, 0x77, 0x14, 0xa0, 0x35, 0x6d, 0x9b | RT.SetWakeupTime – SetWakeupTime() returns EFI\_INVALID\_PARAMETER with invalid leap day. | 1. Call SetWakeupTime() with **Time** is 2001/2/29. The return code must be EFI\_UNSUPPORTED or EFI\_INVALID\_PARAMETER. |
| 5.2.2.4.22 | 0x4b660fec, 0xc2d0, 0x423f, 0xa3, 0x87, 0x07, 0x80, 0x41, 0xa1, 0x83, 0xb7 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_SUCCESS with valid parameters at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with valid parameters. The return code should be EFI\_SUCCESS. |
| 5.2.2.4.23 | 0x218d16a6, 0xf52a, 0x4e42, 0x80, 0x52, 0x1a, 0x4d, 0x5d, 0x4a, 0x19, 0x60 | RT.SetWakeupTime – SetWakeupTime() returns EFI\_SUCCESS with valid parameters at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with valid parameters. The return code should be EFI\_SUCCESS. |
| 5.2.2.4.24 | 0x0da0ec8a, 0xb748, 0x4c42, 0xa8, 0xc6, 0x71, 0x03, 0x75, 0x32, 0x90, 0x71 | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Enabled** should be TRUE. |
| 5.2.2.4.25 | 0x34aaf995, 0xd29b, 0x4892, 0xa4, 0x18, 0x99, 0x2c, 0xb0, 0xee, 0x29, 0xea | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Enabled** should be TRUE. |
| 5.2.2.4.26 | 0x49f3c56e, 0x013b, 0x4fa8, 0x8a, 0xb2, 0x17, 0x70, 0xd5, 0x37, 0x3d, 0x74 | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Pending** should be FALSE. |
| 5.2.2.4.27 | 0xb39225e6,  0x3d06, 0x401c, 0xad, 0x26, 0x3e, 0xa9, 0x23, 0x71, 0xf3, 0xdc | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Pending** should be FALSE. |
| 5.2.2.4.28 | 0x6fd3d6d4, 0x2694, 0x4677, 0x87, 0x76, 0x3d, 0xd6, 0x2e, 0x3a, 0x8c, 0xa0 | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Time** should be set before. |
| 5.2.2.4.29 | 0xdf714d88, 0x9ee9, 0x4027, 0xa3, 0x70, 0xe5, 0xa2, 0x83, 0x56, 0x5c, 0xed | RT.SetWakeupTime – SetWakeupTime() enables the wakeup time at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with valid parameters.  2. Call GetWakeupTime() to get the wakeup time. The return **Time** should be set before. |
| 5.2.2.4.30 | 0xd3835a5c, 0xb4be, 0x4f6c, 0xab, 0xf0, 0x29, 0x52, 0x52, 0x37, 0x14, 0x06 | RT.SetWakeupTime – SetWakeupTime() disables the wakeup time with **Enable** is FALSE at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with **Enable** is FALSE. The return code must be EFI\_SUCCESS. |
| 5.2.2.4.31 | 0xeb8730ec, 0x578d, 0x41b1, 0xa2, 0xbe, 0x4a, 0x9f, 0xf6, 0x03, 0xdb, 0x22 | RT.SetWakeupTime – SetWakeupTime() disables the wakeup time with **Enable** is FALSE at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with **Enable** is FALSE. The return code must be EFI\_SUCCESS. |
| 5.2.2.4.32 | 0xffaa1029, 0x16ae, 0x4d5c, 0xba, 0x74, 0x86, 0x80, 0xf4, 0xba, 0x9c, 0xd0 | RT.SetWakeupTime – SetWakeupTime() disables the wakeup time with **Enable** is FALSE at EFI\_TPL\_APPLICATION. | 1. Call SetWakeupTime() with **Enable** is FALSE.  2. Call GetWakeupTime() to get the wakeup time. The return **Enabled** must be FALSE. |
| 5.2.2.4.33 | 0x8a70609a, 0xab54, 0x475e, 0x8d, 0xf2, 0xc3, 0xf9, 0x11, 0x58, 0xc4, 0xa8 | RT.SetWakeupTime – SetWakeupTime() disables the wakeup time with **Enable** is FALSE at EFI\_TPL\_CALLBACK. | 1. Call SetWakeupTime() with **Enable** is FALSE.  2. Call GetWakeupTime() to get the wakeup time. The return **Enable** must be FALSE. |

## 

## Virtual Memory Services Test

Reference Document:

*UEFI Specification*, Virtual Memory Services Section.

* Virtual Memory Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| SetVirtualAddressMap | Runtime | Used by an OS loader to convert from physical addressing to virtual addressing. |
| ConvertPointer | Runtime | Used by EFI components to convert internal pointers when switching to virtual addressing. |

No test case is designed to verify these functions in the EFI SCT.

## Misc Runtime Services Test

Reference Document:

*UEFI Specification*, Miscellaneous Runtime Services Section.

* Miscellaneous Runtime Services Functions

|  |  |  |
| --- | --- | --- |
| Name | Type | Description |
| ResetSystem | Runtime | Reset the entire platform. |
| UpdateCapsule | Runtime | Passes capsules to the firmware with both virtual and physical mapping. |
| QueryCapsuleCapabilities | Runtime | Estimate if a capsule or capsules can be updated via UpdateCapsule() |
| GetNextHighMonotonicCount | Runtime | Returns the next high 32 bits of the platform’s monotonic counter. |

### ResetSystem()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.4.1.1 | 0x26feed7e, 0x1501, 0x4c0a, 0xae, 0xf3, 0x86, 0xd6, 0x6b, 0xe2, 0xfc, 0xd0 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetCold at EFI\_TPL\_APPLICATION. | 1. Call ResetSystem() with a **ResetType** value of EfiResetCold. The system should be reset. |
| 5.2.4.1.2 | 0x567f8ee9, 0x4e5e, 0x4278, 0x86, 0x3d, 0xdb, 0xc4, 0xd7, 0x4f, 0x0f, 0xba | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is **EfiResetCold** at EFI\_TPL\_CALLBACK. | 1. Call ResetSystem() with a **ResetType** value of EfiResetCold. The system should be reset. |
| 5.2.4.1.3 | 0xb7a21919, 0xf358, 0x4a1d, 0x85, 0x26, 0xcc, 0x52, 0x4c, 0x52, 0x94, 0xb2 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetCold at EFI\_TPL\_NOTIFY. | 1. Call ResetSystem() with a **ResetType** value of EfiResetCold. The system should be reset. |
| 5.2.4.1.4 | 0x7bbad1aa, 0x88b4, 0x4d66, 0x95, 0x94, 0xdb, 0x7e, 0x65, 0xe1, 0xd3, 0xa4 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetWarm at EFI\_TPL\_APPLICATION. | 1. Call ResetSystem() with a **ResetType** value of EfiResetWarm. The system should be reset. |
| 5.2.4.1.5 | 0xdbe1128b, 0x5155, 0x4241, 0x84, 0x1e, 0x54, 0xea, 0x76, 0x3a, 0x85, 0xc9 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetWarm at EFI\_TPL\_CALLBACK. | 1. Call ResetSystem() with a **ResetType** value of EfiResetWarm. The system should be reset. |
| 5.2.4.1.6 | 0x8128b536, 0x0b56, 0x480b, 0xa2, 0xd4, 0xcd, 0x79, 0xf8, 0xfa, 0xcb, 0x3b | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetWarm at EFI\_TPL\_NOTIFY. | 1. Call ResetSystem() with a **ResetType** value of EfiResetWarm. The system should be reset. |
| 5.2.4.1.7 | 0x1189a0df, 0xe9cc, 0x45e6, 0xbb, 0x94, 0x21, 0xa7, 0xb3, 0x42, 0x70, 0x96 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetShutdown at EFI\_TPL\_APPLICATION. | 1. Call ResetSystem() with a **ResetType** value of EfiResetShutdown. The system should be reset or shut down. |
| 5.2.4.1.8 | 0x22b8b295, 0x62a2, 0x4e14, 0xb8, 0x5b, 0xd2, 0xde, 0x36, 0x37, 0x15, 0xb5 | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetShutdown at EFI\_TPL\_CALLBACK. | 1. Call ResetSystem() with a **ResetType** value of EfiResetShutdown. The system should be reset or shut down. |
| 5.2.4.1.9 | 0x1ed1babb, 0x6521, 0x4515, 0x93, 0x9a, 0x39, 0x26, 0xc8, 0xe3, 0x12, 0xff | RT.ResetSystem – ResetSystem() resets the platform with **ResetType** is EfiResetShutdown at EFI\_TPL\_NOTIFY. | 1. Call ResetSystem() with a **ResetType** value of EfiResetShutdown. The system should be reset or shut down. |

### UpdateCapsule()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.4.2.1 | 0xf48a2ac4, 0xbce7, 0x4fa7, 0x9e, 0x1b, 0xb9, 0x6f, 0xf8, 0x60, 0xe3, 0x0a | RT.UpdateCapsule –UpdateCapsule() returns EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED with **CapsuleCount** is NULL. | 1. Call UpdateCapsule() with a **CapsuleCount** value of NULL. The return value should be EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED. |
| 5.2.4.2.2 | 0x304f6960, 0x79d0, 0x4f17, 0x88, 0x11, 0x62, 0x0f, 0xc6, 0xbd, 0xb0, 0xd4 | RT. UpdateCapsule–UpdateCapsule() returns EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED when a capsule has the **CAPSULE\_FLAGS\_PERSIST\_ACROSS\_RESET** in its header, but the **ScatterGatherList** is NULL. | 1. Call UpdateCapsule() with **ScatterGatherList** is NULL and a capsule has the flag of **CAPSULE\_FLAGS\_PERSIST\_ACROSS\_RESET** in its header.The return value should be EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED. |
| 5.2.4.2.3 | 0x18f86bf8, 0x76cf, 0x4225, 0x8e, 0x3e, 0x1b, 0x1f, 0x63, 0x43, 0x26, 0x00 | RT.UpdateCapsule– UpdateCapsule()returns EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED when a capsule has the flag of **CAPSULE\_FLAGS\_POPULATE\_SYSTEM\_TABLE** in its header only. | 1. Call UpdateCapsule()when a capsule has the flag of **CAPSULE\_FLAGS\_POPULATE\_SYSTEM\_TABLE** in its header only. The return value should be EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED |

### QueryCapsuleCapabilities()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.2.4.3.1 | 0x5b5f42d4, 0x8985, 0x45a0, 0x9d, 0xf2, 0x21, 0xaf, 0x74, 0xb1, 0xf5, 0xf6 | RT.QueryCapsuleCapabilities– QueryCapsuleCapabilities() query for generic capsule capability with a fake EFI\_CAPSULE\_HEADER. CAPSULE\_FLAGS\_PERSIST\_ACROSS\_RESET is set in the flags in the header. | 1. Call QueryCapsuleCapabilities() with a fake EFI\_CAPSULE\_HEADER. The return value should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |
| 5.2.4.3.2 | 0x13826168, 0xfef6, 0x407e, 0x93, 0x7c, 0x6d, 0x5e, 0x32, 0x34, 0x9d, 0x5c | RT.QueryCapsuleCapabilities–QueryCapsuleCapabilities() query for generic capsule capability with a fake EFI\_CAPSULE\_HEADER. 0 is set in the flags in the header. | 1. Call QueryCapsuleCapabilities() with a fake EFI\_CAPSULE\_HEADER. The return value should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |
| 5.2.4.3.3 | 0x67c3c36d, 0x4cf8, 0x41fb, 0xa7, 0x8a, 0x86, 0x36, 0x84, 0xe9, 0xe6, 0xe4 | RT.QueryCapsuleCapabilities– QueryCapsuleCapabilities()query for generic capsule capability with **MaximumCapsuleSize** is NULL. | 1. Call QueryCapsuleCapabilities() with **MaximumCapsuleSize** is NULL. The return value should be EFI\_INVALID\_PARAMETER or EFI\_UNSUPPORTED |

### GetNextHighMonotonicCount()

This function may only be available in Runtime. No test case is designed to verify it.

# Protocols EFI Loaded Image Test

## EFI\_LOADED\_IMAGE Protocol Test

Reference Document:

*UEFI Specification*, EFI\_LOADED\_IMAGE\_PROTOCOL Section.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.3.1.1.1 | 0xb324a56f, 0x5714, 0x44b4, 0xa2, 0x0f, 0x6e, 0x9b, 0x13, 0x7b, 0x8d, 0xf9 | EFI\_LOADED\_IMAGE\_PROTOCOL – BS.HandleProtocol() to handle Loaded Image Protocol returns EFI\_SUCCESS. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle. The return code should be EFI\_SUCCESS. |
| 5.3.1.1.2 | 0xbce0c845, 0x4ce1, 0x4c3b, 0x9f, 0x94, 0x84, 0x6c, 0x27, 0x9c, 0x93, 0xd0 | EFI\_LOADED\_IMAGE\_PROTOCOL – Revision is equal to EFI\_IMAGE\_INFORMATION\_REVISION | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Revision on each image handle should equal EFI\_IMAGE\_INFORMATION\_REVISION. |
| 5.3.1.1.3 | 0x12b28b7b, 0x8255, 0x4fad, 0xb3, 0x05, 0x81, 0x31, 0x16, 0x71, 0xb2, 0xe1 | EFI\_LOADED\_IMAGE\_PROTOCOL – ParentHandle is equal to the test driver’s image handle | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. ParentHandle should be equal to the test driver’s image handle. |
| 5.3.1.1.4 | 0xb8e8ce9f, 0x3324, 0x4134, 0xab, 0x08, 0x3f, 0x3c, 0x9e, 0xe2, 0x5c, 0x27 | EFI\_LOADED\_IMAGE\_PROTOCOL – SystemTable is not NULL. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. SystemTable should not be NULL. |
| 5.3.1.1.5 | 0x3bf1e23d, 0x86e1, 0x4f8a, 0x8c, 0x1a, 0x7f, 0xdc, 0x5c, 0x49, 0x11, 0xb9 | EFI\_LOADED\_IMAGE\_PROTOCOL – **DeviceHandle** is not NULL. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. **DeviceHandle** should not be NULL. |
| 5.3.1.1.6 | 0x7df05248, 0x72ff, 0x40a5, 0x94, 0x8c, 0xc6, 0x47, 0xd1, 0xfd, 0xc1, 0xae | EFI\_LOADED\_IMAGE\_PROTOCOL - ImageBase is not NULL and ImageSize is not 0. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. ImageBase is not NULL and ImageSize is not 0. |
| 5.3.1.1.7 | 0xfede5dd0, 0x92f6, 0x42de, 0x81, 0x4f, 0xf2, 0xe3, 0x33, 0x9b, 0x5d, 0xe1 | EFI\_LOADED\_IMAGE\_PROTOCOL - Application image’s ImageCodeType equals **EfiLoaderCode** and ImageDataType equals **EfiLoaderData**. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Application image’s ImageCodeType should be **EfiLoaderCode** and ImageDataType should be **EfiLoaderData**. |
| 5.3.1.1.8 | 0x9ead501b, 0x4a09, 0x4c24, 0xba, 0x47, 0xcf, 0x27, 0xbf, 0xf0, 0x66, 0xdb | EFI\_LOADED\_IMAGE\_PROTOCOL - **BootService** image’s ImageCodeType equals **EfiBootServiceCode** and ImageDataType equals **EfiBootServiceData**. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. **BootService** image’s ImageCodeType equals **EfiBootServiceCode** and ImageDataType equals **EfiBootServiceData**. |
| 5.3.1.1.9 | 0x064e5c37, 0xcfaf, 0x4b5a, 0xa2, 0xa0, 0xf6, 0x17, 0xdd, 0x41, 0xa4, 0x12 | EFI\_LOADED\_IMAGE\_PROTOCOL - **RuntimeService** image’s ImageCodeType equals **EfiRuntimeServiceCode** and ImageDataType equals **EfiRuntimeServiceData**. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. **RuntimeService** image’s ImageCodeType equals **EfiRuntimeServiceCode** and ImageDataType equals **EfiRuntimeServiceData**. |
| 5.3.1.1.10 | 0xc7606256, 0x8a89, 0x48ce, 0xb5, 0x7b, 0xa1, 0xb0, 0x6b, 0x3c, 0x62, 0x3b | EFI\_LOADED\_IMAGE\_PROTOCOL – Unload() is NULL if the image has no Unload function. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Check on Application Images which have no unload function. Unload field should be NULL. |
| 5.3.1.1.11 | 0xfc2330ce, 0xaa7a, 0x4c64, 0xac, 0x5e, 0xfe, 0xb1, 0xf0, 0xf7, 0xda, 0xc7 | EFI\_LOADED\_IMAGE\_PROTOCOL – Unload() is not NULL and its address is valid if the image has Unload function. | 1. Call BS.LoadImage() to get image handle by filename.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Check on Application Images which have Unload function. Unload field should be valid and its entry address should be within the range of [ImageBase, ImageBase+ImageSize] |
| 5.3.1.1.12 | 0x69cb9798, 0x5b57, 0x4381, 0xb9, 0xb2, 0x54, 0xb9, 0xa2, 0x4b, 0x8d, 0x16 | EFI\_LOADED\_IMAGE\_PROTOCOL – LoadOptions is used in notify function. | 1. Call BS.LoadImage() to get image handle by filename with specified LoadOptions.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Call BS.StartImage(). LoadOptions should be used. |
| 5.3.1.1.13 | 0x6da9aef4, 0xdadd, 0x4bda, 0xa7, 0x0d, 0x29, 0x47, 0x0e, 0x05, 0xf3, 0x17 | EFI\_LOADED\_IMAGE\_PROTOCOL – LoadOptions is used in notify function. | 1. Call BS.LoadImage() to get image handle by filename with specified LoadOptions.  2. Call BS.HandleProtocol() to handle Loaded Image Protocol on each image handle.  3. Call BS.StartImage(). LoadOptions should be used.  4. Unload Image.  5. Change LoadOptions and call BS.**LoadImage()** again.  6. Call BS.HandleProtocol() and BS.StartImage(). Updated LoadOptions value should be used. |
| 5.3.1.1.14 | 0x0caae7f5, 0x0742, 0x458f, 0xbf, 0x02, 0x65, 0x2d, 0x33, 0xa4, 0xf1, 0xab | EFI\_LOADED\_IMAGE\_PROTOCOL – SystemTable is not NULL | 1. Check on all images in system. SystemTable should not be NULL. |
| 5.3.1.1.15 | 0xa7bc2e01, 0x3162, 0x482c, 0xa6, 0x8b, 0x93, 0x9d, 0x0c, 0xf7, 0x9a, 0x45 | EFI\_LOADED\_IMAGE\_PROTOCOL – ImageBase is not NULL and ImageSize is not 0 | 1. Check on all images in system. ImageBase is not NULL and ImageSize is not 0. |
| 5.3.1.1.16 | 0xa3ada89a, 0xef4e, 0x475b, 0xbc, 0x53, 0x00, 0x98, 0xd5, 0xc6, 0x5b, 0xee | EFI\_LOADED\_IMAGE\_PROTOCOL – ImageCodeType matches with the ImageDataType. | 1. Check on all images in system.  If ImageCodeType is **EfiLoaderCode**, ImageDataType should be **EfiLoaderData**;  If ImageCodeType is **EfiBootServicesCode**, ImageDataType should be **EfiBootServicesData**;  If ImageCodeType is **EfiRuntimeServicesCode**, ImageDataType should be **EfiRuntimeServicesData**; |
| 5.3.1.1.17 | 0xda215e1d, 0x5ac8, 0x480a, 0xa7, 0x9e, 0xa0, 0x66, 0xb9, 0x74, 0x58, 0x65 | EFI\_LOADED\_IMAGE\_PROTOCOL – If Unload() function is not NULL, its address is valid. | 1. Check on all images in system. If Unload() function is not NULL, its address should be within the range of [ImageBase, ImageBase+ImageSize] |
| 5.3.1.1.18 | 0xe2f6c4a6, 0xe2a8, 0x4bab, 0x94, 0xbb, 0x70, 0x44, 0x54, 0xd6, 0x2a, 0xea | EFI\_LOADED\_IMAGE\_PROTOCOL – Revision equals EFI\_IMAGE\_INFORMATION\_REVISION. | 1. Check Revision on all file images. Revision should be equal to EFI\_IMAGE\_INFORMATION\_REVISION |

# Protocols Device Path Protocol Test

## Device Path Node Conformance Test

Reference Document:

*UEFI Specification*, Device Path Nodes Section.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.1.1.1 | 0x91064ab1, 0x5408, 0x48c1, 0xbb, 0xd9, 0x2a, 0x49, 0xee, 0xe2, 0x1d, 0xc9 | EFI\_DEVICE\_PATH\_PROTOCOL - Check End of Hardware Device Path - End This Device Path. | Verify the device path nodes. Type: 0x7F or 0xFF. Sub-Type: 0xFF. Length: 4 bytes. |
| 5.4.1.1.2 | 0xb5a0ee55, 0x0070, 0x472d, 0x84, 0xcd, 0xbc, 0xb1, 0xe2, 0xbc, 0x25, 0xc0 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Hardware Device Path - PCI Device Path. | Verify the device path nodes. Type: 1.Sub-Type: 1.Length: 6 bytes. |
| 5.4.1.1.3 | 0x2902b389, 0xe4e7, 0x43cd, 0x9e, 0xff, 0xdc, 0x3f, 0xaa, 0xff, 0x12, 0xfa | EFI\_DEVICE\_PATH\_PROTOCOL - Check Hardware Device Path - PCCARD Device Path. | Verify the device path nodes. Type: 1.Sub-Type: 2.Length: 5 bytes |
| 5.4.1.1.4 | 0x745df5f1, 0x7d97, 0x4297, 0xaf, 0x5a, 0xc5, 0xca, 0x67, 0x28, 0x39, 0x18 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Hardware Device Path - Memory Mapped Device Path. | Verify the device path nodes. Type: 1.Sub-Type: 3.Length: 24 bytes. Memory Type < EfiMaxMemoryType, or Memory Type > 0x7FFFFFFF.End Address >= Start Address. |
| 5.4.1.1.5 | 0xc8f02111, 0x1de9, 0x4df2, 0x8f, 0x17, 0xbb, 0x12, 0x9b, 0xa6, 0x4d, 0xfe | EFI\_DEVICE\_PATH\_PROTOCOL - Check Hardware Device Path - Vendor Device Path. | Verify the device path nodes. Type: 1.Sub-Type: 4.Length>=20 bytes. |
| 5.4.1.1.6 | 0x1c206e49, 0x6638, 0x469d, 0x8c, 0x9c, 0x26, 0x13, 0x85, 0x8e, 0x4d, 0x77 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Hardware Device Path - Controller Device Path. | Verify the device path nodes. Type: 1.Sub-Type: 5.Length: 8 bytes. |
| 5.4.1.1.7 | 0xcedef0c0, 0x24cc, 0x4d36, 0x9d, 0x31, 0x9b, 0x9a, 0xf4, 0x63, 0xe6, 0x95 | EFI\_DEVICE\_PATH\_PROTOCOL - Check ACPI Device Path - ACPI Device Path. | Verify the device path nodes. Type: 2.Sub-Type: 1.Length: 12 bytes. |
| 5.4.1.1.8 | 0xf497a21b, 0x8bb4, 0x4310, 0xba, 0xcf, 0xf6, 0xfc, 0x18, 0xda, 0x46, 0x9e | EFI\_DEVICE\_PATH\_PROTOCOL - Check ACPI Device Path - Expanded ACPI Device Path. | Verify the device path nodes. Type: 2.Sub-Type: 2.Length>=19 bytes. |
| 5.4.1.1.9 | 0xc3b2ba41, 0x7126, 0x4b7a, 0xab, 0xdc, 0x7d, 0x1b, 0x46, 0x3d, 0x9b, 0xd7 | EFI\_DEVICE\_PATH\_PROTOCOL - Check ACPI \_ADR Device Path - ACPI \_ADR Device Path. | Verify the device path nodes. Type*:* 2.Sub-Type*:* 3. Length>=8 bytes. |
| 5.4.1.1.10 | 0xf52ef05c, 0x4a10, 0x4857, 0xb9, 0x8c, 0x01, 0xd8, 0x15, 0x6e, 0xf8, 0x3f | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - ATAPI Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 1.Length: 8 bytes. PrimarySecondary: 0 or 1.SlaveMaster: 0 or 1. |
| 5.4.1.1.11 | 0x3e3eaf27, 0xf811, 0x4060, 0x97, 0xe1, 0x13, 0xfc, 0x5a, 0x51, 0x6c, 0x0c | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - SCSI Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 2.Length: 8 bytes. |
| 5.4.1.1.12 | 0x8f24a32d, 0xb167, 0x42df, 0x85, 0xc3, 0xa3, 0xec, 0x68, 0x4a, 0x79, 0x80 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - Fibre Channel Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 3.Length: 24 bytes. |
| 5.4.1.1.13 | 0xfd1e18a9, 0x0fd6, 0x4ea4, 0xac, 0xea, 0xe6, 0xc4, 0xd1, 0x73, 0x97, 0x52 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - 1394 Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 4.Length: 16 bytes. |
| 5.4.1.1.14 | 0x758cfe7a, 0x1463, 0x4f29, 0x8c, 0x5b, 0x0e, 0x3a, 0x04, 0x17, 0x5d, 0xf8 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - USB Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 5.Length: 6 bytes. |
| 5.4.1.1.15 | 0xd1527a5c, 0xc1bd, 0x4585, 0x93, 0x23, 0xa5, 0xea, 0xc7, 0xd5, 0x12, 0x7b | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - USB Device Path (WWID). | Verify the device path nodes.Type*:* 3.Sub-Type*:* 16. Length *>=*10bytes. |
| 5.4.1.1.16 | 0x50e59956, 0x46fd, 0x4b21, 0xb5, 0x57, 0x9a, 0x33, 0xb2, 0x08, 0xd3, 0x41 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - Device Logical Unit. | Verify the device path nodes.Type*:* 3.Sub-Type*:* 17. Length: 5 bytes. |
| 5.4.1.1.17 | 0x2eb2da32, 0x351d, 0x4743, 0x80, 0x55, 0xea, 0x23, 0x75, 0x69, 0x61, 0xc2 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path – USB Device Path (Class). | Verify the device path nodes. Type: 3.Sub-Type: 15.Length: 11 bytes. |
| 5.4.1.1.18 | 0xba91dcd7, 0x719d, 0x4803, 0xaf, 0xe2, 0x61, 0x02, 0x1b, 0x31, 0x9b, 0x1f | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - I2O Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 6.Length: 8 bytes. |
| 5.4.1.1.19 | 0xb10c12a3, 0x8faa, 0x408a, 0x83, 0x63, 0x35, 0x6c, 0x74, 0x95, 0xe6, 0x80 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - MAC Address Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 11.Length: 37 bytes. |
| 5.4.1.1.20 | 0xdd68e9c3, 0x28e1, 0x44c7, 0x9c, 0x31, 0xba, 0xcc, 0x80, 0x4e, 0xe4, 0xb3 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - IPv4 Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 12.Length: 19 bytes. StaticIPAddress: 0x00 or 0x01. |
| 5.4.1.1.21 | 0x2da145c3, 0x7d26, 0x4715, 0x8e, 0xfb, 0xf2, 0x35, 0xd5, 0x51, 0xe0, 0x77 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - IPv6 Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 13.Length: 43 bytes. StaticIPAddress: 0x00 or 0x01. |
| 5.4.1.1.22 | 0xfcac17d1, 0xc792, 0x417a, 0x86, 0x99, 0x26, 0x11, 0xd0, 0xae, 0xc5, 0xba | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - InfiniBand Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 9.Length: 48 bytes. |
| 5.4.1.1.23 | 0x5f832ee4, 0x1d93, 0x42bf, 0x94, 0xea, 0xf8, 0x1b, 0x30, 0x1a, 0x9e, 0xf7 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - UART Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 14.Length: 19 bytes. Parity: 0x00~0x05.Stop Bits: 0x00~0x03. |
| 5.4.1.1.24 | 0x86499222, 0x650a, 0x4492, 0x92, 0x2d, 0x46, 0x84, 0x4b, 0x1e, 0xb2, 0x0f | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - Vendor-Defined Device Path. | Verify the device path nodes. Type: 3.Sub-Type: 10.Length>=20 bytes. |
| 5.4.1.1.25 | 0x4c19f495, 0x7214, 0x48da, 0xb4, 0xc5, 0x2e, 0x6c, 0xae, 0xd2, 0x8f, 0xc9 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - UART Flow Control Messaging Path. | Verify the device path nodes. Type: 3.Sub-Type: 10.Length: 24 bytes. Vendor\_GUID: DEVICE\_PATH\_MESSAGING\_UART\_FLOW\_CONTROL. Flow\_Control\_Map: 0 or 1. |
| 5.4.1.1.26 | 0x8e637c03, 0xa1df, 0x4ab6, 0xae, 0x29, 0x5b, 0x9c, 0xd8, 0x6c, 0x6d, 0x1e | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - Serial Attached SCSI (SAS) Device Path. | Verify the device path nodes.Type*:* 3.Sub-Type*:* 10.*Length*: 44 bytes.Vendor\_GUID*:* DEVICE\_PATH\_MESSAGING\_SAS |
| 5.4.1.1.27 | 0x885db334, 0x940b, 0x4ec3, 0x82, 0xe5, 0xc5, 0xf1, 0x1d, 0xdb, 0x2a, 0x42 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Messaging Device Path - iSCSI Device Path. | Verify the device path nodes.Type: 3.Sub-Type*:* 19.*Length>=18* bytes. Options*:* Bit0=0x0, Bit2=0x0, Bit10=0x0 |
| 5.4.1.1.28 | 0x1856d9b9, 0x57db, 0x49eb, 0x97, 0x35, 0x68, 0x8a, 0xee, 0x43, 0x76, 0xf6 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Media Device Path - Hard Drive Media Device Path. | Verify the device path nodes. Type: 4.Sub-Type: 1.Length: 42 bytes. MBR Type: 0x01 or 0x02.Signature Type: 0x00, 0x01 or 0x02. |
| 5.4.1.1.29 | 0x8b53dc1e, 0xb9be, 0x49d7, 0x86, 0xad, 0xd5, 0x12, 0x8e, 0x1f, 0x08, 0x34 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Media Device Path - CD-ROM Media Device Path. | Verify the device path nodes. Type: 4.Sub-Type: 2.Length: 24 bytes. |
| 5.4.1.1.30 | 0x4c60bb0c, 0x8c00, 0x40f8, 0xa7, 0x35, 0x13, 0x4a, 0x56, 0x28, 0xe5, 0x21 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Media Device Path - Vendor-Defined Media Device Path. | Verify the device path nodes. Type: 4.Sub-Type: 3.Length>=20 bytes. |
| 5.4.1.1.31 | 0xde41b8cb, 0x401f, 0x4b7f, 0xb2, 0x34, 0xf8, 0xfb, 0x29, 0x3f, 0xc5, 0x23 | EFI\_DEVICE\_PATH\_PROTOCOL - Check Media Device Path - File Path Media Device Path. | Verify the device path nodes. Type: 4.Sub-Type: 4.Length>=4 bytes. |
| 5.4.1.1.32 | 0xc9969745, 0x6507, 0x4695, 0xb1, 0x26, 0xc3, 0xf8, 0xe6, 0xd2, 0x86, 0xec | EFI\_DEVICE\_PATH\_PROTOCOL - Check Media Device Path - Media Protocol Device Path. | Verify the device path nodes. Type: 4.Sub-Type: 5.Length: 20 bytes. |
| 5.4.1.1.33 | 0x014988e5, 0xc211, 0x478d, 0x90, 0x6d, 0xf1, 0x6a, 0xb0, 0x73, 0x85, 0x0c | EFI\_DEVICE\_PATH\_PROTOCOL - Check BIOS Boot Specification Device Path. | Verify the device path nodes. Type: 5.Sub-Type: 1.Length>=8 bytes. |
| 5.4.1.1.34 | 0x3152ee5d, 0xd161, 0x4916, 0xa4, 0x13, 0x44, 0xa7, 0x79, 0x39, 0x16, 0x7f | EFI\_DEVICE\_PATH\_PROTOCOL - Check End of Hardware Device Path - End Entire Device Path. | Verify the device path nodes. Type: 0x7F or 0xFF.Sub-Type: 0xFF.Length: 4 bytes. |
| 5.4.1.1.35 | 0xab5c791b, 0x015c, 0x41b2, 0x93, 0xdf, 0x70, 0xf5, 0xc8, 0xaf, 0x3a, 0xec | EFI\_DEVICE\_PATH\_PROTOCOL – Check SATA Device Path. | Verify the device path nodes. Type: 3. SubType: 18. Length: 10 bytes |
| 5.4.1.1.36 | 0x2bbca783, 0x4c23, 0x477d, 0xa7, 0x50, 0xf3, 0xda, 0xfa, 0xbc, 0x38, 0xf6 | EFI\_DEVICE\_PATH\_PROTOCOL – Check PIWG Fireware Volume | Verify the device path nodes. Type: 4. SubType: 6. Length >= 4 bytes. |
| 5.4.1.1.37 | 0xbaaf24e1, 0x0c59, 0x4494, 0xaf, 0xef, 0x53, 0x02, 0xc1, 0x90, 0x57, 0x29 | EFI\_DEVICE\_PATH\_PROTOCOL – Check PIWG Fireware File | Verify the device path nodes. Type: 4. SubType: 7. Length >= 4 bytes. |
| 5.4.1.1.38 | 0xbe55aaa6, 0x7510, 0x4904, 0x98, 0x65, 0x8c, 0xa7, 0x16, 0x34, 0xd2, 0x03 | EFI\_DEVICE\_PATH\_PROTOCOL - Controller Device Path Node. | Verify the device path nodes. Type: 3. SubType: 20. 0 < VlanId < 4095 |
| 5.4.1.1.39 | 0x5658c849, 0xd7ed, 0x4780, 0x8e, 0xe7, 0x6d, 0xf2, 0x62, 0x48, 0x1d, 0xdb | EFI\_DEVICE\_PATH\_PR  OTOCOL – Check Fibre Channel Ex | Verify the device path nodes. Type: 3. SubType: 21. |
| 5.4.1.1.40 | 0x3f412961, 0x4872, 0x4aa9, 0xbe, 0xd2, 0x2b, 0x03, 0x5f, 0xbc, 0xcc, 0xb6 | EFI\_DEVICE\_PATH\_PR  OTOCOL – Check Serial Attached SCSI(SAS) Ex. | Verify the device path nodes. Type: 3. SubType: 22. |
| 5.4.1.1.41 | 0x2ed116cb, 0x1ec7, 0x468a, 0x9c, 0xf8, 0x0f, 0xf4, 0x41, 0x2a, 0x4b, 0xb1 | EFI\_DEVICE\_PATH\_PROTOC  OL– Check NVM  Express. | Verify the device path nodes.  Type: 3. SubType: 23, Length = 16 bytes. |
| 5.4.1.1.42 | 0x64770fbb, 0x280f, 0x40d5, 0x80, 0x33, 0x7, 0x82, 0x44, 0x7b, 0x3a, 0x2b | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Hardware Device Path - BMC Device Path. | Verify the device path nodes. Type: 1. Sub-Type: 6. Length: 13 bytes. InterfaceType >= 0 and InterfaceType <= 3 |
| 5.4.1.1.43 | 0x88882137, 0x4e4d, 0x445a, 0xa1, 0xae, 0x11, 0xd8, 0xc2, 0xe1, 0xcf, 0xac | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Messaging Device Path - Uniform Resource Identifiers (URI) Device Path | Verify the device path nodes. Type: 3. Sub-Type: 24. Length: >= 4 bytes. |
| 5.4.1.1.44 | 0xda928c4a, 0x6d22, 0x4091, 0x95, 0x8c, 0xe, 0xde, 0xa5, 0x3b, 0xc8, 0x2e | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Messaging Device Path - Universal Flash Storage (UFS) Device Path | Verify the device path nodes. Type: 3. Sub-Type: 25. Length: 6 bytes |
| 5.4.1.1.45 | 0x71e0582d, 0x983, 0x468e, 0x9a, 0x5d, 0xd2, 0xe5, 0xbb, 0x8c, 0x52, 0x6c | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Messaging Device Path - Secure Digital (SD) Device Path | Verify the device path nodes. Type: 3. Sub-Type: 26. Length: 5 bytes |
| 5.4.1.1.46 | 0x3d20f5d0, 0x670a, 0x4923, 0x91, 0x78, 0xb0, 0x1e, 0x6d, 0xe8, 0xee, 0x13 | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Messaging Device Path - Bluetooth Device Path | Verify the device path nodes. Type: 3. Sub-Type: 27. Length: 10 bytes |
| 5.4.1.1.47 | 0x136c50de, 0xb2d4, 0x4416, 0xb4, 0x90, 0xe, 0x32, 0x85, 0xf1, 0x6a, 0x7 | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Messaging Device Path - WIFI Device Path | Verify the device path nodes. Type: 3. Sub-Type: 28. Length: 36 bytes |
| 5.4.1.1.48 | 0x973269de, 0xdca6, 0x4ad9, 0x9b, 0x9b, 0x6, 0x40, 0xfa, 0x4d, 0xbd, 0xf5 | EFI\_DEVICE\_PATH\_PROTOCOL -  Check Relative Offset Range Device Path | Verify the device path nodes. Type: 4. Sub-Type: 8. Length: 24 bytes |
| 5.4.1.1.49 | 0x6e817459, 0x21fd, 0x4923, 0x89, 0xe7, 0xca, 0xf9, 0x7d, 0x9d, 0xc2, 0x27 | EFI\_DEVICE\_PATH\_PROTOCOL -  Check RAM Disk Device Path | Verify the device path nodes. Type: 4. Sub-Type: 9. Length: 38 bytes |
| 5.4.1.1.50 | 0xdf69547d, 0xd032, 0x44bd, 0xb0, 0x54, 0x7f, 0x34, 0x3c, 0x2c, 0x7d, 0x95 | EFI\_DEVICE\_PATH\_PROTOCOL –  Check eMMC Device Path. | Verify the device path node. Type: 3. Sub-Type: 29. Length: 5 bytes |

## Whole Device Path Conformance Test

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.2.1.1 | 0x4d36889a, 0x938a, 0x45ae, 0xaa, 0x79, 0x89, 0x7f, 0xa3, 0x7e, 0x15, 0x99 | EFI\_DEVICE\_PATH\_PROTOCOL - BIOS Root Specification Device Path. | A Device Path containing the BIOS Boot Specification Device Path should contain only the required End Device Path structure and no other Device Path structures. |
| 5.4.2.1.2 | 0xf141747c, 0xf5f8, 0x43b9, 0x99, 0x9e, 0x45, 0xad, 0x37, 0xe1, 0x2a, 0x49 | EFI\_DEVICE\_PATH\_PROTOCOL - PCI Root Bus Device Path Node. | The device path node for PCI root bus is: ACPI Device Path: \_HID PNP0A03. It must be the first device path node. |
| 5.4.2.1.3 | 0xc44987b4, 0x9a29, 0x4b10, 0x82, 0xd3, 0xe9, 0x46, 0x81, 0x7e, 0x3c, 0x02 | EFI\_DEVICE\_PATH\_PROTOCOL - ACPI Device Path Node. | ACPI \_CRS Device Path Node must include  Floppy – ACPI Device Path: \_HID PNP0604  Keyboard – ACPI Device Path: \_HID PNP0301  Serial Port – ACPI Device Path: \_HID PNP0501  Parallel Port – ACPI Device Path: \_HID PNP0401.  EISA Device Path Nodes other than PCI Root Bus must be preceded by an ACPI Device Path Node. |
| 5.4.2.1.4 | 0xb28b09c6, 0x3b60, 0x48ce, 0xbf, 0x66, 0xac, 0xa1, 0xf6, 0x20, 0x6b, 0x01 | EFI\_DEVICE\_PATH\_PROTOCOL - PCI Device Path Node. | The PCI Device Path Node must be preceded by an ACPI Device Path Node that uniquely identifies the PCI root bus (Acpi(PNP0A03,0)) or another PCI Device Path Node. |
| 5.4.2.1.5 | 0x47f98975, 0x2945, 0x4198, 0x99, 0xa0, 0x7b, 0x07, 0xfe, 0xe0, 0x9b, 0x85 | EFI\_DEVICE\_PATH\_PROTOCOL - Memory Mapped Device Path Node. | The Memory Mapped Device Path Node must be the first device path node. |
| 5.4.2.1.6 | 0xfc86d0ef, 0xb3da, 0x4377, 0x99, 0x36, 0x56, 0x85, 0xb4, 0x59, 0x9e, 0x24 | EFI\_DEVICE\_PATH\_PROTOCOL - ATAPI Device Path Node. | The ATAPI Device Path Node must be preceded by a PCI Device Path Node. |
| 5.4.2.1.7 | 0x390d6af3, 0x78a8, 0x41ed, 0x99, 0x78, 0x16, 0x4d, 0xfe, 0x2b, 0x30, 0xc8 | EFI\_DEVICE\_PATH\_PROTOCOL - SCSI Device Path Node. | The SCSI Device Path Node must be preceded by a PCI Device Path Node. |
| 5.4.2.1.8 | 0xd456e708, 0x5b3c, 0x4f72, 0xae, 0xbb,0x7f, 0x94, 0x92, 0x76, 0x7b, 0xe1 | EFI\_DEVICE\_PATH\_PROTOCOL - USB Device Path Node. | The USB Device Path Node must be preceded by a PCI Device Path Node. |
| 5.4.2.1.9 | 0x436486e1, 0x4426, 0x427f, 0xa5, 0xc5, 0x45, 0xf2, 0x13, 0xef, 0x15, 0x88 | EFI\_DEVICE\_PATH\_PROTOCOL - PCI Option ROM Device Path Node. | The PCI Option ROM Device Path Node must be preceded by a PCI Device Path Node |
| 5.4.2.1.10 | 0x9619e2ad, 0x0358, 0x4aef, 0x98, 0x60, 0xb9, 0x08, 0xa3, 0xcc, 0x08, 0x7e | EFI\_DEVICE\_PATH\_PROTOCOL - Device Path must be terminated. | The Device Path must be terminated by an End of Device Path node with a sub-type of End the Entire Device Path. A NULL Device Path consists of a single End Device Path Node. A Device Path that contains a NULL pointer and no Device Path structures is illegal. |
| 5.4.2.1.11 | 0x59116d82, 0xaf34, 0x48a2, 0xaa, 0x22, 0xe4, 0x83, 0x7a, 0xd8, 0xe5, 0x8d | EFI\_DEVICE\_PATH\_PROTOCOL - Controller Device Path Node. | The Controller Device Path Node must be preceded by a PCI Device Path Node. |

## Device Path Utilities Protocol Interface Function Test

### CreatDeviceNode Functionality

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| Number | GUID | Assertion | Test Description |
| 5.4.3.1.1 | 0x9831dfbb, 0x008e, 0x4b37, 0xb2, 0x3c, 0x76, 0x43, 0x7c, 0xa4, 0xee, 0x91 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. CreatDeviceNode - CreatDeviceNode()must set Type, SubType and Length correctly, return EFI\_DEVICE\_PATH. | 1. Call CreatDeviceNode() with a NodeType value of 1, a NodeSubType value of 1, and a NodeLength value of 6.  2. The return **EFI\_DEVICE\_PATH** structure should have Type, SubType and Length values that are the same as the ones set in **CreatDeviceNode()**. |
| 5.4.3.1.2 | 0xf7c1a5dd, 0x3683, 0x43a6, 0x8d, 0x90, 0x6b, 0x79, 0x12, 0xbd, 0x32, 0x1d | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. CreatDeviceNode - CreatDeviceNode()must set Type, SubType and Length correctly, return EFI\_DEVICE\_PATH (another case). | 1. Call **CreatDeviceNode()** with a NodeType value of 2, a NodeSubType value of 1 and a NodeLength value of 12.  2. The return **EFI\_DEVICE\_PATH** structure should have Type, SubType and Length values the same as the ones set in **CreatDeviceNode()**. |

### AppendDeviceNode Functionality

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| Number | GUID | Assertion | Test Description |
| 5.4.3.2.1 | 0x0deb01c9, 0x16db, 0x42ac, 0x99, 0x99, 0x27, 0x7b, 0x61, 0x96, 0xf4, 0xb8 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode -AppendDeviceNode() called by the End of Device Path node must set Type, SubType and Length correctly in the first device path node, return EFI\_DEVICE\_PATH structure. | 1. Call CreatDeviceNode() to create an End of Device Path node.  2. Call CreatDeviceNode() with a NodeType value of 2,a NodeSubType value of 1 and a NodeLength value of 12.  3. Call AppendDeviceNode() with a DeviceNode value of the return pointer of CreatDeviceNode().  4. The first device path node in the return EFI\_DEVICE\_PATH structure should have Type, SubType and Length values the same as the ones set in CreatDeviceNode(). |
| 5.4.3.2.2 | 0xc2fa4f0f, 0xd2f0, 0x44b1, 0xa8, 0x69, 0x04, 0xeb, 0xc8, 0x88, 0xa6, 0xb6 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode -AppendDeviceNode() must set Type, SubType and Length correctly in the last but the End of Device Path node in the return EFI\_DEVICE\_PATH structure. | 1. Call CreatDeviceNode(), AppendDeviceNode() repeatedly to create a new device path.  2. The last but the end-of-device-path node in the return EFI\_DEVICE\_PATH structure should have Type, SubType and Length values the same as set in the last CreatDeviceNode(). |

### GetDevicePathSize Functionality

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| Number | GUID | Assertion | Test Description |
| 5.4.3.3.1 | 0x4257efa5, 0xd844, 0x4361, 0x98, 0xb9, 0x0d, 0x0e, 0x09, 0xf6, 0x8f, 0x78 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. GetDevicePathSize - GetDevicePathSize() should return the correct value and the return status should increase after AppendDeviceNode() is called. | 1. Call **CreatDeviceNode()** to create an End of Device Path node.  2. Call GetDevicePathSize().  3. Call **AppendDeviceNode()** with a DeviceNode value of a return pointer of **CreatDeviceNode()**.  4. Call GetDevicePathSize() again.  5. The return status should be 4 after **GetDevicePathSize()** was called the first time.  6. The return status should show an increase of the new device path node’s length after **GetDevicePathSize()** was called the second time. |

### DuplicateDevicePath Functionality

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.4.1 | 0x065a0a89, 0x3594, 0x440e, 0x82, 0xe6, 0x9e, 0xaf, 0x74, 0xc7, 0xb7, 0x2f | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. DuplicateDevicePath - DuplicateDevicePath() must correctly set the return EFI\_DEVICE\_PATH structure the same as the original one. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create a new device path.  2. Call GetDevicePathSize() first.  3. Call DupilicateDevicePath().  4. Call GetDevicePathSize() with a DevicePath value of the return value of DupilicateDevicePath().  5. The return value of **GetDevicePathSize()** should keep the same as the first return value, and the two device paths should be identical. |

### DuplicateDevicePath Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.2.6 | 0x97363972, 0x64cd, 0x4af8, 0xa7, 0x07, 0x41, 0x49, 0x81, 0xad, 0x4a, 0xb2 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. DuplicateDevicePath - DuplicateDevicePath() should return NULL if DevicePath is NULL | 1. Call DupilicateDevicePath()with a DevicePath value of NULL**.**  2. The return value should be NULL**.** |

### AppendDevicePath Functionality

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.5.1 | 0x7da4d0e1, 0x2d1b, 0x4b60, 0xaa, 0xb2, 0xf3, 0xc1, 0x35, 0xf1, 0xf3, 0x21 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. **AppendDevicePath - AppendDevicePath**() must correctly set the return **EFI\_DEVICE\_PATH** structure as the new device path that appends the second device path to the first. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create a new device path.  2. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create another device path.  3. Call **AppendDevicePath()** with *Src1* and *Src2* set respectively.  4. Call **GetDevicePathSize()** with a *DevicePath* value of the return value of **AppendDevicePath ()**.  5. The return value of **GetDevicePathSize()** should show an increase of the new device path’s length with the size of *Src1*’s End of Device Path device node subtracted after **GetDevicePathSize()** is called the second time. |

### AppendDevicePathInstance Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.6.1 | 0x8d72d028, 0x1e92, 0x4a79, 0x8d, 0xbe, 0xab, 0xc9, 0x3a, 0x47, 0xed, 0xee | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDevicePathInstance - AppendDevicePathInstance() must correctly set the return EFI\_DEVICE\_PATH structure as the new device path that appends the specific device path instance to the specific device path. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create a new device path.  2. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create another device path as a new device path instance.  3. Call **AppendDevicePathInstance()** with a DevicePathInstance value of the new device path instance.  4. The last device path instance of the returned **EFI\_DEVICE\_PATH** structure should be the same as the newly created one. |

### GetNextDevicePathInstance Functionality

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.7.1 | 0x4c914601, 0x681c, 0x48e5, 0xbe, 0xbd, 0x72, 0xdf, 0xfb, 0x1b, 0x42, 0x63 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. GetNextDevicePathInstance - GetNextDevicePathInstance() must get the next device path instance and return a pointer to the copy of the current device path instance. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create a new device path.  2. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create another device path as a new device path instance.  3. Call **AppendDevicePathInstance()** with a DevicePathInstance value of the new device path instance.  4. Call GetNextDevicePathInstance().  5. The return **EFI\_DEVICE\_PATH** structure should include a device path instance the same as the first instance of the new device path and *DevicePathInstanceSize* should become the size of the first instance, and at the same time, the *DevicePathInstance* should point to the second instance. |

### IsDevicePathMultiInstance Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.3.8.1 | 0x2e9e1bb4, 0x5e2f, 0x4a26, 0xbb, 0x16, 0xf8, 0x0f, 0xf8, 0xdf, 0x6c, 0xdd | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. IsDevicePathMultiInstance - IsDevicePathMultiInstance() must judge whether a device path is a  multi-instance. | 1. Call **CreatDeviceNode()** to create an End of Device Path node.  2. Call IsDevicePathMultiInstance().  3. Call **CreatDeviceNode()**, **AppendDeviceNode()** repeatedly to create a new device path that includes only one device path instance.  4. Call IsDevicePathMultiInstance().  5. Call **AppendDevicePathInstance()** with a *DevicePathInstance* value of a new device path instance.  6. Call IsDevicePathMultiInstance().  7. The return values of *IsDevicePathMultiInstance* should be **FALSE**, **FALSE** and **TRUE** respectively. |

## Device Path Utilities Protocol Interface Conformance Test

### CreatDeviceNode Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.4.1.1 | 0x44a2c284, 0xb019, 0x441b, 0x9e, 0xe0, 0x15,  0x14, 0x96, 0x51, 0xc8, 0x1f | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. CreatDeviceNode - CreatDeviceNode() should fail with an invalid NodeLength value | 1. Call CreatDeviceNode(**)** with a NodeLength value of 3.  2. The return pointer should be NULL. |

### AppendDeviceNode Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.4.2.1 | 0x795510e5, 0xdd0e, 0x403e, 0xa3, 0x4c, 0x67, 0x64, 0x2f, 0xe6, 0x2b, 0x46 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode -AppendDeviceNode() should return the copy of DeviceNode with a DevicePath value of NULL | 1. Call CreatDeviceNode() with a NodeType value of 1, a NodeSubType value of 1 and a NodeLength value of 6.  2. Call AppendDeviceNode() with DevicePath value of NULL and a DeviceNode value of the return pointer of CreatDeviceNode().  3. The return pointer should return the copy of the DeviceNode parameter . |
| 5.4.4.2.2 | 0x54f1f4cc, 0xa193, 0x4023, 0xa1, 0x68, 0x96, 0x9a, 0xa8, 0x2d, 0xdd, 0x13 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode -AppendDeviceNode() should return the copy of DevicePath with DeviceNode set to NULL | 4. Call CreatDeviceNode() to create an End of Device Path node.  5. Call AppendDeviceNode() with a DeviceNode value of NULL.  6. The return should be the copy of DevicePath. |
| 5.4.4.2.3 | 0xbb6ae1b8, 0xb420, 0x4f94, 0xb7, 0x88, 0xc4, 0xcc, 0x3a, 0xda, 0x53, 0x05 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode - AppendDeviceNode() should return end-of-device-path device node if both DevicePath and DeviceNode are NULL | 1. Call CreatDeviceNode(), AppendDeviceNode with both DevicePath and DeviceNode are NULL  2. The return EFI\_DEVICE\_PATH\_PROTOCOL structure should be end-of-device-path device node. |

### AppendDevicePath Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.4.3.1 | 0xba53eab4, 0xa3b2, 0x4ed3, 0xae, 0x7e, 0x77, 0xa3, 0x6a, 0x86, 0x1d, 0xb0 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDevicePath - AppendDevicePath() should ignore Src1 when it is set to NULL. | 1. Call CreatDeviceNode() AppendDeviceNod() repeatedly to create a new device path.  2. Call GetDevicePathSize().  3. Call AppendDeviceNode() with a Src1 value of NULL and a valid Src2 value.  4. Call GetDevicePathSize() with a DevicePath value of the return value of AppendDeviceNode().  5. The return value of GetDevicePathSize() should be the same as the first return value. |
| 5.4.4.3.2 | 0x49fbe4f2, 0xb963, 0x4a01, 0xbb, 0xd0, 0xc2, 0x9d, 0x11, 0x17, 0x4f, 0x6d | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDevicePath - AppendDevicePath() should ignore Src2 when it is set to NULL. | 1. Call CreatDeviceNode() AppendDeviceNode() repeatedly to create a new device path.  2. Call GetDevicePathSize().  3. Call AppendDeviceNode() with a valid Src1 value and a Src2 value of NULL.  4. Call GetDevicePathSize() with a DevicePath value of the return value of AppendDeviceNode().  5. The return value of GetDevicePathSize() should be the same as the first return value. |
| 5.4.4.3.3 | 0x546bd0e4, 0xd288, 0x461f, 0x8a, 0xac, 0x67, 0x75, 0xc6, 0x96, 0x83, 0xe4 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDeviceNode - AppendDeviceNode() should return end-of-device-path if both Src1 and Src2 are NULL | 1. Call CreatDeviceNode(), AppendDeviceNode with both Src1 and Src2 are NULL  2. The return EFI\_DEVICE\_PATH structure should be end-of-device-path. |

### AppendDevicePathInstance Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.4.4.1 | 0xfe34dfb2, 0x7b8d, 0x42c7, 0x8a, 0x8a, 0x00, 0xea, 0x1b, 0xe6, 0xe5, 0x44 | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. AppendDevicePathInstance - AppendDevicePathInstance() should fail with a DevicePathInstance value of NULL. | 1. Call CreatDeviceNode() with a DevicePathInstance value of NULL.  2. The return pointer should be NULL. |

### GetNextDevicePathInstance Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.4.5.1 | 0x25acf6b7, 0xd5c8,  0x4fb0, 0xa6, 0x89, 0xaf, 0x8c, 0x03, 0x4e, 0x5e, 0xdc | EFI\_DEVICE\_PATH\_UTILITIES\_PROTOCOL. GetNextDevicePathInstance - GetNextDevicePathInstance()should fail with *DevicePathInstance* set to NULL. | 1. Call GetNextDevicePathInstance() with a DevicePathInstance value of NULL.  2. The return pointer should be NULL. |

## 

## Device Path To Text Protocol Interface Function Test

### ConvertDeviceNodeToText Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.5.1.1 | 0x68d2e9f6, 0xb5f0, 0x4660, 0xbd, 0xf7, 0x74, 0x97, 0x43, 0xce, 0xb1, 0xb4 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDeviceNodeToTexT -ConvertDeviceNodeToText() must set a string to describe the device node structure. | 1. Call **CreatDeviceNode()** and set the values of this device path node’s specific device path data to create a device path node of PCI Root Device Path.  2. Call ConvertDeviceNodeToText() with a DisplayOnly value of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  3. The return string should be the same as the expected one. |
| 5.4.5.1.2 | 0x09a4021d, 0x2804, 0x49fa, 0x82, 0x95, 0x30, 0xb1, 0xcf, 0x27, 0xf7, 0x88 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDeviceNodeToTexT -ConvertDeviceNodeToText() must set a string to describe the device node structure. | 4. Call **CreatDeviceNode()** and set the values of this device path node’s specific device path data to create a device path node of PCI Device Path.  5. Call ConvertDeviceNodeToText() with a *DisplayOnly* value of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  6. The return string should be the same as the expected one. |
| 5.4.5.1.3 | 0x97deff32, 0xa4d0, 0x4909, 0xa7, 0xfa, 0x98, 0xcf, 0x3e, 0xcf, 0xf5, 0xf0 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDeviceNodeToTexT -ConvertDeviceNodeToText() must set a string to describe the device node structure. | 7. Call **CreatDeviceNode()** and set the values of this device path node’s specific device path data to create a device path node of ATAPI Device Path.  8. Call ConvertDeviceNodeToText() with a DisplayOnly value of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  9. The return string should be the same as the expected one. |

### ConvertDevicePathToText Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.5.2.1 | 0x11993701, 0x534b,  0x4804, 0xb9, 0x17, 0x72, 0x6b, 0xc9, 0x57, 0x43, 0x13 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDevicePathToText - ConvertDevicePathToText() must set a string to describe the device path structure. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** and **AppendDevicePathInstance()** repeatedly to create a legacy floppy device path.  2. Call ConvertDevicePathToText() with a DisplayOnly value of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  3. The return string should be the same as the expected one. |
| 5.4.5.2.2 | 0xdb90a554, 0xc75f, 0x409e, 0x9d, 0x40, 0xcc, 0xcd, 0x6a, 0xc6, 0xd0, 0x57 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDevicePathToText - ConvertDevicePathToText() must set a string to describe the device path structure. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** and **AppendDevicePathInstance()** repeatedly to create an IDE disk device path.  2. Call ConvertDevicePathToText() with a DisplayOnlyvalue of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  3. The return string should be the same as the expected one. |
| 5.4.5.2.3 | 0x532045b2, 0x8cb7, 0x4c27, 0x83, 0x72, 0xc2, 0x80, 0xe4, 0xe1, 0xf9, 0x29 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDevicePathToText - ConvertDevicePathToText() must set a string to describe the device path structure. | 1. Call **CreatDeviceNode()**, **AppendDeviceNode()** and **AppendDevicePathInstance()** repeatedly to create a secondary root PCI bus with a PCI to PCI bridge device path.  2. Call ConvertDevicePathToText() with a DisplayOnly value of FALSE and a AllowShortcuts value of TRUE and FALSE respectively.  3. The return string should be the same as the expected one. |

## Device Path To Text Protocol Interface Conformance Test

### ConvertDeviceNodeToText Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.6.1.1 | 0x945a93f7, 0xedac, 0x4893, 0xb2, 0xd2, 0x84, 0x0c, 0x39, 0xbb, 0x78, 0x24 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() should return NULL with DeviceNode set to NULL. | 1. Call ConvertDeviceNodeToText () with a DeviceNode value of NULL.  2. The return pointer should be NULL. |

### ConvertDevicePathToText Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.6.2.1 | 0x2570911f, 0x1a08, 0x4f96, 0x92, 0xf5, 0x26, 0x7e, 0xc0, 0x8d, 0x75, 0xb0 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertDevicePathToText - ConvertDevicePathToText() should return NULL with DevicePath set to NULL. | 1. Call ConvertDevicePathToText () with a DevicePath value of NULL.  2. The return pointer should be NULL. |

## Device Path To Text Protocol Interface Coverage Test

### ConvertDeviceNodeToText Coverage

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.7.1.1 | 0xca28d9a9, 0x6159, 0x4b70, 0xb5, 0xa0, 0x6f, 0xb3, 0x68, 0x63, 0x02, 0xd2 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe PcCard device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original. |
| 5.4.7.1.2 | 0x203b6963, 0x5013, 0x4683, 0x95, 0x8b, 0xd4, 0xa2, 0x1c, 0xcc, 0xbb, 0x8d | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Memory Mapped device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.3 | 0xc05c7ebe, 0x69a4, 0x4fcc, 0xb8, 0x29, 0x25, 0x77, 0x54, 0xf3, 0xb4, 0x3e | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Vendor defined device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.4 | 0x36de850b, 0xb28d, 0x4bfd, 0x9e, 0xff, 0xbc, 0xd8, 0x05, 0xa4, 0xa2, 0xf3 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Controller device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.5 | 0xa20c1075, 0x9bde, 0x42db, 0x83, 0x28, 0x62, 0x6a, 0x18, 0xe6, 0x07, 0x9e | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the ACPI Expended device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.6 | 0xd448b8f6, 0x2d7e, 0x473d, 0xae, 0x66, 0x9e, 0xc7, 0xba, 0xa7, 0xf9, 0x9c | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a shortcut form of text string to describe the ACPI Expended device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.7 | 0xc4ef8ea1, 0x6fa7, 0x4e49, 0xa1, 0x7a, 0x30, 0xa0, 0xed, 0xd2, 0x3c, 0x6b | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the SCSI device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.8 | 0xac5859c4, 0x99a9, 0x43bc, 0xbd, 0x20, 0x76, 0xd4, 0x36, 0xa8, 0xf9, 0x71 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Fibre Channel device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.9 | 0xd00934b4, 0x846e, 0x4f8b, 0xa6, 0xc9, 0x13, 0xb, 0x19, 0x13, 0x49, 0x3c | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the AcpiAdr device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.10 | 0xe49fdcdb, 0xbadb, 0x48c7, 0xbe, 0x8b, 0xbc, 0xce, 0x19, 0x0f, 0x2b, 0x79 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the USB device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.11 | 0xb21543cc, 0x4090, 0x4e28, 0x88, 0xc5, 0x5b, 0xd6, 0x29, 0x17, 0x7b, 0xd9 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the I2O device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.12 | 0x4bf7bbff, 0x783f, 0x4ab0, 0xb5, 0x2a, 0x3e, 0xab, 0x1d, 0x6e, 0xdd, 0x02 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Infiniband device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.13 | 0xd7a537b7, 0x96a2, 0x478d, 0xa2, 0xd3, 0x67, 0xca, 0x68, 0x93, 0x8e, 0xe2 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the PC-ANSI device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.14 | 0xeaba3b8d, 0x0aad, 0x4729, 0xb0, 0x2e, 0xb6, 0xa4, 0x89, 0xdc, 0x17, 0x4d | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the UartFlowCtrl device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.15 | 0xd751aa0e, 0xb0ea, 0x43ee, 0x89, 0x65, 0x5, 0x4c, 0x97, 0x1, 0xa, 0x32 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the AcpiExp device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.16 | 0x51a639b6, 0x878d, 0x4118, 0x88, 0x6b, 0x15, 0x4f, 0x84, 0x5e, 0xfd, 0xfd | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the PciRoot device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.17 | 0xe23c5141, 0xac77, 0x42f4, 0xb4, 0x18, 0x9e, 0xd3, 0x76, 0xbc, 0xcf, 0xd7 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the MAC device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.18 | 0x77ebce11, 0x3621,  0x4900, 0xbd, 0xb2, 0x95, 0x01, 0x2a, 0xcd, 0xca, 0x46 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the IPv4 device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.19 | 0xef32be73, 0xf5b7, 0x4545, 0xaf, 0xd7, 0x5e, 0xfb, 0xdc, 0x01, 0x8f, 0x16 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the IPv6 device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.20 | 0xbdf0860e, 0x12b6, 0x4c2a, 0xa2, 0x6c, 0x8e, 0x25, 0x87, 0x99, 0xa8, 0xd6 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the UART device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.21 | 0x340f6746, 0x662f,  0x4613, 0x89, 0x5a, 0x16, 0x57, 0x7d, 0xe0, 0x76, 0x99 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the USB Class device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.22 | 0x16001709, 0x687d, 0x4880, 0x89, 0xc4, 0x1c, 0x63, 0x1e, 0xb5, 0x2e, 0x2d | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the PcieRoot device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.23 | 0xf375ad05, 0xd5ae, 0x408f, 0x8a, 0xa5, 0x21, 0xb8, 0xd1, 0xe9, 0xfd, 0x75 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Floppy device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.24 | 0xa4c0ed2e, 0x1438, 0x44cc, 0x97, 0x10, 0x1e, 0x2e, 0x29, 0xe3, 0xbd, 0xe6 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Keyboard device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.25 | 0x2ccd0cbb, 0x395f,  0x4b76, 0x8a, 0xe8, 0x3f, 0x4a, 0x07, 0x98, 0x4f, 0x3a | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Logical Unit device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.26 | 0x13625cd7, 0x79d1, 0x4f0b, 0x80, 0xe0, 0xb5, 0x54, 0x94, 0xae, 0xc6, 0xb6 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Serial device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.27 | 0x2001ae80, 0x7309, 0x4b70, 0x9f, 0x4e, 0x7b, 0xad, 0x66, 0x9d, 0xc0, 0x43 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Hard Drive with GUID device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.28 | 0xf37b8ee5, 0xfb01, 0x41e3, 0xa2, 0x6a, 0xa1, 0x99, 0xd9, 0x59, 0x24, 0x74 | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Parallel Port device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.29 | 0xe171c43f, 0x9aaf, 0x4133, 0x95, 0x80, 0xfb, 0xb5, 0xa7, 0x0b, 0x88, 0x72 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the CD-ROM device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as theoriginal one. |
| 5.4.7.1.30 | 0x596665ca, 0x74e6, 0x4f6e, 0x88, 0xd8, 0x6e, 0x26, 0xe5, 0x3a, 0x42, 0xab | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the FibreEx device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.31 | 0x5b136106, 0xcee0, 0x46d9, 0x87, 0xa9, 0x68, 0x1d, 0x70, 0xf7, 0x1f, 0x17 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Media device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.32 | 0xdb0e6e8b, 0x1d57, 0x41e5, 0xb8, 0x74, 0x4c, 0xe8, 0x5a, 0xd5, 0x76, 0x4c | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDeviceNodeToText - ConvertDeviceNodeToText() must recover the conversion ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the SAS device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.33 | 0x44f98053, 0xbbf7, 0x4002, 0x9a, 0x7e, 0x6b, 0x4d, 0x37, 0x3e, 0x18, 0xff | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Media Relative Offset Range device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.34 | 0x44ed02e4, 0x48c7, 0x42df, 0xbe, 0x12, 0x60, 0xc1, 0xb2, 0x7f, 0xe8, 0xab | EFI\_DEVICE\_PATH\_TO\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Vlan device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.7.1.35 | 0x4e3dfefc, 0xeebb, 0x46d0, 0xa1, 0xc3, 0x83, 0xaa, 0x2, 0x6d, 0xf1, 0x1b | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the SASEx device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.36 | 0x21e74335, 0x50c9, 0x4deb, 0x8a, 0x9d, 0xf4, 0x2, 0x97, 0xfc, 0xa2, 0x26 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the NVMe device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.37 | 0x252df981, 0x416a, 0x486d, 0x8c, 0x78, 0xde, 0xae, 0x72, 0x4a, 0x68, 0xeb | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the BMC device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.38 | 0x77cdae2c, 0x642c, 0x4113, 0xb6, 0x59, 0x25, 0x23, 0x42, 0xb1, 0x16, 0xb6 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the RamDisk device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.39 | 0xd823b4b, 0x58b4, 0x4882, 0x9f, 0x38, 0xb, 0xfb, 0x3, 0xa0, 0x29, 0xa3 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the Uri device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.40 | 0x4136553e, 0x8284, 0x409c, 0x90, 0x56, 0xcb, 0xbc, 0x91, 0xc5, 0xea, 0xa1 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the SD device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.41 | 0x23bcd190, 0x10b4, 0x4063, 0x95, 0x2, 0xea, 0x5c, 0x14, 0xfc, 0x72, 0x1e | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the BlueTooth device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.42 | 0x6faccc19, 0x7785, 0x49e6, 0xaf, 0x86, 0x9b, 0x5f, 0x69, 0x53, 0x60, 0x7d | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the Wi-Fi device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |
| 5.4.7.1.43 | 0x60e2e2ac, 0xf5f9, 0x4ecf, 0xac, 0xb1, 0x79, 0xa1, 0xe5, 0xcc, 0xbc, 0xf6 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertDeviceNodeT oText - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string | 1. Set a text string to describe the eMMC device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one. |

### ConvertDevicePathToText Coverage

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.7.2.1 | 0x4af4f3cb, 0x4afa, 0x43b5, 0xb3, 0x83, 0x2e, 0x08, 0x57, 0x15, 0xf7, 0xa6 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertDevicePathToText - ConvertDevicePathToText() must recover the conversion that ConvertTextToDevicePath() has performed on the device node string. | 1. Set a text string to describe a device path with multiple device path instances.  2. Call ConvertTextToDevicePath().  3. Call ConvertDevicePathToText().  4. The return string should be the same as the original one. |

## 

## Device Path From Text Protocol Interface Function Test

### ConvertTextToDeviceNode Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.8.1.1 | 0x6ea38cc6, 0x6b02, 0x4ee7, 0x84, 0xcc, 0x37, 0xc0, 0x07, 0x55, 0xef, 0xa3 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertTextToDeviceNode() must set a device node structure. | 1. Set a text string to describe the PCI Root device path node.  2. Call ConvertTextToDeviceNode().  3. The return structure should be the same as the expected one. |
| 5.4.8.1.2 | 0xe025cd1b, 0xda51, 0x4496, 0xac, 0xa0, 0xf6, 0x18, 0x3e, 0x67, 0xb6, 0x78 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertTextToDeviceNode() must set a device node structure. | 1. Set a text string to describe the PCI device path node.  2. Call ConvertTextToDeviceNode().  3. The return structure should be the same as the expected one. |
| 5.4.8.1.3 | 0xe924b842, 0x2e27, 0x4d39, 0x98, 0x7d, 0x3a, 0x64, 0xd7, 0x45, 0x0e, 0xda | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertTextToDeviceNode() must set a device node structure. | 1. Set a text string to describe the ATAPI device path node.  2. Call ConvertTextToDeviceNode().  3. The return structure should be the same as the expected one. |

### ConvertTextToDevicePath Functionality

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.8.2.1 | 0xa2215ca2, 0x965a, 0x4ae3, 0xae, 0x58, 0xca, 0xd1, 0x20, 0xb3, 0xf5, 0x87 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDevicePath - ConvertTextToDevicePath() must set a device node structure. | 1. Set a text string to describe the legacy floppy device path.  2. Call ConvertTextToDevicePath().  3. The return structure should be the same as the expected one. |
| 5.4.8.2.2 | 0x34dcb77c, 0x782f, 0x429a, 0x92, 0xfc, 0xa0, 0x02, 0xae, 0xfb, 0xcb, 0xd7 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDevicePath - ConvertTextToDevicePath() must set a device node structure. | 1. Set a text string to describe the IDE disk device path.  2. Call ConvertTextToDevicePath().  3. The return structure should be the same as the expected one. |
| 5.4.8.2.3 | 0xbf4b5c33, 0x7cc4, 0x412b, 0xb6, 0x88, 0x14, 0x0a, 0x17, 0x3f, 0x4f, 0x5a | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDevicePath - ConvertTextToDevicePath() must set a device node structure. | 1. Set a text string to describe the secondary root PCI bus with a PCI to PCI bridge device path.  2. Call ConvertTextToDevicePath().  3. The return structure should be the same as the expected one. |

## Device Path From Text Protocol Interface Conformance Test

### ConvertTextToDeviceNode Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.9.1.1 | 0x112d380b, 0x1f72, 0x41d4, 0xa3, 0x5a, 0xd3, 0x61, 0x72, 0xce, 0x42, 0x60 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertTextToDeviceNode() should return NULL with TextDeviceNode set to NULL. | 1. Call ConvertTextToDeviceNode() with a TextDeviceNode value of NULL.  2. The return pointer should be NULL. |

### ConvertTextToDevicePath Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.9.2.1 | 0x6de40774, 0x269d, 0x4c52, 0x9e, 0xce, 0xe4, 0x01, 0x95, 0xc4, 0x09, 0xed | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDevicePath - ConvertTextToDevicePath() should return NULL with TextDevicePath set to be NULL. | 1. Call ConvertTextToDevicePath() with a TextDevicePath value of NULL.  2. The return pointer should be NULL. |

## Device Path From Text Protocol Interface Coverage Test

### ConvertTextToDeviceNode Coverage

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.10.1.1 | 0xabd4778e, 0xc1c5, 0x4dcb, 0xa5, 0x75, 0x4a, 0x2e, 0x83, 0x68, 0x01, 0x82 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe PcCard device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the one originally set. |
| 5.4.10.1.2 | 0x384a0f7f, 0x3aed, 0x4942, 0xbf, 0x29, 0xed, 0x70, 0x7c, 0xb8, 0x96, 0xc3 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Memory Mapped device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.3 | 0x5ea2ddfd, 0xd264, 0x46d5, 0x99, 0x97, 0x17, 0xb2, 0x36, 0xe4, 0x46, 0xee | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Vendor defined device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original onet. |
| 5.4.10.1.4 | 0xeeaad308, 0x9461, 0x42dc, 0x95, 0x2a, 0x25, 0xe3, 0xfb, 0x34, 0xc6, 0x4d | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Controller device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.5 | 0x5adc74cf, 0x0a05, 0x4689, 0xa0, 0xd0, 0xf3, 0x71, 0x10, 0x05, 0x24, 0xf4 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the ACPI Expended device path node.  1. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.6 | 0xac15c6df, 0x10f5, 0x40f1, 0x9e, 0xdc, 0x16, 0xa4, 0x22, 0x86, 0xe2, 0xae | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a shortcut form of text string to describe the ACPI Expended device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.7 | 0xd6769fb3, 0x6f40, 0x441e, 0xbc, 0x16, 0xdb, 0xab, 0xc5, 0x1f, 0xbc, 0x8e | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the SCSI device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.8 | 0x5a6105d4, 0x6c72, 0x4842, 0xbb, 0xf9, 0x16, 0xb4, 0x63, 0xc5, 0x65, 0x21 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Fibre Channel device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.9 | 0x370abd68, 0xd84c, 0x4247, 0xbd, 0xbd, 0xb4, 0xbc, 0x2a, 0x1f, 0x74, 0x9d | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the 1394 device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.10 | 0x4b30ff6b, 0x0495, 0x4a88, 0x89, 0x24, 0xed, 0x47, 0xb4, 0x70, 0x3a, 0xea | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the USB device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.11 | 0x7c010d41, 0x940f, 0x4ab7, 0x99, 0xb3, 0x56, 0x29, 0xfe, 0xe2, 0xb3, 0xe8 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the I2O device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.12 | 0x3aff77da, 0x5f86, 0x4145, 0x84, 0xfa, 0x7e, 0x24, 0x64, 0x1a, 0xef, 0x67 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Infiniband device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.13 | 0x57945d65, 0x2cd1, 0x44cb, 0x95, 0xa2, 0x85, 0x3d, 0x6b, 0x45, 0xc2, 0x10 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has peformed on the device node string. | 1. Set a text string to describe the PC-ANSI device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.14 | 0x99fe3cd1, 0x9015, 0x4995, 0xb9, 0x6c, 0x03, 0x37, 0x1c, 0xc0, 0x26, 0xc5 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the UartFlowCtrl device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.15 | 0xbe92f84c, 0x3922, 0x426b, 0xa0, 0x2a, 0x1b, 0x1b, 0xeb, 0xf9, 0x9d, 0x7c | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the SAS device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.16 | 0x453b6f77, 0xd3bf, 0x4f23, 0x80, 0x35, 0x0f, 0x61, 0xdf, 0xe0, 0x16, 0xe1 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the DebugPort device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.17 | 0xdc026cfc, 0xc681, 0x43af, 0xb3, 0x73, 0xed, 0x8c, 0x1f, 0x7e, 0xaa, 0x6d | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the MAC device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original onet. |
| 5.4.10.1.18 | 0x94dca74e, 0xacdd, 0x4fc2, 0xab, 0xb8, 0x48, 0xb1, 0x1b, 0xe0, 0x77, 0x57 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the IPv4 device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.19 | 0x447fabae, 0x7a70, 0x43df, 0x9f, 0x07, 0xc3, 0x07, 0x85, 0x24, 0x87, 0xd5 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the IPv6 device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.20 | 0xba0fc861, 0xd2ce, 0x4c70, 0x8b, 0xec, 0xaa, 0x89, 0xbc, 0x7d, 0x11, 0x0f | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe UART device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.21 | 0x2eba02bb, 0xa904, 0x4949, 0xa4, 0x6a, 0x41, 0x1f, 0xd8, 0xa8, 0xdd, 0xaf | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe USB Class device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as theoriginal one. |
| 5.4.10.1.22 | 0x50cf1d50, 0xb560, 0x4a1a, 0x96, 0xc2, 0x01, 0x10, 0xf1, 0x25, 0xe3, 0x53 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the USB Video device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original onet. |
| 5.4.10.1.23 | 0xd77e99e4, 0xe619, 0x4773, 0xa4, 0xa0, 0xbe, 0x55, 0x21, 0x4b, 0x01, 0xf0 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the UsbTest And Measurement device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original onet. |
| 5.4.10.1.24 | 0xe5490e03, 0x83be, 0x4642, 0x98, 0xc5, 0x26, 0xae, 0x4f, 0xa4, 0x5d, 0xe4 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | �1. Set a text string to describe the AcpiAdr device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.25 | 0xe1042ce4, 0x760e, 0x433d, 0xb1, 0x7b, 0x9d, 0x02, 0x14, 0xf3, 0x2a, 0x12 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Logical Unit device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.26 | 0x1e3c0327, 0x7081, 0x4b7f, 0xab, 0xfa, 0xff, 0x01, 0xc2, 0x8c, 0xbe, 0x3f | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the iSCSI device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.27 | 0x37beed32, 0x165b, 0x480a, 0x91, 0x9b, 0xf5, 0xf2, 0x46, 0x07, 0xc7, 0x11 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Hard Drive with GUID device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.28 | 0x20884e00, 0x4471, 0x4e65, 0x84, 0xae, 0x51, 0x5d, 0x92, 0xc1, 0xe4, 0xf6 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Hard Drive with MBR device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.29 | 0xfdca47e4, 0x9965, 0x41dc, 0xbb, 0x01, 0x19, 0x10, 0x54, 0x41, 0x69, 0x60 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the covnersion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the CD-ROM device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.30 | 0xa0fc2a05, 0x01e1, 0x4a96, 0xb8, 0x8d, 0xa7, 0x73, 0x33, 0x25, 0xaf, 0x6e | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the File Path device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.31 | 0x0a0fc261, 0x193b, 0x4136, 0x82, 0xe3, 0x41, 0x32, 0x62, 0x36, 0xc6, 0x10 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the Media device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.32 | 0xb59ff699, 0x4dc5, 0x45b8, 0x8b, 0xe6, 0x25, 0x36, 0x2e, 0xda, 0x59, 0xf3 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode() has performed on the device node string. | 1. Set a text string to describe the BBS path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.33 | 0x2379a6e4, 0x3b61, 0x471c, 0x87, 0xb9, 0xff, 0xe6, 0x6a, 0x98, 0x79, 0x13 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Media Relative Offset Range device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.34 | 0x74f16d4f, 0xcbc4, 0x42f0, 0x99, 0x16, 0xae, 0x35, 0xa6, 0xd7, 0x5e, 0xb7 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Vlan device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.35 | 0xa6a5af57, 0xca9b, 0x42c1, 0x9b, 0xcd, 0xe3, 0xdb, 0xdf, 0x2, 0xf3, 0x8b | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the �PciRoot device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.36 | 0x850d81ee, 0xe3d5, 0x468f, 0x83, 0x80, 0x25, 0x3e, 0xcb, 0xeb, 0xf2, 0x07 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the PcieRoot device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.37 | 0x1f72c17d, 0x9f1a, 0x4f57, 0xac, 0xb5, 0x2b, 0xfb, 0x3d, 0xe, 0x5b, 0x67 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Floppy device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.38 | 0x64dbbe77, 0x819e, 0x4cd9, 0x90, 0x88, 0xd9, 0x3d, 0x8f, 0x99, 0x9, 0x33 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Keyboard device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.39 | 0x62970cad, 0xb9ae, 0x459e, 0x94, 0xc7, 0x97, 0x37, 0x3, 0xc5, 0xda, 0x43 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Serial device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.40 | 0x2c0e3e0c, 0x28f4, 0x4284, 0xbb, 0x54, 0x4, 0x2b, 0x6b, 0x26, 0xd3, 0x4e | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the Parallel Port device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.41 | 0x826c2efe, 0xc377, 0x4594, 0x99, 0x42, 0xe1, 0xef, 0x07, 0x5d, 0xd1, 0x2f | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the FIbreEx device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.42 | 0xad957706, 0xb29a, 0x4184, 0xb8, 0x42, 0xf6, 0xf1, 0xa4, 0xe0, 0x57, 0x9b | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDeviceNode - ConvertDeviceNodeToText() must recover the conversion that ConvertTextToDeviceNode()has performed on the device node string. | 1. Set a text string to describe the SasEx device path node.  2. Call ConvertTextToDeviceNode().  3. Call ConvertDeviceNodeToText().  4. The return string should be the same as the original one. |
| 5.4.10.1.43 | 0x5fda2be2, 0x242a, 0x4c81, 0xa9, 0x7c, 0xfb, 0x2e, 0xe9, 0x94, 0x14, 0xf6 | EFI\_DEVICE\_PATH\_FR  OM\_TEXT\_PROTOCOL.  ConvertTextToDevic  eNode -  ConvertDeviceNodeT  **oText()** must recover  the conversion that  ConvertTextToDevic  **eNode()** has performed  on the device node  string. | 1. Set a text string to describe the NVM express device path node.  2. Call  **ConvertTextToDeviceNode()**.  3. Call  **ConvertDeviceNodeToText()**.  4. The return string should be the  same as the original one. |
| 5.4.10.1.44 | 0x6bc6e55b, 0xaa2c, 0x4853, 0x88, 0xbd, 0x7e, 0x79, 0xc8, 0xd3, 0xae, 0x58 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the BMC device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.45 | 0x177fd920, 0xb733, 0x4841, 0x9a, 0x10, 0xdb, 0x7b, 0x37, 0x4b, 0x47, 0x7c | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the UFS device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.46 | 0x84e9f8, 0x6b65, 0x48e1, 0x92, 0x32, 0x4, 0x6e, 0xb4, 0x56, 0xd1, 0xe3 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the SD device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.47 | 0x25c2071e, 0xedc, 0x403f, 0x89, 0x4a, 0xa4, 0x84, 0x25, 0xcc, 0xca, 0x80 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the Bluetooth device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.48 | 0x84a73ccc, 0x2468, 0x440a, 0x93, 0xa1, 0xe2, 0x37, 0x35, 0xe5, 0x9f, 0x66 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the Wi-Fi device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.49 | 0x671ecea, 0x309c, 0x4398, 0x8c, 0x1, 0xed, 0x15, 0x37, 0xed, 0xaa, 0x40 | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the RamDisk device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.50 | 0x7e00edfb, 0x4ef8, 0x45da, 0x9e, 0x54, 0x8e, 0xf, 0x1b, 0xa5, 0xc3, 0xde | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the Uri device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |
| 5.4.10.1.51 | 0x882a6001, 0xae82, 0x4bb5, 0x83, 0xd, 0x6c, 0x2a, 0xd7, 0x68, 0x44, 0xec | EFI\_DEVICE\_PATH\_FR OM\_TEXT\_PROTOCOL. ConvertTextToDevic eNode - ConvertDeviceNodeT oText() must recover the conversion that ConvertTextToDevic eNode() has performed on the device node string. | 1. Set a text string to describe the eMMC device path node. 2. Call ConvertTextToDeviceNode(). 3. Call ConvertDeviceNodeToText(). 4. The return string should be the same as the original one |

### ConvertTextToDevicePath Coverage

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.4.10.2.1 | 0x1759828d, 0x3377, 0x4473, 0x84, 0x8a, 0x1a, 0x92, 0x6f, 0x2e, 0x5b, 0xc5 | EFI\_DEVICE\_PATH\_FROM\_TEXT\_PROTOCOL. ConvertTextToDevicePath - ConvertDevicePathToText() must recover the conversion that ConvertTextToDevicePath() has performed on the device node string. | 1. Set a text string to describe a device path with multiple device path instances.  2. Call ConvertTextToDevicePath().  3. Call ConvertDevicePathToText().  4. The return string should be the same as the original one. |

# Protocols EFI Driver Model Test

## EFI\_DRIVER\_BINDING\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DRIVER\_BINDING\_PROTOCOL Section.

This test will change the system data during testing. It is not included in the EFI SCT.

## EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL Section.

### GetDriver()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.2.1.1 | 0x013a1d94, 0x42ec, 0x429c, 0xb4, 0x99, 0x9d, 0x67, 0x5c, 0xea, 0x32, 0xe2 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver - Invokes GetDriver() with invalid ControllerHandle. | Call GetDriver() with invalid ControllerHandle. It should return EFI\_INVALID\_PARAMETER. |
| 5.5.2.1.2 | 0xec346531, 0x5125, 0x4e5f, 0x93, 0xa9, 0x7a, 0x7a, 0xed, 0xc0, 0xe3, 0xb9 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver - Invokes GetDriver() with invalid DriverImageHandle | Call GetDriver() with invalid DriverImagePath. It should return EFI\_INVALID\_PARAMETER. |
| 5.5.2.1.3 | 0xb6ce6934, 0xae1d, 0x41be, 0xba, 0x01, 0xac, 0x73, 0x49, 0x70, 0xe0, 0xb5 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver - Invokes GetDriver() and verify interface correctness within test case | Call GetDriver() with DriverImageHandle is NULL. If the return status is EFI\_SUCCESS, get the next image handle till the end. The return status should be EFI\_SUCCESS, except the last one. The last one should be EFI\_NOT\_FOUND. |
| 5.5.2.1.4 | 0xf8e30f06, 0x98b8, 0x4aba, 0xa0, 0x73, 0x67, 0x69, 0x33, 0xc0, 0xf8, 0x81 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver - Invokes GetDriver() and verify whether the image handle is installed. | Call GetDriverPath() to get the valid DevicePath.Call LoadImage() to get the DriverImageHandle. Use this DevicePath and DriverImageHandle to call DriverLoaded().Call GetDriver().The Image Handle got by the GetDriver() should be same as the former handle which is got by LoadImage().The new DriverImageHandle should be same as the before one. |

### GetDriverPath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.2.2.1 | 0x47008c31, 0xe877, 0x4acf, 0x88, 0x7a, 0xd5, 0x56, 0xd4, 0xb1, 0xd5, 0xe3 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriverPath - Invokes GetDriverPath() with invalid ControllerHandle. | Call GetDriverPath() with invalid ControllerHandle. Return status should be EFI\_INVALID\_PARAMETER. |
| 5.5.2.2.2 | 0xbb8d1b45, 0xe187, 0x4195, 0xa9, 0xdc, 0xdb, 0xc7, 0x5e, 0xef, 0x99, 0x92 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriverPath - Invokes GetDriverPath() with invalid DriverImageHandle | Call GetDriverPath() with invalid DriverImagePath. Return status should be EFI\_INVALID\_PARAMETER. |
| 5.5.2.2.3 | 0xe0434e5d, 0xa452, 0x4ef6, 0xb3, 0x90, 0xba, 0x12, 0x2a, 0xbb, 0xa8, 0xa8 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriverPath - Invokes GetDriverPath() and verify interface correctness within test case | Call GetDriverPath() with DriverImagePath is NULL.If the return status is EFI\_SUCCESS, get the next image handle till the end. The return status should be EFI\_SUCCESS, except the last one. The last one should be EFI\_NOT\_FOUND. |

### DriverLoaded()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.2.3.1 | 0x7bad1b57, 0xc99c, 0x48c0, 0xb5, 0x28, 0x0b, 0x86, 0x0e, 0xfc, 0x27, 0xc3 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.DriverLoaded - Invokes DriverLoaded() and verify interface correctness within test case | Call GetDriverPath() to get the valid DevicePath.Call LoadImage() to get the Driver Image Handle.Use this DevicePath and Driver Image Handle to call DriverLoaded().The return status should be EFI\_SUCCESS. |
| 5.5.2.3.2 | 0x4d764ca3, 0x4d43, 0x4a89, 0x93, 0x4b, 0x8f, 0x60, 0x9e, 0xca, 0x82, 0x4d | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.DriverLoaded - Invokes DriverLoaded() with DriverImagePathnot gotten from the prior call to GetDriverPath(). | Call DriverLoaded() with DriverImagePath is not a device path that was returned on a prior call to GetDriverPath() for the controller specified by ControllerHandle. Return status should be EFI\_NOT\_FOUND. |
| 5.5.2.3.3 | 0x745042f7, 0xa9e8, 0x436b, 0x8c, 0x44, 0x42, 0x49, 0x07, 0x90, 0x68, 0x50 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.DriverLoaded - Invokes DriverLoaded() with invalid ControllerHandle | Call DriverLoaded() with invalid ControllerHandle .The return status should be EFI\_INVALID\_PARAMETER. |
| 5.5.2.3.4 | 0xecc09588, 0xb786, 0x49b1, 0x93, 0x7f, 0x8e, 0xed, 0x89, 0xa7, 0x52, 0xd6 | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.DriverLoaded - Invokes DriverLoaded() with invalid DriverImagePath. | Call DriverLoaded() with invalid DriverImagePath .The return status should be EFI\_INVALID\_PARAMETER. |
| 5.5.2.3.5 | 0xf5d05588, 0x0d6a, 0x40fa, 0xa9, 0x54, 0x4b, 0x40, 0xd7, 0x9b, 0x4e, 0x5b | EFI\_PLATFORM\_DRIVER\_OVERRIDE\_PROTOCOL.DriverLoaded - Invokes DriverLoaded() with invalid DriverImageHandle | Call DriverLoaded() with invalid DriverImageHandle. The return status should be EFI\_INVALID\_PARAMETER. |

## 

## �EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL Section.

### GetDriver()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.3.1.1 | 0x18a52d36, 0xd149, 0x414c, 0xa8, 0xc9, 0x43, 0xc8, 0x55, 0x71, 0xc6, 0x5f | EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver – GetDriver returns EFI\_SUCCESS with valid DriverImageHandle | 1. Circularly call GetDriver() with DriverImageHandle retrieved by the last call of GetDriver(), until the end of the list of override drivers is reached.  Expected Behavior:  The return status of each valid DriverImageHandle must be EFI\_SUCCESS. |
| 5.5.3.1.2 | 0x841a7b86, 0xabf0, 0x40af, 0x92, 0x67, 0x3f, 0xb3, 0x69, 0x2f, 0xc0, 0x37 | EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver – GetDriver returns EFI\_NOT\_FOUND with unsupported Parameters | 1. Circularly call GetDriver() with DriverImageHandle retrieved by the last call of GetDriver(), until the end of the list of override drivers is reached.  Expected Behavior:  The last return status must be EFI\_NOT\_FOUND. |
| 5.5.3.1.3 | 0x2f0b7eb4, 0xb6b4, 0x4a58, 0x87, 0x55, 0x93, 0x52, 0xd4, 0x7e, 0x27, 0xef | EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL.GetDriver – GetDriver () returns EFI\_INVALID\_PARAMETER with invalid DriverImageHandle | 1. Pass the invalid DriverImageHandle to the function  Expected Behavior:  The return status must be EFI\_INVALID\_PARAMETER. |

## 

## �EFI\_DRIVER\_CONFIGURATION\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_BUS\_SPECIFIC\_DRIVER\_OVERRIDE\_PROTOCOL Section.

### SetOptions()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.4.1.1 | 0x82d78ef0, 0x0e7c, 0x4338, 0xb0, 0xe6, 0xef, 0x07, 0x01, 0x35, 0x18, 0xc7 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SetOptions – SetOptions() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle | 1. Call SetOptions() with invalid ControllerHandle. Return status of SetOptions() is EFI\_INVALID\_PARAMETER. |
| 5.5.4.1.2 | 0x159d6867, 0x6e6f, 0x4cb0, 0x99, 0xc1, 0xdf, 0x57, 0x86, 0xc0, 0x61, 0x3f | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SetOptions – SetOptions() returns EFI\_INVALID\_PARAMETER with invalid ActionRequired | 1. Call SetOptions() with an ActionRequired value of NULL. Return status must be EFI\_INVALID\_PARAMETER. |
| 5.5.4.1.3 | 0x97465a70, 0x7746, 0x4116, 0x93, 0xbc, 0x22, 0xb1, 0xaa, 0x9e, 0x14, 0xa2 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SetOptions – SetOptions() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle & ChildHandle. | 1. Call SetOptions() with: ( ControllerHandle == NULL && ChildHandle != NULL ). Return status must be EFI\_INVALID\_PARAMETER. |
| 5.5.4.1.4 | 0x976f0e0a, 0xa696, 0x4922, 0x8a, 0x44, 0xf3, 0x50, 0xf5, 0x0b, 0xd5, 0xe8 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SetOptions – SetOptions() returns EFI\_UNSUPPORTED with unsupported Language. | 1. Parse the EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SupportedLanguage, compare with the language code repository. If could not find out an unsupported language, then skip this checkpoint.  2. Call SetOptions() with all unsupported Language codes. Each return status must be EFI\_UNSUPPORTED. |
| 5.5.4.1.5 | 0x12b263e5, 0xcb83, 0x4855, 0x94, 0x35, 0x6e, 0xfb, 0x53, 0x9d, 0x22, 0x51 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.SetOptions – SetOptions() returns EFI\_UNSUPPORTED with unsupported ControllerHandle. | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the SetOptions(). The return code must be EFI\_UNSUPPORTED. |

### OptionsValid()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.4.2.1 | 0x9a4ba394, 0xbf63, 0x4dba, 0xaf, 0x83, 0xc7, 0x50, 0xc9, 0xff, 0xaa, 0xf4 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.OptionsValid – OptionsValid() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call OptionsValid() with invalid ControllerHandle. Return status must be EFI\_INVALID\_PARAMETER. |
| 5.5.4.2.2 | 0x10a4cd4b, 0x0e42, 0x4bed, 0x9b, 0x3e, 0x53, 0x21, 0x50, 0x9c, 0xd0, 0xf6 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.OptionsValid – OptionsValid() returns EFI\_UNSUPPORTED with unsupported ControllerHandle. | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the OptionsValid(). It should return EFI\_UNSUPPORTED. |

### ForceDefaults()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.4.3.1 | 0x45b89573, 0xff7d, 0x4549, 0xbc, 0x5f, 0x7f, 0x23, 0x04, 0xa1, 0x1c, 0x43 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.ForceDefaults – ForceDefaults() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call ForceDefaults() with invalid ControllerHandle. Return status must be EFI\_INVALID\_PARAMETER. |
| 5.5.4.3.2 | 0x0ede4bce, 0x0456, 0x45e5, 0x86, 0x04, 0x88, 0xc4, 0xa2, 0xbb, 0x7c, 0xa1 | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.ForceDefaults – ForceDefaults() returns EFI\_INVALID\_PARAMETER. with an ActionRequired value of NULL | 1. Call ForceDefaults() with an ActionRequired value of NULL. Return status must be EFI\_INVALID\_PARAMETER. |
| 5.5.4.3.3 | 0x0e7dd3db, 0x072b, 0x45b6, 0xaa, 0xdf, 0xf3, 0xed, 0xed, 0x37, 0xe6, 0xae | EFI\_DRIVER\_CONFIGURATION\_PROTOCOL.ForceDefaults – ForceDefaults() returns EFI\_UNSUPPORTED with unsupported ControllerHandle. | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the ForceDefaults(). It should return EFI\_UNSUPPORTED. |

## 

## EFI\_DRIVER\_DIAGNOSTICS\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DRIVER\_DIAGNOSTICS\_PROTOCOL Section.

### RunDiagnostic()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.5.1.1 | 0xe6351da7, 0x8e29, 0x451b, 0xb1, 0x16, 0xda, 0x93, 0x29, 0x97, 0x0f, 0x17 | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call RunDiagnostics() with invalid ControllerHandle. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.5.1.2 | 0xf98940fb, 0x1ae6, 0x42a8, 0x95, 0xb3, 0xd3, 0x90, 0x84, 0x17, 0x2e, 0xb7 | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with a Language value of NULL. | 1. Call RunDiagnostics() with a Language value of NULL. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.5.1.3 | 0xe348a9ee, 0x10fc, 0x4487, 0x8c, 0x1a, 0xfc, 0xa8, 0x11, 0xd7, 0xbb, 0x24 | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with an ErrorType value of NULL. | 1. Call RunDiagnostics() with an ErrorType value of NULL. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.5.1.4 | 0x1f03e17d, 0x3f3c, 0x45ab, 0x93, 0xf5, 0xd3, 0xde, 0x3e, 0xc3, 0xe3, 0xcc | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with a BufferSize value of NULL. | 1. Call RunDiagnostics() with a BufferSize value of NULL. Return status must be EFI\_INVALID\_PARAMETER |
| 5.5.5.1.5 | 0x7a73befe, 0xb271, 0x486f, 0x9b, 0x0e, 0x97, 0x3c, 0x5e, 0x80, 0x64, 0xd9 | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with a Buffer value of NULL. | 1. Call RunDiagnostics() with a Buffer value of NULL. Return status must be EFI\_INVALID\_PARAMETER |
| 5.5.5.1.6 | 0xaeab03a7, 0xfa56, 0x4e97, 0x8e, 0x1c, 0xc3, 0x35, 0xb4, 0xa4, 0xb4, 0x1c | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_UNSUPPORTED with unsupported Language. | 1. Parse the EFI\_DRIVER\_DIAGNOSTICS\_PROTOCOL.SupportedLanguage, compare with the language code repository. If could not find out an unsupported language, then skip this checkpoint.  2. Call RunDiagnostics() with all unsupported Language codes.  Each return status of RunDiagnostics() is EFI\_UNSUPPORTED. |
| 5.5.5.1.7 | 0xf8d9425c, 0x4bc8, 0x44a9, 0xa4, 0x33, 0x9a, 0x2c, 0x01, 0xec, 0x58, 0x27 | EFI\_DRIVER\_DIAGNOSTIC\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_UNSUPPORTED with unsupported ControllerHandle. | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the RunDiagnostics().  It should return EFI\_UNSUPPORTED. |

## 

## EFI\_DRIVER\_DIAGNOSTICS2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DRIVER\_DIAGNOSTICS2\_PROTOCOL Section.

### RunDiagnostic()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.6.1.1 | 0x6c872dce, 0x787e, 0x44dc, 0xa8, 0x87, 0xea, 0x1b, 0x8d, 0x55, 0xfd, 0x59 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with NULL ControllerHandle. | 1. Call RunDiagnostics() with NULL ControllerHandle. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.2 | 0xf3263eb0, 0x1630, 0x4749, 0x98, 0xe6, 0xc9, 0x50, 0x23, 0x15, 0xd3, 0xa2 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with invalid ChildHandle. | 1. Call RunDiagnostics() with invalid ChildHandle. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.3 | 0xc5b8e4ef, 0x2fa4, 0x4ae9, 0xa6, 0x5e, 0xdd, 0x47, 0x2d, 0xfd, 0x81, 0xe5 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with Language value of NULL. | 1. Call RunDiagnostics() with Language value of NULL. Return Status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.4 | 0xe23426c8, 0x5fe2, 0x4e80, 0xa9, 0x40, 0xab, 0x66, 0x10, 0x63, 0x28, 0xf6 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with ErrorType value of NULL. | 1. Call RunDiagnostics() with ErrorType value of NULL. Return status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.5 | 0x6e86ac1a, 0x0ce8, 0x4f83, 0x9d, 0xa2, 0x38, 0x79, 0x1e, 0xff, 0x0f, 0x8c | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with a BufferSize value of NULL. | 1. Call RunDiagnostics() with a BufferSize value of NULL. Return status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.6 | 0x4c955e4c, 0x86b9, 0x4c6d, 0x83, 0xa0, 0x4e, 0xa3, 0x34, 0x67, 0xd0, 0x38 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_INVALID\_PARAMETER with a Buffer value of NULL. | 1. Call RunDiagnostics() with a Buffer value of NULL. Return status must be EFI\_INVALID\_PARAMETER |
| 5.5.6.1.7 | 0x8b218e7b, 0x24a0, 0x400c, 0xa8, 0x69, 0x1a, 0xd1, 0x14, 0x8e, 0x7a, 0x07 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_UNSUPPORTED with unsupported Language. | 1. Parse the EFI\_DRIVER\_DIAGNOSTICS\_PROTOCOL.SupportedLanguage, compare with the language code repository. If could not find out an unsupported language, then skip this checkpoint.  2. Call RunDiagnostics() with all unsupported Language codes.  Each return status of RunDiagnostics() is EFI\_UNSUPPORTED. |
| 5.5.6.1.8 | 0xef071998, 0xeb8d, 0x488f, 0xa5, 0xd5, 0x9e, 0x44, 0x7a, 0x54, 0x20, 0x8b | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_UNSUPPORTED with virtual device handle | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the RunDiagnostics().  It should return EFI\_UNSUPPORTED. |
| 5.5.6.1.9 | 0xc9da5237, 0x6ad0, 0x4c74, 0x88, 0xd0, 0x6e, 0x51, 0x7f, 0x6c, 0x4f, 0x63 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() return EFI\_UNSUPPORTED with virtual child handle | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ChildHandle input for the RunDiagnostics().  It should return EFI\_UNSUPPORTED. |
| 5.5.6.1.10 | 0x2e31c21e, 0x1999, 0x42b7, 0x96, 0xe6, 0xda, 0x8e, 0xfc, 0xc1, 0xf1, 0x51 | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_SUCCESS with supported Language. | 1. Call RunDiagnostics() with supported Language. Return status must be EFI\_SUCCESS. |
| 5.5.6.1.11 | 0x04405fac, 0x1688, 0x4213, 0xa1, 0x1d, 0x4b, 0x64, 0x58, 0xff, 0xe7, 0x2c | EFI\_DRIVER\_DIAGNOSTIC2\_PROTOCOL.RunDiagnostics – RunDiagnostics() returns EFI\_SUCCESS with supported **Language**. | 1. Call RunDiagnostics() with supported **Language**.. Return status must be EFI\_SUCCESS. |

## 

## EFI\_COMPONENT\_NAME\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_COMPONENT\_NAME\_PROTOCOL Section.

### GetDriverName()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.7.1.1 | 0x628fcfba, 0xc74b, 0x4038, 0x91, 0x5a, 0x01, 0x1a, 0xb9, 0x0f, 0x67, 0x35 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetDriverName – GetDriverName() returns its driver name in every supported language. | For each supported language:  1. Call GetDriverName() to retrieve current driver’s name.  2. Dump the returned driver name.  Each return code of GetDriverName() should be EFI\_SUCCESS. |
| 5.5.7.1.2 | 0x59ed70e0, 0x9cc8, 0x48d5, 0x86, 0x75, 0xed, 0xcb, 0xb0, 0x88, 0xeb, 0xd9 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetDriverName – GetDriverName() returns EFI\_INVALID\_PARAMETER with a Language value of NULL. | 1. Call GetDriverName() with a Language value of NULL.  THe return status of GetDriverName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.1.3 | 0x9cffff0f, 0x65a7, 0x43a5, 0x9e, 0xf1, 0x74, 0x02, 0x27, 0x82, 0x3d, 0xfc | EFI\_COMPONENT\_NAME\_PROTOCOL.GetDriverName – GetDriverName() returns EFI\_INVALID\_PARAMETER with a DriverName value of NULL. | 1. Call GetDriverName() with a DriverName value of NULL.  The return status of GetDriverName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.1.4 | 0xcb089876, 0xe819, 0x4fd8, 0xac, 0xbe, 0x47, 0x56, 0x8c, 0x10, 0x93, 0xcc | EFI\_COMPONENT\_NAME\_PROTOCOL.GetDriverName – GetDriverName() returns EFI\_UNSUPPORTED with unsupported Language. | 1. Parse the EFI\_COMPONENT\_NAME\_PROTOCOL.SupportedLanguage, compare with the language code repository. If could not find out an unsupported language, then skip this checkpoint.  2. Call GetDriverName() with all unsupported Language codes.  Each return status of GetDriverName() is EFI\_UNSUPPORTED. |

### GetControllerName()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.7.2.1 | 0x961fabd3, 0x97ec, 0x4c97, 0xa0, 0x5a, 0xc2, 0xfd, 0xa6, 0x32, 0xf1, 0x3d | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() must successfully retrieve ControllerName for all manageable ControllerHandle. | 1. Retrieve all controller handles that are managed by the driver specified by the component protocol instance.  2. For each ControllerHandle  Call GetControllerName() with the ControllerHandle and at the same time, with a ChildHandle value of NULL in every supported language.  The GetControllerName() should return EFI\_SUCCESS. |
| 5.5.7.2.2 | 0xa83cfe57, 0x8391, 0x472b, 0xbc, 0x0e, 0x12, 0x18, 0x95, 0x06, 0x86, 0x70 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() must successfully retrieve ControllerName for ChildHandle of manageable ControllerHandle. | 1. Retrieve all controllers that are managed by the driver specified by the component instance.  2. Retrieve all child controllers. (If the controller has no child controller, then skip this checkpoint).  3. For each controller and its child controller:  Call GetControllerName() with every child controller of the bus controller.  The GetControllerName() should return EFI\_SUCCESS. |
| 5.5.7.2.3 | 0x735f5c9b, 0x95c9, 0x4949, 0xa8, 0xf7, 0x0a, 0x61, 0x06, 0x2e, 0x28, 0x67 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle. | 1. Call GetControllerName() with invalid ControllerHandle.  The return status of GetControllerName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.2.4 | 0x6f51eca4, 0x1808, 0x4b5b, 0x96, 0x9b, 0x88, 0xd8, 0xc8, 0xa5, 0x00, 0x3e | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_INVALID\_PARAMETER with invalid ChildHandle when the driver is not a device driver. | Call GetControllerName() with invalid ChildHandle when the driver is not a device driver.  The return status of GetControllerName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.2.5 | 0x9d3dedbf, 0xa123, 0x475b, 0xb6, 0x3e, 0x15, 0x01, 0xbc, 0x99, 0x81, 0x83 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_INVALID\_PARAMETER with a ControllerName value of NULL. | 1. Call GetControllerName() with a ControllerName value of NULL.  The return status of GetControllerName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.2.6 | 0xb436d551, 0xf2f4, 0x4fdc, 0xb0, 0x31, 0x07, 0x3d, 0xad, 0xec, 0xd7, 0x16 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_INVALID\_PARAMETER with a Language value of NULL | 1. Call GetControllerName() with a Language value of NULL  The return status of GetControllerName() is EFI\_INVALID\_PARAMETER. |
| 5.5.7.2.7 | 0x27a4781a, 0xe85a, 0x4714, 0xab, 0x9a, 0x67, 0xc1, 0x01, 0x38, 0x5e, 0x83 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_UNSUPPORTED with unsupported Language. | 1. Parse the EFI\_COMPONENT\_NAME\_PROTOCOL.SupportedLanguage, compare with the language code repository. If could not find out an unsupported language, then skip this checkpoint.  2. Find out all controller handles that will cause GetControllerHandle() return EFI\_SUCCESS when with supported Language.  3. Call GetDriverName() with each ControllerHandle and at the same time with those unsupported Language codes.  When input with unsupported Language, the return status of GetControllerName() should be EFI\_UNSUPPORTED. |
| 5.5.7.2.8 | 0xa1a56539, 0x8150, 0x483f, 0xa1, 0xb7, 0x23, 0xaf, 0x4f, 0x84, 0x64, 0xc7 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_UNSUPPORTED with irrelevant ControllerHandle | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ControllerHandle input for the GetControllerName(). It should return EFI\_UNSUPPORTED. |
| 5.5.7.2.9 | 0x8a5321c3, 0x3e88, 0x4c62, 0xbf, 0xdd, 0xc7, 0xe4, 0xec, 0xf5, 0x1f, 0x9f | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_UNSUPPORTED with irrelevant ChildHandle | 1. Test case creates a virtual device handle that does not stand for any device controller.  2. Input this handle as the ChildHandle input for the GetControllerName() (at the same time, the ControllerHandle should be valid). It should also return EFI\_UNSUPPORTED. |
| 5.5.7.2.10 | 0xa5ecbbe1, 0x1795, 0x4798, 0xa8, 0x26, 0x20, 0x9c, 0x57, 0x8e, 0x1d, 0xe9 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() returns EFI\_UNSUPPORTED with device handle and not-NULL ChildHandle | 1. Test case gets a valid device handle, and an invalid ChildHandle.  2. Input this device handle as ControllerHandle and the ChildHandle. It should return EFI\_UNSUPPORTED. |
| 5.5.7.2.11 | 0xdb9e40a7, 0x8638, 0x4c0f, 0xb2, 0x94, 0xfe, 0x05, 0x23, 0xfa, 0x1e, 0x2f | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() go through each of the handles | Call GetGontrollerName()with all of the handles. The return status should not be EFI\_INVALID\_PARAMETER. |
| 5.5.7.2.12 | 0x79ab9a12, 0xe535, 0x4727, 0xa0, 0x4d, 0x20, 0xb7, 0x8f, 0x91, 0x8f, 0x85 | EFI\_COMPONENT\_NAME\_PROTOCOL.GetControllerName – GetGontrollerName() go through each of the handles and child handles | Call GetGontrollerName()with all of the handles and child handles. The return status should not be EFI\_INVALID\_PARAMETER. |

## 

## EFI\_COMPONENT\_NAME2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_COMPONENT\_NAME2\_PROTOCOL Section.

### GetDriverName()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.8.1.1 | 0x31518904, 0x1307, 0x4bef, 0x84, 0xe6, 0x66, 0xff, 0x76, 0xa7, 0x8f, 0xf4 | COMPONENT\_NAME2\_PROTOCOL.GetDriverName - GetDriverName() returns EFI\_INVALID\_PARAMETER with NULL Language | Call GetDriverName() with Language being NULL. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.1.2 | 0x7b478492, 0x53c0, 0x4748, 0xa2, 0x44, 0x60, 0xf3, 0xf2, 0xd0, 0xee, 0x5a | COMPONENT\_NAME2\_PROTOCOL.GetDriverName - GetDriverName() returns EFI\_INVALID\_PARAMETER with NULL DriverName | Call GetDriverName() with DriverName being NULL. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.1.3 | 0x36e0a7e5, 0xbfc8, 0x4ab9, 0xb4, 0x1a, 0x9d, 0x69, 0x25, 0x43, 0x6a, 0xd2 | COMPONENT\_NAME\_PROTOCOL.GetDriverName - GetDriverName() returns EFI\_UNSUPPORTED with unsupported language | Call GetDriverName() with unsupported Language. The returned status should be EFI\_UNSUPPORTED |
| 5.5.8.1.4 | 0x327aa49d, 0x4a8b, 0x4101, 0x8b, 0x0d, 0x92, 0x32, 0x33, 0xfc, 0x09, 0xe5 | COMPONENT\_NAME2\_PROTOCOL.GetDriverName - GetDriverName() returns EFI\_SUCCESS with supported languange | Call GetDriverName() with supported Language. The returned status should be EFI\_SUCCESS |

### GetControllerName()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.8.2.1 | 0xc38a85af, 0x2d0a, 0x4bfa, 0x8f, 0x44, 0xa2, 0x47, 0xf1, 0xfd, 0x7b, 0x94 | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_INVALID\_PARAMETER with invalid ControllerHandle | Call GetControllerName() with invalid ControllerHandle. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.2.2 | 0xde8c8d23, 0x4aa6, 0x4dd7, 0x93, 0xbd, 0x35, 0x78, 0x40, 0x67, 0x6b, 0xff | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_INVALID\_PARAMETER with invalid ChildHandle and non-device ControllerHandle | Call GetControllerName() with valid Bus Handle(non-device ControllerHandle) and invalid ChildHandle. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.2.3 | 0x8398d1d9, 0xdfb7, 0x47f1, 0xad, 0x65, 0x36, 0xf1, 0x2a, 0x6a, 0x47, 0xea | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_INVALID\_PARAMETER with NULL ControllerName | Call GetControllerName() with valid device ControllerHandle and NULL ControllerName. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.2.4 | 0x8cf65e39, 0x125b, 0x4206, 0x99, 0x85, 0xca, 0xa5, 0x15, 0x68, 0x7b, 0x0a | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_INVALID\_PARAMETER with NULL Language | Call GetControllerName() with valid device ControllerHandle and NULL Language. The returned status should be EFI\_INVALID\_PARAMETER |
| 5.5.8.2.5 | 0x064d252b, 0xbc7f, 0x4859, 0x86, 0x02, 0xaf, 0xa9, 0x7f, 0x8e, 0xa2, 0xbd | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_UNSUPPORTED with unsupported language | Call GetControllerName() with unsupported Language. The returned status should be EFI\_UNSUPPORTED |
| 5.5.8.2.6 | 0x95c8bfd8, 0xc67c, 0x411e, 0x93, 0x95, 0x43, 0x28, 0x01, 0x2c, 0x07, 0x66 | COMPONENT\_NAME\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_UNSUPPORTED with irrelevant ControllerHandle | Call GetControllerName() with irrelevant ControllerHandle. The returned status should be EFI\_UNSUPPORTED |
| 5.5.8.2.7 | 0x155c06f0, 0xe315, 0x4175, 0xa0, 0xe9, 0x4d, 0xe3, 0xc5, 0x16, 0x3c, 0xb2 | COMPONENT\_NAME\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_UNSUPPORTED with irrelevant ChildHandle | Call GetControllerName() with irrelevant ChildHandle. The returned status should be EFI\_UNSUPPORTED |
| 5.5.8.2.8 | 0xabf5cd96, 0xfb74, 0x489c, 0xae, 0x70, 0xeb, 0x31, 0xa0, 0xfd, 0xef, 0x25 | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_SUCCESS with supported language | Call GetControllerName() with Supported Language and valid ControllerHandle. The returned status should be EFI\_SUCCESS |
| 5.5.8.2.9 | 0x38bd708a, 0xf1d7, 0x4b3b, 0xb2, 0x39, 0x06, 0xf6, 0xfd, 0xa2, 0x1c, 0xb8 | COMPONENT\_NAME2\_PROTOCOL.GetControllerName - GetControllerName() returns EFI\_SUCCESS support language | Call GetControllerName() with Supported Language, valid ControllerHandle and valid ChildHandle. The returned status should be EFI\_SUCCESS |

## 

## EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL

Reference Document:

*UEFI Specification*, EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL Section.

### Query()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.9.1.1 | 0x6acc3f19, 0xe9b, 0x4ff7, 0xbd,0xd0, 0x7e,0x49, 0x19,0x6, 0xa8, 0xdd | EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL.Query - Invoke Query() and verify interface correctness | 1. Call Query() with valid ControllerHandle and Instance  2. if EFI\_SUCCESS, get the next ControllerHandle till the end  3. The return status should be EFI\_SUCCESS except the last one. The last one should be EFI\_NOT\_FOUND. |
| 5.5.9.1.2 | 0x4cfb435, 0x4569, 0x48bb, 0x8c,0x8a, 0xba,0x2a, 0xa7,0x5f, 0x16,0xe2 | EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL.Query - Invoke Query() with invalid ControllerHandle | Call Query() with invalid ControllerHandle, it should return EFI\_INVALID\_PARAMETER |
| 5.5.9.1.3 | 0x28730223, 0x508, 0x46c9, 0x83, 0xf7, 0x94, 0xec, 0x52, 0x4, 0x65, 0x2a | EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL.Query - Invoke Query() with invalid Instance | Call Query() with Instance is NULL, it should return EFI\_INVALID\_PARAMETER |

### Response()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.9.2.1 | 0x15cd60c3, 0xb30, 0x44df, 0xbe,0x9, 0x0,0xfa, 0x9f,0xe6, 0xf8,0xc5 | EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL.Response - Invoke Response() and verify interface correctness | 1. Call Query() with valid ControllerHandle and Instance, call Response() with the same ControllerHandle and the arguments returned from Query()  2. if EFI\_SUCCESS, get the next ControllerHandle till the end  3. The return status should be EFI\_SUCCESS except the last one. The last one should be EFI\_NOT\_FOUND. |
| 5.5.9.2.2 | 0x88e2dc36, 0x4d7b, 0x467a, 0xbb,0x60, 0xc9,0x97, 0xb7,0x22, 0xb7,0x12 | EFI\_PLATFORM\_TO\_DRIVER\_CONFIGURATION\_PROTOCOL.Response - Invoke Response() with invalid ControllerHandle | Call Query() and Response() with invalid ControllerHandle, the return status should be EFI\_INVALID\_PARAMETER |

### DMTF SM CLP ParameterTypeGuid

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.9.3.1 | 0x35a69b6e, 0x1755, 0x41ca, 0x97,0xd7, 0xab,0xc3, 0xb7,0xb7, 0x7c,0xd3 | EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK.CLPCommand - verify the DMTF CLP command line NULL-terminated string and return EFI\_SUCCESS. | 1. Invoke Query(), produce EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK.  2. Verify ParameterTypeGuid.  3. Compare the CLPCommand string with Standard command verbs and options. The return code should be EFI\_SUCCESS |
| 5.5.9.3.2 | 0x77b6a0b3, 0x7efe, 0x42f8, 0x98,0xcf, 0xf5,0x49, 0x51,0xe7, 0x1c,0x2c | EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK.CLPReturnString – verify the CLP return string is “format=keyword” format | 1. Invoke Query() and Response(), produce EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK  2. Verify the CLPReturnString format is “format=keyword” format. The return code should be EFI\_SUCCESS |
| 5.5.9.3.3 | 0xd7cacc21, 0x4e96, 0x444c, 0x91,0xcb, 0x70,0x4e, 0x3f,0xa8, 0x31,0x33 | EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK.CLPCmdStatus - with valid command and return the command status of CLP with EFI\_SUCCESS. | 1. Invoke Query() and Response(), produce EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK  2. Compare the CLPCmdStatus string with Standard command return status table. The return code should be EFI\_SUCCESS |
| 5.5.9.3.4 | 0x69e16544, 0x23bd, 0x4b46, 0x9d,0xe5, 0xe0,0x6a, 0xb4,0x3d, 0x8b,0x12 | EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK.CLPErrorValue - compare this parameter with CLP Error Value and return code EFI\_SUCCESS. | 1. Invoke Query() and Response(), produce EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK  2. Compare the CLPErrorValue with Error Values. The return code should be EFI\_SUCCESS |
| 5.5.9.3.5 | 0x78e97814, 0x4c3d, 0x42b3, 0xae,0x7c, 0x7b,0x16, 0x61,0x69, 0x32,0x4a | EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK. CLPMsgCode - compare with CLP Message Code, return code EFI\_SUCCESS. | 1. Invoke Query() and Response(), produce EFI\_CONFIGURE\_CLP\_PARAMETER\_BLK  2. verify the CLPMsgCode is equal to the CLP Probable Cause Value, the return code should be EFI\_SUCCESS |

## EFI\_DRIVER\_SUPPORTED\_EFI\_VERSION\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DRIVER\_SUPPORTED\_EFI\_VERSION\_PROTOCOL Section.

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.10.1.1 | 0x9b72180d, 0x155c, 0x4b7a, 0xbb, 0xa8, 0x99, 0x83, 0x7b, 0x2f, 0x9d, 0xf8 | EFI\_DRIVER\_SUPPORTED\_EFI\_VERSION\_PROTOCOL.Length - verify this value is the structure length, and return EFI\_SUCCESS. | Verify the entire structure length is correct and return EFI\_SUCCESS value. |
| 5.5.10.1.2 | 0xac1951b1, 0x7243, 0x40a9, 0xa0, 0x1, 0x9d, 0x9d, 0x6e, 0x44, 0x8f, 0x5a | EFI\_DRIVER\_SUPPORTED\_EFI\_VERSION\_PROTOCOL.FirmwareVersion - verify the parameter with EFI\_2\_10\_SYSTEM\_REVISION. Return EFI\_SUCCESS or EFI\_INCOMPATIBLE\_VERSION.. | Initialize the EFI\_VERSION\_PTOTOCOL and compare the version of the EFI Specification that driver conforms to with EFI\_2\_10\_SYSTEM\_REVISION. If equal, return EFI\_SUCCESS; if not, return value should be EFI\_INCOMPATIBLE\_VERSION. . |

## 

## 

## EFI\_ADAPTER\_INFORMATION\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ADAPTER\_INFORMATION\_PROTOCOL Section.

### GetInformation()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.11.1.1 | 0x0d68257b,  0xf647,  0x452a,0x97,  0x44,0xa2,  0x23,0xe6,  0xee,0x3d,  0xf2 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.GetInformation - GetInformation()returnsEFI\_SUCCESS  with valid information type. | Call GetSupportedTypes() to  get the valid Information type.  Call GetInformation (), the  return status should be EFI\_SUCCESS and the InformationBlock != NULL. |
| 5.5.11.1.2 | 0x15a3a10d,  0xca48,  0x4d52,0x99,  0x89,0x51,  0x71,0xfc,  0x90,0x90,  0x54 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.GetInformation - GetInformation()returns correct InformationBlockSize. | Call GetSupportedTypes() to  get the valid Information type.  Call GetInformation () the return  status should be EFI\_SUCCESS and the InformationBlock != NULL.  Compare the InformationBlockSize  Received from step2 with the expected size. Their size should be equal. |
| 5.5.11.1.3 | 0xeb7c1cc7,  0x5c94,  0x40c6,0xbe,  0xaf,0x53,  0x08,0xd7,  0xf6,0x35,  0x01 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.GetInformation -  GetInformation() returns EFI\_UNSUPPORTEDwith unknown InformationType. | Call GetInformation () with unknown InformationType, the return status should be EFI\_UNSUPPORTED. |
| 5.5.11.1.4 | 0xab0d01e7,  0x8f70,  0x4a76,0x87,  0x7e,0xa7,  0x13,0xce,  0x00,0x1b,  0x72 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.GetInformation - GetInformation()returns EFI\_INVALID\_PARAMETERS  with NULL InformationBlock. | Call GetInformation ()with NULL InformationBlock, the return status should be EFI\_INVALID\_PARAMETERS. |
| 5.5.11.1.5 | 0x5a831392,  0x7ee7,  0x4f3e,0xbc,  0xd6,0x32,  0x6d,0x64,  0xf9,0xc2,  0x1c | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.GetInformation - GetInformation()returnsEFI\_INVALID\_PARAMETERS  with NULL InformationBlockSize. | Call GetInformation ()with NULL InformationBlockSize, the return status should be EFI\_INVALID\_PARAMETERS. |

### SetInformation()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.11.2.1 | 0xeed7dbd9,  0x834c,  0x4dbf,0xa1,  0x8d,0x39,  0x9f,0xdf,  0x19,0xd3,  0xf0 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.SetInformation - SetInformation() returns EFI\_SUCCESS  with valid information type. | Call GetSupportedTypes() to  get the valid Information type.  Call GetInformation () the return  status should be EFI\_SUCCESS and the InformationBlock != NULL.  Call SetInformation()the  return status should be EFI\_SUCCESS or EFI\_WRITE\_PROTECTED. |
| 5.5.11.2.2 | 0x2e1eae6b,  0x95f1,  0x4189,0xac,  0x02,0xc8,  0x50,0x41,  0x02,0x3c,  0xca | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.SetInformation - SetInformation() returns EFI\_SUCCESS  with valid information type. | Call GetSupportedTypes() to  get the valid Information type.  Call GetInformation () the return  status should be EFI\_SUCCESS and the InformationBlock != NULL.    Call SetInformation()the  return status should be EFI\_SUCCESS or EFI\_WRITE\_PROTECTED.  Call GetInformation ()and check  the received information with the Information set by step3. They should be equal. |
| 5.5.11.2.3 | 0xdb4d7a52,  0x608c,  0x46f7,0xaf,  0x23,0x0b,  0x10,0x1e,  0xc8,0xb8,  0xec | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.SetInformation - SetInformation() returns EFI\_UNSUPPORTED  with unknown InformationType. | Call SetInformation() with unknown InformationType, the return  status should be EFI\_UNSUPPORTED. |
| 5.5.11.2.4 | 0xd15882e0,  0xcb55,  0x42f4,0xbb,  0x30,0xcb,  0xa0,0x50,  0x3a,0xad,  0xc9 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL.SetInformation - SetInformation() returns EFI\_INVALID\_PARAMETER or EFI\_WRITE\_PROTECTED with NULL InformationBlock. | Call SetInformation()with NULL InformationBlock, the return  status should be EFI\_INVALID\_PARAMETER  or EFI\_WRITE\_PROTECTED. |

### GetSupportedTypes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.5.11.3.1 | 0x59a9f08d,  0xad58,  0x49e0,0x92,  0x7f,0x9b,  0x46,0xbb,  0x62,0x3b,  0x41 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL. GetSupportedTypes - GetSupportedTypes() returns EFI\_SUCCESS**.** | Call GetSupportedTypes() , the return status should be EFI\_SUCCESS. |
| 5.5.11.3.2 | 0xac9f6a14,  0xff26,  0x43d1,0x8c,  0x47,0x61,  0x56,0x00,  0xc4,0x12,  0xf4 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL. GetSupportedTypes - GetSupportedTypes() returns EFI\_SUCCESS. | Call GetSupportedTypes() to get the valid Information type.  The Information type received from step1 should be one of the probable types. |
| 5.5.11.3.3 | 0xd55b2936,  0x5f3f,  0x40a8,0xb8,  0xa1,0x40,  0x9f,0x59,  0x50,0xda,  0x61 | EFI\_ADAPTER\_INFORMATION\_PROTOCOL. GetSupportedTypes - GetSupportedTypes()returns EFI\_INVALID\_PARAMETER with NULL InfoTypesBuffer. | Call GetSupportedTypes()with  NULL InfoTypesBuffer, the return status should be EFI\_INVALID\_PARAMETER**.** |
| 5.5.11.3.4 | 0x890c711f,  0xce91,  0x4426,0xa5,  0xfd,0x01,  0x0a,0x1c,  0xa5,0x33,  0x5b | EFI\_ADAPTER\_INFORMATION\_PROTOCOL. GetSupportedTypes() - GetSupportedTypes()returns EFI\_INVALID\_PARAMETER with NULL InfoTypesBufferCount. | Call GetSupportedTypes()with  NULL InfoTypesBufferCount, the return status should be EFI\_INVALID\_PARAMETER. |

# Protocols Console Support Test

## EFI\_SIMPLE\_ TEXT\_INPUT\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.1.1.1 | 0x7cb5f8dd, 0x7346, 0x484b, 0xb1, 0xb3, 0xa6, 0x46, 0x69, 0x6d, 0xea, 0xe7 | EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL.Reset – Reset() returns EFI\_SUCCESS with ExtendedVerification as FALSE. | 1. Call Reset() with ExtendedVerification as FALSE. The return status should be EFI\_SUCCESS. |
| 5.6.1.1.2 | 0x6fc31add, 0xf34b, 0x4b56, 0x9b, 0xa6, 0x36, 0xb2, 0x7c, 0xbe, 0xf5, 0xa2 | EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL.Reset – ReadKeyStroke() returns EFI\_NOT\_READY when there is no key has been stroked. | 1. Call Reset() with ExtendedVerification as FALSE.  2. After Reset(), do not stroke any key, and call ReadKeyStroke(). The return code should be EFI\_NOT\_READY |
| 5.6.1.1.3 | 0x8da56db6, 0xd7df, 0x4029, 0xba, 0x98, 0x37, 0x46, 0x0b, 0x21, 0x0e, 0x3b | EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL.Reset – Reset() returns EFI\_SUCCESS with ExtendedVerification as TRUE. | 1. Call Reset() with ExtendedVerification as TRUE. The return status should be EFI\_SUCCESS. |
| 5.6.1.1.4 | 0x3d51b174, 0x59f8, 0x44bc, 0xb7, 0xf7, 0x9a, 0x11, 0x2c, 0x51, 0x82, 0xa1 | EFI\_SIMPLE\_TEXT\_INPUT\_PROTOCOL.Reset – ReadKeyStroke() returns EFI\_NOT\_READY when there is no key that has been stroked. | 1. Call Reset() with ExtendedVerification as TRUE.  2. After Reset(), do not stroke any key, and call ReadKeyStroke(). The return code should be EFI\_NOT\_READY |

### ReadKeyStroke()

No automatic test case is designed to verify this function.

## EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL Section.

UEFI 2.1 Specification, Section 11.3.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.1.1 | 0xecaf43c6, 0x6b77, 0x413a, 0x89, 0x8f, 0x28, 0x0e, 0x92, 0x5f, 0xf9, 0x43 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Reset – Reset() without Extended Verification Mode | 1. Call Reset() with ExtendedVerification as FALSE.  2. Check cursor position. It should be (0,0). |
| 5.6.2.1.2 | 0xc40bba44, 0xcfa3, 0x4494, 0xaf, 0xa5, 0xfa, 0x2f, 0x78, 0xcb, 0x20, 0x20 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Reset – Reset() without Extended Verification Mode returns EFI\_SUCCESS | 1. Call Reset() with ExtendedVerification as FALSE. The return code should be EFI\_SUCCESS |
| 5.6.2.1.3 | 0x51267bf4, 0x7b3e, 0x46fd, 0xac, 0x6c, 0xff, 0x8e, 0x54, 0x61, 0xd1, 0x7f | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Reset – Reset() with Extended Verification Mode | 1. Call Reset() with ExtendedVerification as TRUE.  2. Check cursor position. It should be (0,0). |
| 5.6.2.1.4 | 0x1771a342, 0xbbc3, 0x43da, 0x91, 0x4d, 0x7d, 0x59, 0xb7, 0xd8, 0x86, 0x2e | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Reset – Reset() with Extended Verification Mode returns EFI\_SUCCESS | 1. Call Reset() with ExtendedVerification as TRUE. The return code should be EFI\_SUCCESS |

### OutputString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.2.1 | 0x3e706c2f, 0xc7ee, 0x43de, 0x8f, 0xe7, 0x39, 0x81, 0x33, 0x11, 0x7d, 0x9b | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with normal Unicode String. Cursor value in Mode should be assigned to the right position. | 1. Call OutputString() with normal Unicode String.  2. Check cursor position. It should be at the end of the string. In addition, other attributes of output mode remain unchanged. |
| 5.6.2.2.2 | 0xb7c77060, 0xbd1e, 0x4607, 0x85, 0x41, 0xdc, 0xf5, 0x08, 0xe3, 0xff, 0xd4 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with normal Unicode string returns EFI\_SUCCESS | 1. Call OutputString() with normal Unicode String. The return code should be EFI\_SUCCESS |
| 5.6.2.2.3 | 0xf3f07bdb, 0x683d, 0x448f, 0xa5, 0x4a, 0xb5, 0x61, 0xf9, 0x86, 0x95, 0xb5 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with very long Unicode String. Cursor value in Mode should be assigned to the right position. | 1. Call OutputString() with very long Unicode String.  2. Check cursor position. It should be at the end of the string. In addition, other attributes of output mode remain unchanged. |
| 5.6.2.2.4 | 0xcefd060c, 0x9ed5, 0x4862, 0x96, 0x75, 0xda, 0x26, 0x3b, 0xdc, 0x35, 0x3a | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with very long Unicode String returns EFI\_SUCCESS | 1. Call OutputString() with very long Unicode String. The return code should be EFI\_SUCCESS |
| 5.6.2.2.5 | 0x722925c0, 0xf84a, 0x4aa0, 0x9d, 0xe8, 0x04, 0x03, 0x70, 0xe0, 0x69, 0x0f | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with cursor control Unicode String. Cursor value in Mode should be assigned to the right position. | 1. Call OutputString() with Drawing Unicode String.  2. Check cursor position. It should be at the end of the string. In addition, other attributes of output mode remain unchanged. |
| 5.6.2.2.6 | 0x6fce5c66, 0xd273, 0x446d, 0x88, 0x54, 0x94, 0x7b, 0x6c, 0xd4, 0xa3, 0x96 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with Drawing Unicode String returns EFI\_SUCCESS | 1. Call OutputString() with Drawing Unicode String. The return code should be EFI\_SUCCESS |
| 5.6.2.2.7 | 0xae266668, 0xa3ef, 0x4930, 0x85, 0x64, 0x55, 0x9f, 0x9e, 0x96, 0x14, 0x6b | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with cursor control Unicode String. Cursor value in Mode should be assigned to the right position. | 1. Call OutputString() with cursor control Unicode String.  2. Check cursor position. It should be at the appointed postion. In addition, other attributes of output mode remain unchanged. |
| 5.6.2.2.8 | 0x2e40bcfe, 0x7713, 0x4ab1, 0x99, 0x5c, 0xe0, 0x8b, 0x2d, 0xdc, 0x2b, 0x60 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.OutputString – OutputString() with cursor control Unicode String returns EFI\_SUCCESS | 1. Call OutputString() with cursor control Unicode String. The return code should be EFI\_SUCCESS |

### TestString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.3.1 | 0x0317202b, 0x4c09, 0x4f09, 0xa8, 0x9e, 0x17, 0x91, 0x7d, 0x0b, 0xb5, 0x6c | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.TestString – TestString() with cursor control Unicode String. Cursor value in Mode should be assigned to the right position. | 1. Call TestString() with normal Unicode String.  2. Check cursor position. It should be at the end of the string. In addition, other attributes of output mode remain unchanged. |
| 5.6.2.3.2 | 0x92609750, 0x7965, 0x4e08, 0xae, 0xaf, 0xb1, 0xec, 0xa3, 0x61, 0x63, 0x66 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.TestString – TestString() with normal Unicode string returns EFI\_SUCCESS | 1. Call TestString() with normal Unicode String Mode value. The return code should be EFI\_SUCCESS |

### QueryMode()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.4.1 | 0x26d95327, 0x008c, 0x4ca1, 0xb6, 0x75, 0x9d, 0x86, 0x20, 0xdf, 0x73, 0x19 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – QueryMode() with supported ModeNumber value remains other attributes unchanged | 1. Call QueryMode() with supported ModeNumber value. Other attributes should remain unchanged. |
| 5.6.2.4.2 | 0xf2b8054e, 0xcfa7, 0x4fcd, 0x9e, 0x6c, 0xc6, 0x07, 0xbe, 0x62, 0xff, 0x27 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – QueryMode() with supported ModeNumber value returns EFI\_SUCCESS | 1. Call QueryMode() with supported ModeNumber value. The return code should be EFI\_SUCCESS |
| 5.6.2.4.3 | 0x4b5c620e, 0x0e2f, 0x4c19, 0xa2, 0x41, 0x25, 0xbd, 0x47, 0x67, 0xbf, 0x3e | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – QueryMode() with unsupported ModeNumber value returns EFI\_UNSUPPORTED | 1. Call QueryMode() with each ModeNumber value less than **MaxMode**. If ModeNumber #1 (80\*50) is unsupported, the return code should be EFI\_UNSUPPORTED |
| 5.6.2.4.4 | 0x5c444cd8, 0x3dce, 0x4be7, 0xb5, 0xcd, 0x39, 0x38, 0xd5, 0x04, 0xac, 0x95 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – ModeNumber #0 is supported and the dimension is 80 \* 25 | 1. Call QueryMode() with each **Mode** value less than **MaxMode**. ModeNumber #0 should be supported and the dimension is 80 \* 25 |
| 5.6.2.4.5 | 0x3b069c23, 0xde80, 0x4eb9, 0x86, 0x57, 0x48, 0x0f, 0x63, 0x81, 0x6c, 0x53 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – If ModeNumber #1 is supported, the dimension is 80 \* 50 | 1. Call QueryMode() with each ModeNumber value less than **MaxMode**. If ModeNumber #1 is supported, the dimension should be 80 \* 50 |
| 5.6.2.4.6 | 0x891cb899, 0xc05e, 0x4160, 0xa9, 0x8c, 0x06, 0x04, 0xc4, 0x0a, 0x44, 0x48 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – QueryMode() with Invalid ModeNumber Fields, EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode does not change before and after | 1. Call QueryMode() with Invalid Mode Fields beyond **MaxMode**. EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode should not change before and after |
| 5.6.2.4.7 | 0x8f0b6ebe, 0xaa65, 0x4aa4, 0x8c, 0xfc, 0x22, 0x08, 0x74, 0xe7, 0x95, 0x63 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.QueryMode – QueryMode() with Invalid Mode Fields returns EFI\_UNSUPPORTED | 1. Call QueryMode() with Invalid Mode Fields beyond **MaxMode**. The return code should be EFI\_UNSUPPORTED |

### SetMode()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.5.1 | 0x3680c8c3, 0x8fc6, 0x4fe2, 0xa2, 0xdb, 0x4f, 0xcb, 0xe1, 0x0a, 0x14, 0x87 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetMode – SetMode() with supported ModeNumber value sets mode and cursor postion | 1. Call SetMode() with supported ModeNumber value. Cursor position should be set to (0,0). Current mode should be the appointed mode. Other attributes should remain unchanged. |
| 5.6.2.5.2 | 0xcb1c6bc5, 0x6c12, 0x4d3a, 0x91, 0xc4, 0x2e, 0xdb, 0x09, 0xa3, 0x5d, 0x5f | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetMode – SetMode() with supported ModeNumber value returns EFI\_SUCCESS | 1. Call SetMode() with supported ModeNumber value. The return code should be EFI\_SUCCESS |
| 5.6.2.5.3 | 0xab044f50, 0xd0d3, 0x44f5, 0x92, 0x34, 0xe0, 0x52, 0xcc, 0x26, 0x47, 0x89 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetMode – SetMode() with Invalid Mode Fields, EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode does not change before and after | 1. Call SetMode() with Invalid Mode Fields beyond **MaxMode**. EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode should not change before and after |
| 5.6.2.5.4 | 0x6ce26a46, 0xab4a, 0x44df, 0x86, 0xc0, 0x3a, 0x97, 0xc3, 0xa3, 0x93, 0x0f | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetMode – SetMode() with Invalid Mode Fields returns EFI\_UNSUPPORTED | 1. SetMode() with Invalid Mode Fields beyond **MaxMode**. The return code should be EFI\_UNSUPPORTED. |

### SetAttribute()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.6.1 | 0xb401e101, 0x5386, 0x49fc, 0x89, 0x64, 0x54, 0x3b, 0xad, 0x90, 0x7b, 0x58 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute() with supported attributes returns EFI\_SUCCESS | 1. Call SetAttribute() with supported attributes. The return code should be EFI\_SUCCESS. |
| 5.6.2.6.2 | 0x49b1f9ea, 0x085c, 0x4b2b, 0xa8, 0x98, 0x75, 0x6a, 0xa7, 0x61, 0x2f, 0x4a | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute()should return EFI\_SUCCESS with valid attributes | 1. Check return status of SetAttribute()with valid attribute to set foreground color |
| 5.6.2.6.3 | 0xefa8f25f, 0x60fe, 0x4707, 0x9f,0x2b, 0x66, 0x12, 0xf6, 0x4d, 0x3f, 0x6e | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute() changes output color and remains other mode fields unchanged | 1. Check all the fields of output mode. The background color and foreground color should be set as appointed value, and other fields should not be changed. |
| 5.6.2.6.4 | 0x3af1e31e, 0x1523, 0x4ad3, 0xa0, 0x77, 0x51, 0xd2, 0x32, 0x8e, 0xdf, 0x80 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute() with supported attributes returns EFI\_SUCCESS and output color is set as expected | 1. After the multiple calls of SetAttribute(), check all the return codes and changes in output mode fields. |
| 5.6.2.6.5 | 0x42c6876b, 0x46e7, 0x47a5, 0xb4, 0x27, 0x25, 0x06, 0x1e, 0x25, 0xe8, 0xbf | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute() with Invalid Attribute values, does not change EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode. | 1. Call SetAttribute() with Invalid Attribute values. EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.Mode should not be changed |
| 5.6.2.6.6 | 0x300a1814, 0xd2c8, 0x4a51, 0xa9, 0x37, 0x0b, 0x8c, 0xe9, 0x3f, 0xb4, 0x45 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetAttribute – SetAttribute() with Invalid Attribute values returns EFI\_UNSUPPORTED | 1. Call SetAttribute() with Invalid Attribute values. The return code should be EFI\_UNSUPPORTED. |

### ClearScreen()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.7.1 | 0xa92ce5f8, 0x89a8, 0x4695, 0xbc, 0xb1, 0x59, 0x3e, 0x0e, 0x88, 0xe2, 0x41 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.ClearScreen – ClearScreen() sets cursor position to (0,0) and remain other attributes unchanged. | 1. Call ClearScreen() in all supported modes. The cursor position should be set to (0,0), and other attributes of output should not be changed. |
| 5.6.2.7.2 | 0xb3a0092f, 0xe768, 0x4359, 0xa9, 0xeb, 0x3d, 0x85, 0x27, 0x78, 0xc4, 0xcb | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.ClearScreen – ClearScreen() returns EFI\_SUCCESS. | 1. Call ClearScreen() in all supported modes. The return code should be EFI\_SUCCESS. |

### SetCursorPosition()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.8.1 | 0xe4f9fd56, 0x1e72, 0x44ee, 0xb0, 0x31, 0xae, 0xc6, 0xb4, 0xda, 0xb2, 0x0d | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetCursorPosition – SetCursorPosition() moves cursor to appointed position and remain other attributes unchanged. | 1. Call SetCursorPosition() in all supported modes to move cursor to every valid position within dimension boundary. The cursor position should be set to appointed value, and other attributes of output should not be changed. |
| 5.6.2.8.2 | 0xbe56dc0d, 0x8779, 0x4700, 0xb4, 0x4c, 0x6d, 0xf4, 0x39, 0xfb, 0xf6, 0xaa | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetCursorPosition – SetCursorPosition() returns EFI\_SUCCESS. | 1. Call SetCursorPosition() in all supported modes to move cursor to every valid position within dimension boundary. The return code should be EFI\_SUCCESS. |
| 5.6.2.8.3 | 0xa125b94f, 0xcbc6, 0x4e25, 0x80, 0x33, 0xfb, 0xf0, 0xde, 0x73, 0x14, 0x65 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetCursorPosition – SetCursorPosition() returns EFI\_SUCCESS and moves cursor to appointed position. | 1. Call SetCursorPosition() in all supported modes to move cursor to every valid position within dimension boundary.  2. Check return code and behavior of each call. |
| 5.6.2.8.4 | 0x85e9aabd, 0x1376, 0x4e67, 0xb6, 0x14, 0xce, 0xcf, 0x63, 0x36, 0x9b, 0x31 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetCursorPosition – SetCursorPosition() with Invalid Row/Column Numbers does not change cursor position. | 1. Call SetCursorPosition() with Invalid Row/Column Numbers. Mode->**CursorColumn** / **CursorRow** should remain unchanged. |
| 5.6.2.8.5 | 0xbeff2f08, 0xbc3e, 0x4e4f, 0xb8, 0x6f, 0x05, 0xb0, 0xe9, 0xd1, 0x0b, 0xa3 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.SetCursorPosition – SetCursorPosition() with Invalid Row/Column Numbers returns EFI\_UNSUPPORTED. | 1. Call SetCursorPosition() with Invalid Row/Column Numbers. The return code should be EFI\_UNSUPPORTED. |

### EnableCursor()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.2.9.1 | 0xdf85a087, 0xd1c9, 0x4739, 0x97, 0x2c, 0x4e, 0xd8, 0x61, 0x5f, 0x56, 0xd4 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with TRUE returns EFI\_SUCCESS or EFI\_UNSUPPORTED | 1. Call EnableCursor() with TRUE. If EnableCursor() is unsupported, the return code should be EFI\_UNSUPPORTED |
| 5.6.2.9.2 | 0x318fe413, 0xd07d, 0x4aad, 0x9c, 0x62, 0xf8, 0xfe, 0x7f, 0x77, 0xbe, 0xb2 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with TRUE changes cursor status to visible. | 1. Call EnableCursor() with TRUE.  2. If EnableCursor() success, **CursorVisible** should be TRUE |
| 5.6.2.9.3 | 0x07394e57, 0xf2f5, 0x4045, 0x8b, 0x2c, 0x91, 0xbb, 0x2b, 0xe4, 0x3c, 0x4e | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with TRUE returns EFI\_SUCCESS or EFI\_UNSUPPORTED | 1. Call EnableCursor() with TRUE. If EnableCursor() is supported. The return code should be EFI\_SUCCESS |
| 5.6.2.9.4 | 0xb3121d1b, 0xbd25, 0x477d, 0xad, 0xc3, 0x5d, 0xe3, 0x1b, 0x19, 0x43, 0x25 | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with FALSE returns EFI\_SUCCESS or EFI\_UNSUPPORTED | 1. Call EnableCursor() with FALSE. If EnableCursor() is unsupported, the return code should be EFI\_UNSUPPORTED |
| 5.6.2.9.5 | 0xcfd7fe8d, 0x1674, 0x4205, 0xb6, 0x3a, 0xe6, 0x4e, 0x86, 0x15, 0x66, 0x0c | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with FALSE changes cursor status to invisible. | 1. Call EnableCursor() with FALSE.  2. If EnableCursor() success, CursorVisible should be FALSE |
| 5.6.2.9.6 | 0x3f2b2512, 0x91cf, 0x44d9, 0xae, 0xbd, 0x89, 0x76, 0x40, 0xf1, 0xb4, 0x1f | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL.EnableCursor – EnableCursor() with FALSE returns EFI\_SUCCESS or EFI\_UNSUPPORTED | 1. Call EnableCursor() with FALSE. If EnableCursor() is supported. The return code should be EFI\_SUCCESS |

## EFI\_SIMPLE\_POINTER\_PROTOCOL\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_POINTER\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.4.1.1 | 0x3fcb89c6, 0xe504, 0x4669, 0xbf, 0x31, 0xba, 0x03, 0xb7, 0x66, 0xc8, 0xc2 | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - Reset() with an ExtendedVerification value of FALSE returns EFI\_SUCCESS | 1. Call Reset() with an ExtendedVerification value of FALSE. The return code should be EFI\_SUCCESS. |
| 5.6.4.1.2 | 0xd752813f, 0x32dc, 0x4820, 0xb7, 0x59, 0xe8, 0x97, 0x0c, 0xf3, 0x33, 0x89 | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - GetState() after Reset() returns 0 for all related movement. | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState(). If success, RelativeMovementX, RelativeMovementY and RelativeMovementZ should be 0. |
| 5.6.4.1.3 | 0x716eefc7, 0x8c0a, 0x4636, 0xa0, 0xdb, 0x7e, 0x70, 0x20, 0xce, 0xe8, 0x5d | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - GetState() after Reset() returns EFI\_UNSUPPORTED. | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState(). The return code maybe EFI\_UNSUPPORTED. |
| 5.6.4.1.4 | 0xce6806f5, 0xe186, 0x4c24, 0x83, 0xaa, 0x00, 0x4f, 0xac, 0xf0, 0x28, 0x65 | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - Reset() with an ExtendedVerification value of TRUE returns EFI\_SUCCESS | 1. Call Reset() with an ExtendedVerification value of TRUE. The return code should be EFI\_SUCCESS |
| 5.6.4.1.5 | 0xd3e54374, 0x17b6, 0x417b, 0xae, 0xc7, 0xcc, 0x55, 0xcc, 0x42, 0x35, 0xa2 | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - GetState() after Reset() returns 0 for all related movement. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(). If success, RelativeMovementX, RelativeMovementY and RelativeMovementZ should be 0. |
| 5.6.4.1.6 | 0xd8a03978, 0x7023, 0x4d61, 0x92, 0xbd, 0x15, 0xd3, 0x9b, 0x3f, 0x5d, 0x11 | EFI\_SIMPLE\_POINTER\_PROTOCOL.Reset - GetState() after Reset() returns EFI\_UNSUPPORTED. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(). The return code maybe EFI\_UNSUPPORTED. |

### GetState()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.4.2.1 | 0x5271062e, 0xdef9, 0x4d30, 0x84, 0x3b, 0x8d, 0x6e, 0x41, 0x33, 0x13, 0xf3 | EFI\_SIMPLE\_POINTER\_PROTOCOL.GetState - GetState() after Reset() returns 0 for all related movement. | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState(). If success, RelativeMovementX, RelativeMovementY and RelativeMovementZ should be 0. |
| 5.6.4.2.2 | 0x7614c447, 0x12a0, 0x403d, 0x8a, 0xde, 0x98, 0x97, 0x51, 0x7d, 0xd8, 0x49 | EFI\_SIMPLE\_POINTER\_PROTOCOL.GetState - GetState() returns EFI\_NOT\_READY when there is no move since last call of GetState(). | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState().  3. Call GetState() again, the return code should be EFI\_NOT\_READY. |
| 5.6.4.2.3 | 0x2f8f8710, 0x02dd, 0x411f, 0xaa, 0xb5, 0x27, 0xe1, 0x3a, 0x6a, 0xb2, 0x79 | EFI\_SIMPLE\_POINTER\_PROTOCOL.GetState - GetState() after Reset() returns 0 for all related movement. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(). If success, RelativeMovementX, RelativeMovementY and RelativeMovementZ should be 0. |
| 5.6.4.2.4 | 0x3db7ea18,0xda9d,  0x4760,  0xa7,0x43,  0x04,0xb4,  0x8d,0x14,  0x4e,0x90 | EFI\_SIMPLE\_POINTER\_PROTOCOL.GetState - GetState() returns EFI\_NOT\_READY when there is no move since last call of GetState(). | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState().  3. Call GetState() again, the return code should be EFI\_NOT\_READY. |

## EFI\_SERIAL\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SERIAL\_IO\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.1.1 | 0x2e369256, 0x6c78, 0x49e9, 0x9e, 0xd5, 0xe3, 0xd2, 0x88, 0x34, 0x33, 0xa0 | EFI\_SERIAL\_IO\_PROTOCOL .Reset - Reset() returns EFI\_SUCCESS. | 1. Call Reset(). The return code should be EFI\_SUCCESS. |

### SetAttributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.2.1 | 0x34260cb2, 0x43ae, 0x4853, 0x87, 0x4b, 0x47, 0x7c, 0xeb, 0x14, 0x42, 0x02 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid BaudRate returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid BaudRate. The return code should be EFI\_SUCCESS and the BaudRate field of **Mode** should be equal to the set value. |
| 5.6.5.2.2 | 0x3fd35bee, 0x5013, 0x472f, 0xa0, 0x08, 0xbd, 0xdf, 0x31, 0x9c, 0xe6, 0x6b | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid ReceiveFifoDepth returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid ReceiveFifoDepth. The return code should be EFI\_SUCCESS and the ReceiveFifoDepth field of Mode should be equal to the set value. |
| 5.6.5.2.3 | 0x8cf74222, 0x7134, 0x47b6, 0xa5, 0x82, 0xf4, 0xd9, 0xad, 0xa7, 0xa3, 0xf4 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid Timeout returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid Timeout. The return code should be EFI\_SUCCESS and the Timeout field of Mode should be equal to the set value. |
| 5.6.5.2.4 | 0x68f91273, 0x0078, 0x4e6c, 0xb9, 0xdb, 0x62, 0x59, 0xb5, 0x39, 0xf7, 0x4a | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid Parity returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid Parity. The return code should be EFI\_SUCCESS and the Parity field of Mode should be equal to the set value. |
| 5.6.5.2.5 | 0xdf6038c2, 0x3752, 0x4e22, 0xab, 0x4c, 0xfe, 0x66, 0x67, 0x0c, 0xa3, 0xdf | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid DataBits returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid DataBits. The return code should be EFI\_SUCCESS and the DataBits field of Mode should be equal to the set value. |
| 5.6.5.2.6 | 0xdf6f2692, 0x9a0d, 0x4b0f, 0xbc, 0x8e, 0x36, 0x8b, 0x6a, 0x03, 0xe0, 0xb1 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with valid StopBits returns EFI\_SUCCESS. | 1. Call SetAttributes() with various valid StopBits. The return code should be EFI\_SUCCESS and the StopBits field of Mode should be equal to the set value. |
| 5.6.5.2.7 | 0xb199d5d2, 0x1143, 0x499e, 0xa5, 0xf8, 0xf0, 0xa7, 0x6f, 0x79, 0xfe, 0xe5 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with default attributes returns EFI\_SUCCESS. | 1. Call SetAttributes() with default attributes: BaudRate=115200; FifoDepth=1; Timeout=1000000; Parity=**NoParity**; DataBits=8; StopBits=**OneStopBit**; The return code should be EFI\_SUCCESS |
| 5.6.5.2.8 | 0x3041ec45, 0x00af, 0x4787, 0xb1, 0xe9, 0x15, 0xb8, 0x7a, 0xc5, 0xdd, 0xc8 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with nonstandard BaudRate values returns EFI\_SUCCESS and set BaudRate as the nearest standard baud rate value. | 1. Call SetAttributes() with nonstandard BaudRate values. The return code should be EFI\_SUCCESS and the BaudRate field of Mode should be equal to the nearest standard baud rate value. |
| 5.6.5.2.9 | 0x7a5cca70, 0x46c7, 0x4488, 0x87, 0x65, 0x84, 0x33, 0x66, 0x78, 0xa5, 0x01 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported BaudRate returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported BaudRate. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.5.2.10 | 0x190ca14d, 0xa6c2, 0x4a42, 0x86, 0x29, 0xa5, 0x14, 0x96, 0xc8, 0xe0, 0x52 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported ReceiveFifoDepth returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported ReceiveFifoDepth. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.5.2.11 | 0xd40c796b, 0xb654, 0x4fb5, 0x88, 0xb0, 0x1e, 0xc8, 0x2a, 0x27, 0x13, 0x50 | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported Timeout returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported Timeout. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.5.2.12 | 0x15dc5ee1, 0x9871, 0x4e25, 0xb2, 0x22, 0xc5, 0x38, 0x5c, 0x9b, 0xf3, 0x6b | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported Parity returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported Parity. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.5.2.13 | 0x0aa15e38, 0xb05c, 0x46cf, 0xb1, 0xf3, 0x1e, 0xb7, 0x41, 0x37, 0xb8, 0xbf | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported DataBits returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported DataBits. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.5.2.14 | 0x174a5c87, 0x74cf, 0x4e88, 0x84, 0x04, 0x68, 0x3e, 0xcb, 0x40, 0xf3, 0x2f | EFI\_SERIAL\_IO\_PROTOCOL .SetAttributes - SetAttributes() with unsupported StopBits returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with unsupported StopBits. The return code should be EFI\_INVALID\_PARAMETER. |

### SetControl()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.3.1 | 0xac56dfb5, 0xce1c, 0x42a6, 0x98, 0xc9, 0xc6, 0xf5, 0xc8, 0xad, 0x83, 0xda | EFI\_SERIAL\_IO\_PROTOCOL .SetControl - SetControl() with valid bits returns EFI\_SUCCESS and GetControl() returns the set bits. | 1. Call SetControl() with valid control bits. The return code should be EFI\_SUCCESS.  2. Call GetControl(). The valid control bits should be set. |
| 5.6.5.3.2 | 0x00605cbc, 0x3965, 0x4b61, 0xa2, 0x54, 0x2b, 0x2b, 0x72, 0x31, 0x72, 0xea | EFI\_SERIAL\_IO\_PROTOCOL .SetControl - SetControl() with unsupported control bits returns EFI\_UNSUPPORTED. | 1. Call SetControl() with unsupported control bits. The return code should be EFI\_UNSUPPORTED. |

### GetControl()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.4.1 | 0x131f5894, 0x1613, 0x4f3e, 0xbd, 0x45, 0x2b, 0xdd, 0xb7, 0xed, 0x22, 0xb0 | EFI\_SERIAL\_IO\_PROTOCOL .GetControl - GetControl() returns EFI\_SUCCESS and gets the bits set by SetControl(). | 1. Call SetControl() with valid control bits.  2. Call GetControl().The return code should be EFI\_SUCCESS and the valid control bits should be returned. |
| 5.6.5.4.2 | 0xdd059dc5, 0x6558, 0x4d43, 0xac, 0x65, 0x58, 0xa6, 0x1d, 0x64, 0x8d, 0xb0 | EFI\_SERIAL\_IO\_PROTOCOL .GetControl - GetControl() returns EFI\_SUCCESS and gets the bit of EFI\_SERIAL\_INPUT\_BUFFER\_EMPTY after buffer contents are read out. | 1. Call Read() to read out buffer contents.  2. Call GetControl().The return code should be EFI\_SUCCESS and EFI\_SERIAL\_INPUT\_BUFFER\_EMPTY is set. |

### Write()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.5.1 | 0x72c50358, 0xc760, 0x4200, 0x8d, 0xb2, 0x09, 0x4d, 0x96, 0x84, 0x6f, 0x1a | EFI\_SERIAL\_IO\_PROTOCOL .Write - Write() in software-loopback mode returns EFI\_SUCCESS and Read() gets the same contents. | 1. Call Write() in software-loopback mode. The return code should be EFI\_SUCCESS.  2. Call Read() to get buffer. It should return the written contents. |
| 5.6.5.5.2 | 0x688bf990, 0xfd8f, 0x430e, 0x8e, 0x1c, 0x78, 0x07, 0x2d, 0x74, 0xbd, 0x08 | EFI\_SERIAL\_IO\_PROTOCOL .Write - Write() in hardware-loopback mode returns EFI\_SUCCESS and Read() gets the same contents. | 1. Call Write() in hardware-loopback mode. The return code should be EFI\_SUCCESS.  2. Call Read() to get buffer. It should return the written contents. |
| 5.6.5.5.3 | 0x198873b8, 0xe8f2, 0x4bfd, 0xa0, 0x20, 0x36, 0xff, 0xb4, 0x93, 0x72, 0x02 | EFI\_SERIAL\_IO\_PROTOCOL .Write - Write() in non-loopback mode returns EFI\_SUCCESS. | 1. Call Write() in non-loopback mode. The return code should be EFI\_SUCCESS. |

### Read()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.5.6.1 | 0x8ad0312f, 0x4cfc, 0x4611, 0xb7, 0x62, 0x85, 0x3a, 0xa3, 0x9d, 0x2f, 0xd9 | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in software-loopback mode returns EFI\_SUCCESS and gets the same contents written. | 1. Call Write() in software-loopback mode.  2. Call Read() in software-loopback to get buffer. It should return the written contents. The return code should be EFI\_SUCCESS. |
| 5.6.5.6.2 | 0x76cb227f, 0x312d, 0x4476, 0x8c, 0x59, 0x6a, 0x98, 0x27, 0x5b, 0x62, 0x3d | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in hardware-loopback mode returns EFI\_SUCCESS and gets the same contents written. | 1. Call Write() in hardware-loopback mode.  2. Call Read() in hardware-loopback to get buffer. It should return the written contents. The return code should be EFI\_SUCCESS. |
| 5.6.5.6.3 | 0x3faefba1, 0x4049, 0x4868, 0x8f, 0x34, 0x59, 0xaf, 0x3e, 0x62, 0xdf, 0xb0 | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in hardware-loopback mode without any characters in buffer returns EFI\_TIME\_OUT and set buffer size to 0. | 1. Call Read() to read out all contents in buffer.  2. Call Read() again, the return code should be EFI\_TIME\_OUT and BufferSize should be 0. |
| 5.6.5.6.4 | 0xc96db50e, 0xd269, 0x4fb0, 0x88, 0xbd, 0x6a, 0x02, 0x06, 0x66, 0x53, 0xa7 | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in hardware-loopback mode with BufferSize=2 returns EFI\_TIME\_OUT when there is only 1 byte contents in serial buffer. | 1. Call Read() to read out all contents in buffer.  2. Call Write() to write 1 byte into serial buffer.  3. Call Read() again with BufferSize = 2. The return code should be EFI\_TIME\_OUT, BufferSize should be 1 and 1 byte should be read. |
| 5.6.5.6.5 | 0xb636572b, 0x7aaa, 0x4146, 0x8d, 0xd4, 0x18, 0xef, 0xac, 0xb4, 0x8a, 0x1a | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in software-loopback mode without any characters in buffer returns EFI\_TIME\_OUT and set buffer size to 0. | 1. Call Read() to read out all contents in buffer.  2. Call Read() again, the return code should be EFI\_TIME\_OUT and BufferSize should be 0. |
| 5.6.5.6.6 | 0x48050436, 0xc835, 0x4a24, 0x87, 0x75, 0x4d, 0x2e, 0x47, 0x88, 0xb5, 0x97 | EFI\_SERIAL\_IO\_PROTOCOL .Read - Read() in software-loopback mode with BufferSize=2 returns EFI\_TIME\_OUT when there is only 1 byte contents in serial buffer. | 1. Call Read() to read out all contents in buffer.  2. Call Write() to write 1 byte into serial buffer.  3. Call Read() again with BufferSize = 2. The return code should be EFI\_TIME\_OUT, BufferSize should be 1 and 1 byte should be read. |

## EFI\_GRAPHICS\_OUTPUT\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_GRAPHICS\_OUTPUT\_PROTOCOL Section.

### QueryMode()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.6.1.1 | 0xd1824539, 0x92cd, 0x434c, 0x81, 0x65, 0x87, 0x2c, 0xc2, 0x1a, 0x5f, 0x9e | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – returns EFI\_SUCCESS with valid parameter. | For valid graphics mode number from 0 to MaxMode-1:  •Call SetMode() to switch the video device to the specified mode.  •Call QueryMode() with the current mode to get the current info structure and check the content of Info.  The returned status should be EFI\_SUCCESS.  For PixelBlueGreenRedReserved8BitPerColor or PixelRedGreenBlueReserved8BitPerColor, the FrameBufferSize should be PixelsPerScanLine \* VerticalResolution \* PixelElementSize. |
| 5.6.6.1.2 | 0x82dfd41e, 0x49db, 0x4c86, 0x99, 0xbb, 0xc5, 0x74, 0x33, 0x4b, 0xa0, 0xc3 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – Call QueryMode() with *MaxMode*. | 1. Call QueryMode() with *MaxMode*. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a *SizeOfInfo* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an Info value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to *MaxMode*-1:  •Call QueryMode() with the specified mode number. The returned status should be any value except EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL. |
| 5.6.6.1.3 | 0x8ebcd9ab, 0x69a9, 0x48a2, 0x9b, 0xbc, 0x8c, 0x47, 0x9e, 0x68, 0x91, 0x56 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – Call QueryMode() with a *SizeOfInfo* value of NULL. | 1. Call QueryMode() with *MaxMode*. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a *SizeOfInfo* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an Info *value* of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to *MaxMode*-1:  •Call QueryMode() with the specified mode number. The returned status should be any value except EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL |
| 5.6.6.1.4 | 0x394e306b, 0x652a, 0x403a, 0xbd, 0x15, 0xdb, 0x9b, 0x46, 0xc3, 0x44, 0x3b | ConsoleContro. QueryMode – Call QueryMode() with an *Info* value of NULL. | 1. Call QueryMode() with *MaxMode*. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a SizeOfInfo value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an Info value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to *MaxMode*-1:  •Call QueryMode() with the specified mode number. The returned status should be any value but EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL |
| 5.6.6.1.5 | 0xe7782dc5, 0x2b78, 0x460f, 0xb1, 0x02, 0x88, 0xd5, 0x12, 0x06, 0x45, 0x1f | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – Call QueryMode() with a valid *ModeNumber*. The returned status should be EFI\_SUCCESS. | 1. Call QueryMode() with *MaxMode*. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a *SizeOfInfo* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an *Info* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to *MaxMode*-1:  •Call QueryMode() with the specified mode number. The returned status should be any value except EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL |
| 5.6.6.1.6 | 0x486360f1, 0x6b8e, 0x48b5, 0x8b, 0xa8, 0xae, 0x40, 0xeb, 0x3b, 0x07, 0xa2 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – Call QueryMode() with with valid parameters. | 1. Call QueryMode() with MaxMode. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a *SizeOfInfo* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an *Info* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to *MaxMode*-1:  •Call QueryMode() with the specified mode number. The returned status should be any value except EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL |
| 5.6.6.1.7 | 0xdc19ab69, 0x764e, 0x429b, 0xa5, 0x3f, 0xb8, 0x1e, 0xd6, 0x3c, 0xd6, 0xc0 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. QueryMode – Call QueryMode()to Check the mode structure and dump it. | 1. Call QueryMode() with MaxMode. The returned status must be EFI\_INVALID\_PARAMETER.  2. Call QueryMode() with a SizeOfInfo value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  3. Call QueryMode() with an *Info* value of NULL. The returned status must be EFI\_INVALID\_PARAMETER.  4. For valid graphics mode number from 0 to MaxMode-1:  •Call QueryMode() with the specified mode number. The returned status should be any value except EFI\_INVALID\_PARAMETER.  •The called allocated buffer that the Info points to should not be NULL. |

### SetMode()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.6.2.1 | 0xb3a4939b, 0xd00a, 0x4da7, 0xaf, 0x6d, 0xf3, 0xee, 0xcb, 0xf9, 0x99, 0x0c | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. SetMode –SetMode() returns EFI\_SUCCESS when setting the graphics device and the set of active video output devices to the video mode specified by ModeNumber. | Call SetMode() with valid mode numbers from 0 to *MaxMode*-1.The returned status should be EFI\_SUCCESS. |
| 5.6.6.2.2 | 0x128e953b, 0xe6ec, 0x4f93, 0xa8, 0xec, 0x72, 0xc5, 0x9b, 0x8a, 0x40, 0x43 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. SetMode – Call SetMode()with valid *ModeNumber*. | 1. For valid graphics mode number from 0 to *MaxMode*-1:  •Call **SetMode()** with valid mode, the returned status should not be **EFI\_UNSUPPORTED** and should be EFI\_SUCCESS.  •Call **QueryMode()** with the same mode number as **SetMode()**.  •The Info structure the **QueryMode()** returns and current mode of graphic device should be the same.  4. Call **SetMode()** with *MaxMode*. The returned status should be **EFI\_UNSUPPORTED**. |
| 5.6.6.2.3 | 0x4f13e7ba, 0xb35a, 0x4bf7, 0xb1, 0xc0, 0xfe, 0x39, 0x9c, 0x49, 0x97, 0xfe | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. SetMode –Call QueryMode() with the *ModeNumber* the SetMode() set , then  compare the Info structure QueryMode() returns with current mode of graphic device in order to verify whether they are same, and at last dump the Info structure. | 1. For valid graphics mode number from 0 to *MaxMode*-1:  •Call **SetMode()** with valid mode, the returned status should not be **EFI\_UNSUPPORTED** and should be EFI\_SUCCESS.  •Call **QueryMode()** with the same mode number as **SetMode()**.  •The Info structure the **QueryMode()** returns and current mode of graphic device should be the same.  2. Call **SetMode()** with MaxMode. The returned status should be **EFI\_UNSUPPORTED**. |
| 5.6.6.2.4 | 0x8776b9dc, 0x711e, 0x4e36, 0x99, 0x21, 0x7e, 0xa7, 0xc4, 0xc7, 0xee, 0x6d | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL. SetMode – Call SetMode()with valid *MaxMode*. | 1. For valid graphics mode number from 0 to *MaxMode*-1:  •Call **SetMode()** with valid mode, the returned status should not be **EFI\_UNSUPPORTED** and should be EFI\_SUCCESS.  •Call **QueryMode()** with the same mode number as **SetMode()**.  •The Info structure the **QueryMode()** returns and current mode of graphic device should be the same.  2. Call **SetMode()** with *MaxMode*. The returned status should be EFI\_UNSUPPORTED. |

### Blt()

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| Number | GUID | Assertion | Test Description |
| 5.6.6.3.1 | 0x95a44702, 0xcea0, 0x480f, 0x9f, 0x84, 0xe2, 0x4c, 0x17, 0xbf, 0x47, 0x79 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltVideoFill operation should fill graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a BltOperation value of *EfiBltVideoFill* to write data from the *BltBuffer* pixel (0, 0) directly to every pixel of the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to retrieve the rectangles drawn by the last *EfiBltVideoFill* operation. All the retrieved rectangles should be the same pixel used in the last *EfiBltVideoFill* operation. If pixels verification passes, the return status should be EFI\_SUCCESS. |
| 5.6.6.3.2 | 0x699c30b0, 0xab3f, 0x45d9, 0xbd, 0x69, 0x6b, 0x93, 0x96, 0xb7, 0x7e, 0x66 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltVideoFill operation should fill graphic screen with pixels. | For valid graphics mode number from 0 to MaxMode-1:  •Call Blt() with a *BltOperation* value of *EfiBltVideoFill* to write data from the BltBuffer pixel (0, 0) directly to every pixel of the video display rectangle (*DestinationX*, *DestionationY*) (*DestinationX* +*Width*, *DestionationY* +*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to retrieve the rectangles drawn by the last *EfiBltVideoFill* operation. All the retrieved rectangles should be the same pixel used in the last *EfiBltVideoFill* operation. If pixels verification passes, the return status should be EFI\_SUCCESS. |
| 5.6.6.3.3 | 0xc34c3fa4, 0xa61e, 0x4598, 0x9f, 0x80, 0x2d, 0xee, 0x8e, 0x2c, 0x9b, 0x57 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltBufferToVideo  operation should write data to video screen and EfiBltVideoToBltBuffer operation should read data from video display rectangle. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to read data from the video display rectangle (*SourceX*, *SourceY*)  (SourceX+Width, SourceY+Height) and place it in the BltBuffer rectangle (DestinationX, DestionationY) (DestionationX+Width,  *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). – Source and Destination should reverse with that of EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of **EfiBltVideoToBltBuffer** to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  •The *BltBuffer* and BltBuffer2 should be the same. |
| 5.6.6.3.4 | 0x33a341ea, 0xc6a2, 0x4037, 0x8a, 0x2d, 0x19, 0xea, 0x1f, 0xe2, 0xf2, 0xa6 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltBufferToVide**o o**peration should write data to video screen and EfiBltVideoToBltBuffer operation should read data from video display rectangle. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of **EfiBltVideoToBltBuffer** to read data from the video display rectangle (*SourceX*, *SourceY*)  (SourceX+Width, SourceY+Height) and place it in the BltBuffer rectangle (DestinationX, DestionationY) (DestionationX+Width,  *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). – Source and Destination should reverse with that of EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  •The *BltBuffer* and BltBuffer2 should be the same. |
| 5.6.6.3.5 | 0x13f113dc, 0xafd0, 0x4658, 0xb7, 0xfb, 0x83, 0xd5, 0xae, 0x6f, 0x10, 0x58 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltBufferToVide operation should write data to video screen and EfiBltVideoToBltBuffer operation should read data from video display rectangle. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). – Source and Destination should reverse with that of EfiVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  •The *BltBuffer* and BltBuffer2 should be the same. |
| 5.6.6.3.6 | 0x5ca291cc, 0x84a0, 0x489d, 0x9b, 0x2a, 0x0f, 0x2f, 0xcc, 0xc6, 0x0b, 0x29 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt – EfiBltBufferToVide operation should write data to video screen and EfiBltVideoToBltBuffer operation should read data from video display rectangle. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*,  *DestionationY*+*Height*). – Source and Destination should reverse with that of EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* to read data from the video display rectangle (*SourceX*, *SourceY*)  (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (Width, Height) with a delta value of 0.The returned status should be EFI\_SUCCESS.  •The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.7 | 0x6c2632c0, 0xe3de, 0x4afc, 0xb3, 0xa1, 0xbe, 0x50, 0x75, 0xab, 0x2d, 0x7a | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of  *EfiBltVideoToBltBuffer* to save original screen and read data from the video display rectangle  (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.  •Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2  rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.  •The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.8 | 0x07d1d0c1, 0x3884, 0x4310, 0x97, 0xbc, 0x16, 0xd6, 0xaa, 0x1a, 0x21, 0x80 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Call Blt() with a *BltOperation* value of  *EfiBltVideoToBltBuffer* to save original screen and read data from the video display rectangle  (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.  •Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  •Call Blt() with a *BltOperation* value of *EfiBltVideoToBltBuffer* again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2  rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.  •The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.9 | 0x11af616a, 0xbef5, 0x4590, 0xbe, 0x85, 0x19, 0x52, 0xa0, 0x0d, 0xe1, 0xaf | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –Call Blt()with invalid *BltOperation*. | Repeat the following step 6 times:  •Call Blt() with a *BltOperation* value other than  EfiBltVideoFill/EfiBltVideoToBltBuffer/EfiBltBufferToVideo/EfiBltVideoToVideo.The returned status should be EFI\_INVALID\_PARAMETER.  3. Restore the screen mode. |
|  |  |  |  |
| 5.6.6.3.11 | 0xe967bdc7, 0xa0ea, 0x4fd7, 0xab, 0xba, 0x52, 0xf3, 0xef, 0x53, 0x22, 0x3e | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –Call Blt() to verify that the pixels EfiBltVideoToBltBuffer retrieves are the same as the pixels EfiBltVideoFill fills. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Call Blt() with a *BltOperation* value of EfiBltVideoFill to write data from the *BltBuffer* pixel (0, 0) directly to every pixel of the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the rectangles drawn by the last EfiBltVideoFill operation. The returned status should be EFI\_SUCCESS.  All of the retrieved rectangles should be the same pixel used in the last EfiBltVideoFill operation. |
| 5.6.6.3.12 | 0x1fc521b0, 0x63c1, 0x4f42, 0xb8, 0x14, 0x06, 0x8a, 0x6c, 0x9c, 0x3e, 0x29 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Call Blt()with a *BltOperation* value of EfiBltVideoFill to write data from the *BltBuffer* pixel (0, 0) directly to every pixel of the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the rectangles drawn by the last EfiBltVideoFill operation. The returned status should be EFI\_SUCCESS.  All of the retrieved rectangles should be the same pixel used in the last EfiBltVideoFill operation. |
| 5.6.6.3.13 | 0x04fd0571, 0xf3eb, 0x4d69, 0xb2, 0xd2, 0x5c, 0x4f, 0xfb, 0x10, 0x5a, 0xc3 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video memory to buffer. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Call Blt() with a *BltOperation* value EfiBltVideoFill to write data from the *BltBuffer* pixel (0, 0) directly to every pixel of the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the rectangles drawn by the last EfiBltVideoFill operation. The returned status should be EFI\_SUCCESS.  All of the retrieved rectangles should be the same pixel used in the last EfiBltVideoFill operation. |
| 5.6.6.3.14 | 0x5bee154c, 0xe519, 0x4be4, 0xaf, 0x8c, 0xb4, 0x18, 0x8e, 0x79, 0xb4, 0xbf | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  • To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the BltBuffer rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). – Source and Destination should reverse with that of EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.15 | 0xf9e726c1, 0x1346, 0x419e, 0x90, 0x8a, 0x66, 0xc4, 0x49, 0x8c, 0xfd, 0x71 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video to the buffer *BltBuffer*. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). – Source and Destination should be the reverse of the EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.16 | 0x00f74a1b, 0x4599, 0x45b7, 0xb6, 0xf7, 0x13, 0xf2, 0xcb, 0xd8, 0x6c, 0xe6 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should write data to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the *BltBuffer* rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). – Source and Destination should be the reverse of the FeiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a *Delta* value of 0.The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.17 | 0x26da6582, 0x8b82, 0x4bd2, 0xac, 0x3a, 0x6e, 0x37, 0x85, 0x4f, 0xd8, 0x21 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video to another buffer BltBuffer2. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the BltBuffer rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). – Source and Destination should be the reverse of the EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a *Delta* value of 0.The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.18 | 0x0aaf7f4e, 0x1794, 0x403c, 0xb3, 0xb0, 0x18, 0xf5, 0xe4, 0xd3, 0xc4, 0xea | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –Verify if the pixels retrieved from the first operation of EfiBltVideoToBltBuffer are the same as the pixels retrieved from the second operation. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to write data from the BltBuffer rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) directly to the video display rectangle (*DestinationX*, *DestionationY*) (*DestionationX*+*Width*, *DestionationY*+*Height*). – Source and Destination should be the reverse of the EfiBltVideoToBltBuffer operation. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.19 | 0x2a79335b, 0xafc3, 0x4ccf, 0x9b, 0xa4, 0x91, 0x9b, 0xe4, 0xb8, 0xbe, 0xfc | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to save the original screen and read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0. The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.20 | 0x3f4c2c88, 0xa1f8, 0x46f5, 0x9e, 0x5e, 0x67, 0x50, 0xb4, 0xae, 0x2b, 0x6f | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video display rectangle to the buffer *BltBuffer*. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a BltOperation value of EfiBltVideoToBltBuffer to save the original screen and read data from the video display rectangle (SourceX, SourceY) (SourceX+Width, SourceY+Height) and place it in the BltBuffer rectangle (0, 0) (Width, Height) with a delta value of 0.The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0. The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.21 | 0xa11dd47e, 0xf144, 0x460c, 0x9e, 0x18, 0x7e, 0xb7, 0xed, 0xda, 0xc0, 0x18 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to save the original screen and read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, Dest*i*nationY) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0. The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.22 | 0xbe3e3046, 0x5aea, 0x48d0, 0x91, 0xc4, 0x62, 0xce, 0xff, 0x61, 0x3c, 0xec | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video display rectangle to another buffer BltBuffer2. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to save the original screen and read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0. The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.23 | 0xed4e402a, 0x403c, 0x4071, 0x86, 0x93, 0x9d, 0x8d, 0x28, 0xf7, 0x83, 0xd9 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –Verify that the pixels EfiBltVideoToBltBuffer retrieves are the same as the ones the second operation retrieves. | For valid graphics mode number from 0 to *MaxMode*-1:  •To select a different valid parameter (*SourceX*, *SourceY*, *DestinationX*, *DestinationY*, *Width*, *Height*, *Delta*):  Load a bitmap from the prepared buffer and call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display it in the video. The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value EfiBltVideoToBltBuffer to save the original screen and read data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) and place it in the *BltBuffer* rectangle (0, 0) (*Width*, *Height*) with a delta value of 0.The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy data from the video display rectangle (*SourceX*, *SourceY*) (*SourceX*+*Width*, *SourceY*+*Height*) to another display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestionationY*+*Height*). The returned status should be EFI\_SUCCESS.  Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer again to retrieve the area from the video display and read data from the video display rectangle (*DestinationX*, *DestinationY*) (*DestinationX*+*Width*, *DestinationY*+*Height*) and place it in the BltBuffer2 rectangle (0, 0) (*Width*, *Height*) with a delta value of 0. The returned status should be EFI\_SUCCESS.  The BltBuffer and BltBuffer2 should be the same. |
| 5.6.6.3.24 | 0x3b54894e, 0x6383, 0x4dd5, 0x9e, 0x53, 0xbe, 0x6b, 0xc1, 0x1b, 0xd8, 0x94 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare BltBuffer from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat the following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt()with a *BltOperation* value EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The rotation of (*DestinationX*, *DestinationY*) may have some distance between the two coordinates. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should not exceed the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.25 | 0xd0869ac8, 0x1d16, 0x4657, 0xae, 0xf2, 0x06, 0xc3, 0x49, 0x82, 0x1d, 0x55 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a BltOperation value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.26 | 0x1f026b26, 0x36fd, 0x4f1c, 0x95, 0x4c, 0x16, 0x0f, 0x9f, 0x98, 0x49, 0xd1 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.27 | 0xd0bfb3c3, 0x54df, 0x4c07, 0x8e, 0x5c, 0x7a, 0x19, 0xa3, 0x5b, 0x5c, 0x0c | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt()with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP files rotates correctly. |
| 5.6.6.3.28 | 0xfde7edd9, 0x1486, 0x45e9, 0xae, 0x06, 0x31, 0xe8, 0xcb, 0x3f, 0xf3, 0x46 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* Value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a *BltOperation* value EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.29 | 0x538471f3, 0x8828, 0x4d1b, 0x8c, 0x2b, 0x01, 0x37, 0xe9, 0x4f, 0xae, 0xc9 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare BltBuffer from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.30 | 0x30ef55c6, 0x62a2, 0x4f90, 0xb3, 0xf8, 0xf4, 0xf9, 0x1b, 0x94, 0xbf, 0x91 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare BltBuffer from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions with 2 times:  change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise.  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.31 | 0x2bb7feeb, 0x9b15, 0x4b27, 0x92, 0x61, 0xff, 0xa6, 0x9e, 0xcf, 0x0a, 0x00 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to MaxMode-1:  •Prepare BltBuffer from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions, change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value EfiBltVideoFill to clear the rectangle in the last call of EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.32 | 0x3bb9ebcc, 0x370a, 0x4c02, 0xb2, 0x0d, 0x1f, 0x86, 0x5a, 0x98, 0xaa, 0x15 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display.  •Repeat following actions, change the (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file stored in *BltBuffer*. The returned status should be EFI\_SUCCESS. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the rectangle in the last EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*,*Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.33 | 0xb904f2be, 0x720e, 0x4d9b, 0x86, 0x72, 0xd7, 0x84, 0x6b, 0xbc, 0x53, 0xea | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the video drawn by the last EfiBltVideoToVideo or fiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.34 | 0x53748ffc, 0xaff8, 0x4cc9, 0x83, 0xab, 0xc7, 0x09, 0xe1, 0x59, 0x1c, 0xed | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last call of EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.35 | 0x4acd2d08, 0x01dd, 0x411f, 0xa6, 0xe2, 0xf3, 0x6f, 0x9f, 0x4b, 0x03, 0xb0 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of *EfiBltVideoFill* to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The rotation of (DestinationX, DestinationY) may have some distance between two coordinate. In addition, the (DestinationX, DestinationY, Width, Height) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.36 | 0xb11e8ade, 0x0c54, 0x4963, 0x89, 0x66, 0xa0, 0x4a, 0x50, 0x40, 0x1c, 0x7b | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to lower the left-hand corner, then to upper the left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP rotates correctly. |
| 5.6.6.3.37 | 0xfa43d810, 0x7501, 0x481f, 0xbd, 0xcd, 0xc1, 0x06, 0x57, 0x94, 0x84, 0x9a | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* vlue of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to upper the left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.38 | 0x94989a37, 0x3941, 0x4cd8, 0x97, 0x0b, 0x14, 0xfa, 0x46, 0xb6, 0x07, 0x16 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last call of EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.39 | 0x4dde309d, 0xaf32, 0x4a35, 0x91, 0x5a, 0x41, 0xcb, 0xb0, 0x18, 0x7c, 0x29 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display shoul be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.40 | 0xaa6b7386, 0x0537, 0x4762, 0xa1, 0x43, 0xca, 0xde, 0xb7, 0x55, 0x15, 0xc7 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToVideo operation should copy data from one video display rectangle to another. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.41 | 0xb751208f, 0x10eb, 0x47eb, 0x9c, 0x73, 0x15, 0x08, 0xb8, 0xc9, 0xcd, 0xbe | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoFill operation should fill the graphic screen with pixels. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from theEfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt the user to judge whether the BMP file rotates correctly. |
| 5.6.6.3.42 | 0x57b7debf, 0xb831, 0x40d1, 0x8b, 0xa0, 0xa6, 0x57, 0x7b, 0x92, 0xe2, 0x53 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –check logo rotatation correctly from user’s view. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the display. The returned status should be EFI\_SUCCESS, and the display should be cleaned.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display the BMP file.  •Repeat following actions, change the  (*DestinationX*,*DestinationY*) from the upper left-hand corner to the upper right-hand corner, then down to the lower right-hand corner, then to the lower left-hand corner, then to the upper left-hand corner, i.e., rotate the (*DestinationX*,*DestinationY*) clockwise:  Call Blt() with a *BltOperation* value of EfiBltVideoToVideo to copy the Video drawn by the last EfiBltVideoToVideo or EfiBltBufferToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** The two rectangles from the EfiBltVideoToVideo operation should not overlap. |
|  |  |  | Call Blt() with a *BltOperation* value of EfiBltVideoFill to clear the source rectangle in the last call of EfiBltVideoToVideo operation. The returned status should be EFI\_SUCCESS.  **Note:** the rotation of (*DestinationX*, *DestinationY*) may have some distance between two coordinate. In addition, the (*DestinationX*, *DestinationY*, *Width*, *Height*) should avoid exceeding the boundary of the current screen mode.  •Prompt user to judge whether the rotation of the BMP file correctly. |
| 5.6.6.3.43 | 0x8971c5fe, 0x02c6, 0x4ada, 0xab, 0x30, 0x36, 0xc5, 0xa7, 0xd9, 0xdc, 0x01 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltBufferToVideo operation should draw the bitmap from the specified buffer to the video screen. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display BMP file to some position of the screen.  •Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the whole screen to a large *BltBuffer*. The return status  should be EFI\_SUCCESS.  •Change *SourceX* from 0 to HorizontalResolution step by step, and change *SourceY* from 0 to VerticalResolution step by step, carry out following action:  For small *Width*, *Height*, and *BltBuffer*, call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer. The returned status should be EFI\_SUCCESS. The small *BltBuffer* retrieved should be the same as the corresponding segment in the large *BltBuffer* standing for the whole screen buffer. |
| 5.6.6.3.44 | 0x03093b96, 0x2b15, 0x4008, 0xb7, 0xbf, 0x9f, 0x8c, 0x17, 0x41, 0x2d, 0xb3 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –EfiBltVideoToBltBuffer operation should retrieve the pixels from the video display rectangle to the specified buffer. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display BMP file to some position of the screen.  •Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the whole screen to a large *BltBuffer*. The return status  should be EFI\_SUCCESS  •Change *SourceX* from 0 to HorizontalResolution step by step, and change *SourceY* from 0 to VerticalResolution step by step, carry out following action:  For small *Width*, *Height*,and *BltBuffer*, Call Blt()with a *BltOperation* value of EfiBltVideoToBltBuffer. The returned status should be EFI\_SUCCESS. The small *BltBuffer* retrieved should be the same as the corresponding segment in the large *BltBuffer* standing for the whole screen buffer. |
| 5.6.6.3.45 | 0x1ef36d93, 0x8591, 0x4172, 0x94, 0xfd, 0x93, 0x08, 0x54, 0x6e, 0x73, 0x11 | EFI\_GRAPHICS\_OUTPUT\_PROTOCOL.Blt –Blt/  EfiBltVideoToBltBuffe, Pixel verification. | For valid graphics mode number from 0 to *MaxMode*-1:  •Prepare some *BltBuffer* from a small BMP file.  •Call Blt() with a *BltOperation* value of EfiBltBufferToVideo to display BMP file to some position of the screen.  •Call Blt() with a *BltOperation* value of EfiBltVideoToBltBuffer to retrieve the whole screen to a large *BltBuffer*. The return status  should be EFI\_SUCCESS  •Change *SourceX* from 0 to HorizontalResolution step by step, and change *SourceY* from 0 to VerticalResolution step by step, carry out following action:  For mall *Width*, *Height*, and *BltBuffer*, call Blt()with a *BltOperation* value of EfiBltVideoToBltBuffer. The returned status should be EFI\_SUCCESS. The small *BltBuffer* retrieved should be the same as the corresponding segment in the large *BltBuffer* standing for the whole screen buffer. |

## EFI\_SIMPLE\_ TEXT\_INPUT\_EX\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.7.1.1 | 0xc969bba7, 0xed63, 0x4235, 0x80, 0x46, 0xa1, 0x8c, 0xa2, 0x8a, 0x3f, 0x6a | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.Reset - Reset() returns EFI\_SUCCESS and ReadKeyStrokeEx return EFI\_NOT\_READY | It is a auto test. Call Reset(). EFI\_SUCCESS should be returned. Call ReadKeyStrokeEx(). EFI\_NOT\_READY should be returned. |
| 5.6.7.1.2 | 0x35381b6c, 0x1035, 0x4241, 0x95, 0x80, 0x21, 0x25, 0x3b, 0x78, 0x60, 0x8d | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.Reset - Reset() returns EFI\_SUCCESS and ReadKeyStrokeEx return EFI\_NOT\_READY | It is a manual test. Press a key. Call Reset(). EFI\_SUCCESS should be returned. Call ReadKeyStrokeEx(). EFI\_NOT\_READY should be returned. |

### ReadKeyStrokeEx ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.7.2.1 | 0x89854ccd, 0xa672, 0x4856, 0xb7, 0x6c, 0xb1, 0x66, 0xc5, 0x64, 0x2f, 0x9a | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.ReadKeyStorkeEx - ReadKeyStorkeEx() returns EFI\_INVALID\_PARAMETER with KeyData being NULL. | Call Reset() first, and EFI\_SUCCESS should be returned.  Call ReadKeyStrokeEx() with KeyData being NULL. EFI\_INVALID\_PARAMETER should be returned. |
| 5.6.7.2.2 | 0x5d141dc0, 0xded6, 0x4e01, 0xa9, 0x8b, 0x55, 0x1f, 0x3e, 0xe3, 0x59, 0x4d | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.ReadKeyStorkeEx - ReadKeyStorkeEx() returns EFI\_NOT\_READY with console just been reseted. | Call Reset() first, and EFI\_SUCCESS should be returned.  Call ReadKeyStrokeEx() with valid parameter. EFI\_NOT\_READY should be returned. |
| 5.6.7.2.3 | 0x5eed7df1, 0x4630, 0x44e1, 0x97, 0xaa, 0xd3, 0x26, 0x82, 0x24, 0xc4, 0x30 | EFI\_SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.ReadKeyStroke - ReadKeyStrokeEx() return EFI\_SUCCESS with key input | It is a manual test. Part 1:  Call Reset(). EFI\_SUCCESS should be returned. Press a key. Call ReadKeyStrokeEx() with valid parameter. EFI\_SUCCESS should be returned. |
| 5.6.7.2.4 | 0x3032721e, 0x8089, 0x49d4, 0x94, 0x5a, 0x46, 0x07, 0xdc, 0x05, 0xcf, 0x8d | EFI\_SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.ReadKeyStroke - ReadKeyStroke() with key input, user's view | Part 2: Echo the key which is pressed. Tester decides the SUCCESS or Failure. |

### SetState()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.7.3.1 | 0x6647a0e7, 0x483c, 0x4777, 0xa9, 0x4b, 0xc8, 0xbc, 0xa3, 0xdf, 0xc7, 0x9c | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.SetState - SetState() returns EFI\_INVALID\_PARAMETER with KeyToggleState being NULL. | Call SetState() with KeyToggleState being NULL. Return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.3.2 | 0x4c766c77, 0xdbf3, 0x4b3d, 0x82, 0x59, 0x81, 0xf8, 0xb8, 0xaa, 0x17, 0x75 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.SetState - SetState() returns EFI\_UNSUPPORTED with KeyToggleState being a unsupported bit set. | Call SetState() with unsupported KeyToggleState. Return status should be EFI\_UNSUPPORTED. |
| 5.6.7.3.3 | 0x44bf142c, 0x72a9, 0x445e, 0xaf, 0x84, 0xaa, 0xc5, 0x96, 0xc6, 0x3f, 0xc8 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.SetState - SetState() returns EFI\_UNSUPPORTED or EFI\_SUCCESS with a valid bit set | Call SetState() with valid KeyToogleState. The return status should be EFI\_UNSUPPORTED or EFI\_SUCCESS.  Press a key and call ReadKeyStrokeEx(). The KeyToggleState should be same as the State which be set. |

### 

### RegisterKeyNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.7.4.1 | 0x27a40c7e, 0x119e, 0x451d, 0x84, 0x70, 0x1d, 0xc4, 0x52, 0x09, 0x2b, 0x0a | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.RegisterKeyNotify - RegisterKeyNotify() returns EFI\_INVALID\_PARAMETER with KeyData being NULL | Call RefisterKeyNotify() with NULL KeyData. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.4.2 | 0xb03a561d, 0x6339, 0x4035, 0xaf, 0xd5, 0xfa, 0x2e, 0xce, 0x16, 0x4b, 0xf9 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.RegisterKeyNotify - RegisterKeyNotify() returns EFI\_INVALID\_PARAMETER with KeyNotificationFunction being NULL | Call RefisterKeyNotify() with NULL KeyNotificationFunction. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.4.3 | 0x5b22932e, 0xc24d, 0x45fe, 0x8b, 0xbd, 0x2e, 0x0e, 0x56, 0xfa, 0xc3, 0x16 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.RegisterKeyNotify - RegisterKeyNotify() returns EFI\_INVALID\_PARAMETER with NotifyHandle being NULL. | Call RefisterKeyNotify() with NULL NotifyHandle. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.4.4 | 0x69a1c06c, 0x516e, 0x4595, 0xbe, 0x4f, 0x6b, 0x18, 0x58, 0xcc, 0x82, 0x3d | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.RegisterKeyNotify - RegisterKeyNotify() returns EFI\_SUCCESS. | It is a manual test. Part 1:  Call Reset(). The return status should be EFI\_SUCCESS.  Press a key, call ReadKeyStrokeEx() to get the key value. The return status should be EFI\_SUCCESS.  Call RegisterKeyNotify() with the key. The return status should EFI\_SUCCESS. |
| 5.6.7.4.5 | 0x6f509a8c, 0x0df2, 0x499d, 0x97, 0x56, 0x35, 0xbe, 0x3c, 0xcb, 0x21, 0xc4 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.RegisterKeyNotify - RegisterKeyNotify() returns EFI\_SUCCESS and notify function has been invoked. | Part 2:  Call Reset(). The return status should be EFI\_SUCCESS.  Press the same key and check the the result of the notify function..  Call UnregisterKeyNotify(). |

### UnregisterKeyNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.7.5.1 | 0xa5244802, 0xf4bf, 0x4e8a, 0xaa, 0x76, 0xe4, 0x87, 0x37, 0x43, 0xd8, 0xd1 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.UnregisterKeyNotify - UnregisterKeyNotify() returns EFI\_INVALID\_PARAMETER with NotifyHandle being NULL | Call UnrefisterKeyNotify with NULL NotifyHandle. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.5.2 | 0x5d1c8b11, 0x326f, 0x4cf5, 0xb0, 0x3d, 0x89, 0xaa, 0x2f, 0xaf, 0x66, 0x42 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.UnregisterKeyNotify - UnregisterKeyNotify() returns EFI\_INVALID\_PARAMETER with NotifyHandle not refer to a register notify function anymore. | Call RegisterKeyNotify() with valid parameter. Return status should be EFI\_SUCCESS.  Call UnregisterKeyNotify() twice. Return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.5.3 | 0x5fe62478, 0x4614, 0x4430, 0xb9, 0xe9, 0x30, 0xe2, 0x12, 0x19, 0xeb, 0x35 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.UnregisterKeyNotify - UnregisterKeyNotify() returns EFI\_INVALID\_PARAMETER with NotifyHandle being illegal format. | Call UnrefisterKeyNotify() with invalid NotifyHandle. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.6.7.5.4 | 0xe305a4b5, 0x03c3, 0x43c4, 0x93, 0x16, 0x7d, 0x7a, 0xb3, 0x6a, 0x13, 0xa5 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.UnregisterKeyNotify - UnregisterKeyNotify() returns EFI\_SUCCESS. | It is a manual test. Part 1:  Call Reset(). The return status should be EFI\_SUCCESS.  Press a key, call ReadKeyStrokeEx() to get the key value. The return status should be EFI\_SUCCESS.  Call RegisterKeyNotify() with the key. The return status should EFI\_SUCCESS.  Call UnregisterKeyNotify() with the valid NotifyHandle. The return status should be EFI\_SUCCESS. |
| 5.6.7.5.5 | 0x534369f7, 0x8399, 0x4353, 0x94, 0xad, 0xc4, 0x48, 0xfa, 0xda, 0xeb, 0x84 | SIMPLE\_TEXT\_INPUT\_EX\_PROTOCOL.UnregisterKeyNotify - UnregisterKeyNotify() returns EFI\_SUCCESS and notify function has not been invoked. | Part 2:  Call Reset(). The return status should be EFI\_SUCCESS.  Press the same key and check the the result of the notify function. |

## EFI\_ABSOLUTE\_POINTER\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ABSOLUTE\_POINTER\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.8.1.1 | 0xa4e0b129, 0x4bd4, 0x4446, 0x8d, 0x32, 0xaa, 0x45, 0x64, 0xb2, 0x74, 0x6e | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - Reset() with an ExtendedVerification value of FALSE returns EFI\_SUCCESS. If device error, should return EFI\_DEVICE\_ERROR | 1. Call Reset() with an ExtendedVerification value of FALSE. The return code should be EFI\_SUCCESS or EFI\_DEVICE\_ERROR. |
| 5.6.8.1.2 | 0xc246b3ff, 0xc1d5, 0x499b, 0x92, 0x87, 0x73, 0xf5, 0x88, 0xf6, 0xa9, 0x9f | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - Reset() with an ExtendedVerification value of TRUE returns EFI\_SUCCESS. If device error, should return EFI\_DEVICE\_ERROR. | 1. Call Reset() with an ExtendedVerification value of TRUE. The return code should be EFI\_SUCCESS or EFI\_DEVICE\_ERROR. |
| 5.6.8.1.3 | 0xab689092, 0xc9e2, 0x4618, 0x90, 0xa8, 0x4, 0x74, 0xde, 0x94, 0x7c, 0x4e | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - GetState() after Reset () return EFI\_UNSUPPORTED | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState(),the return code maybe EFI\_UNSUPPORTED. |
| 5.6.8.1.4 | 0x5c250202, 0xe791, 0x4cee, 0x86, 0x74, 0x4e, 0x3a, 0x43, 0xbc, 0x18, 0x15 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - Reset() with an ExtendedVerification value of TRUE returns EFI\_SUCCESS. | 1. Call Reset() with an ExtendedVerification value of TRUE. The return code should be EFI\_SUCCESS. |
| 5.6.8.1.5 | 0x39c1417d, 0xf6a2, 0x4a77, 0xbb, 0xcd, 0xe, 0xb8, 0xeb, 0x41, 0xe7, 0x52 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - GetState() after Reset () return 0 for all current movement. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(). if success, Current movement in X,Y and Z should be 0. |
| 5.6.8.1.6 | 0xd909148a, 0xd05a, 0x4694, 0xb4, 0xc4, 0xfc, 0x27, 0x87, 0x40, 0xce, 0x78 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.Reset - GetState() after Reset () return EFI\_UNSUPPORTED | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(),the return code maybe EFI\_UNSUPPORTED. |

### GetState()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.8.2.1 | 0x5271062f, 0xdef9, 0x4d30, 0x84,0x3b, 0x8d,0x6e, 0x41,0x33, 0x13,0xf3 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.GetState - GetState() after Reset() returns 0 for all current movement. | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState(). if success, Current movement in X,Y and Z should be 0. |
| 5.6.8.2.2 | 0x7614c448, 0x12a0, 0x403d, 0x8a,0xde, 0x98,0x97, 0x51,0x7d, 0xd8,0x49 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.GetState - GetState() returns EFI\_NOT\_READY when there is no move since last call of GetState()or returns EFI\_DEVICE\_ERROR while a device error occurred.. | 1. Call Reset() with an ExtendedVerification value of FALSE.  2. Call GetState() .  3. Call GetState() again, the return code should be EFI\_NOT\_READY or EFI\_DEVICE\_ERROR. |
| 5.6.8.2.3 | 0x2f8f8711, 0x02dd, 0x411f, 0xaa,0xb5, 0x27,0xe1, 0x3a,0x6a, 0xb2,0x79 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.GetState - GetState() after Reset() returns 0 for all current movement. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState(). if success, Current movement in X,Y and Z should be 0. |
| 5.6.8.2.4 | 0x3db7ea19, 0xda9d, 0x4760, 0xa7,0x43, 0x04,0xb4, 0x8d,0x14, 0x4e,0x90 | EFI\_ABSOLUTE\_POINTER\_PROTOCOL.GetState - GetState() returns EFI\_NOT\_READY when there is no move since last call of GetState()or returns EFI\_DEVICE\_ERROR while a device error occurred. | 1. Call Reset() with an ExtendedVerification value of TRUE.  2. Call GetState() .  3. Call GetState() again, the return code should be EFI\_NOT\_READY or EFI\_DEVICE\_ERROR. |

# Protocols Bootable Image Support Test

## EFI\_LOAD\_FILE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_LOAD\_FILE\_PROTOCOL Section.

No automatic test is designed to test this protocol.

## EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL Section.

### OpenVolume()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.2.1.1 | 0xe1bbbe46, 0x1fe6, 0x4f0b, 0x8d, 0x2e, 0x1b, 0x94, 0x5c, 0x16, 0xf4, 0x87 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – OpenVolume() returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.2 | 0xdf0cc997, 0x16b5, 0x4f26, 0x9f, 0x95, 0xb5, 0x53, 0x5c, 0x73, 0xe6, 0x86 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – OpenVolume() returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.3 | 0xe4d6498c, 0xc4d5, 0x4dd2, 0x93, 0x88, 0x3c, 0x7b, 0xd2, 0x94, 0x9b, 0x4c | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_INFO on root directory at TPL\_APPLICATION returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.4 | 0xeca437ce, 0xcca2, 0x4f7d, 0xb0, 0x55, 0x42, 0x99, 0x78, 0x46, 0xe5, 0x5c | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_INFO on root directory at TPL\_CALLBACK returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.5 | 0xacf4bb1e, 0x292b, 0x46a5, 0x9d, 0x98, 0xac, 0xa1, 0x04, 0x02, 0x43, 0x1c | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume - EFI\_FILE\_INFO.Attribute & EFI\_FILE\_DIRECTORY != 0 at TPL\_APPLICATION. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO on root directory.  3. EFI\_FILE\_INFO.Attribute & EFI\_FILE\_DIRECTORY != 0. |
| 5.7.2.1.6 | 0x7639775e, 0xb879, 0x4c64, 0x87, 0xde, 0x96, 0x6b, 0xb7, 0x76, 0xb8, 0x6b | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume - EFI\_FILE\_INFO.Attribute & EFI\_FILE\_DIRECTORY != 0 at TPL\_CALLBACK. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO on root directory. The return code should be EFI\_SUCCESS.  3. EFI\_FILE\_INFO.Attribute & EFI\_FILE\_DIRECTORY != 0. |
| 5.7.2.1.7 | 0x21746222, 0x29c8, 0x4b78, 0x87, 0x3e, 0x35, 0x4e, 0x58, 0x26, 0x79, 0xde | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory at TPL\_APPLICATION returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.8 | 0x454082d8, 0x05b5, 0x48df, 0xb0, 0x91, 0x99, 0xb7, 0xdd, 0x87, 0x05, 0x10 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory at TPL\_CALLBACK returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.9 | 0x31b71760, 0xbe9c, 0x47aa, 0x8c, 0x49, 0x4c, 0xcf, 0x33, 0x44, 0x57, 0x9f | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory at TPL\_APPLICATION returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.10 | 0x7853b6a4, 0x66ba, 0x4d50, 0xa9, 0x06, 0xd7, 0x9a, 0x12, 0xa9, 0x21, 0x8e | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory at TPL\_CALLBACK returns EFI\_SUCCESS. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory. The return code should be EFI\_SUCCESS. |
| 5.7.2.1.11 | 0x943883d4, 0xb2c6, 0x4041, 0x98, 0xab, 0x34, 0x2f, 0x9c, 0x24, 0x8c, 0x0c | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – Volume labels gotten from EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL should be the same at TPL\_APPLICATION. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory.  3. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory.  4. Volume labels gotten from EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL should be the same. |
| 5.7.2.1.12 | 0x6fdeb4e4, 0xe12d, 0x4c6b, 0x8e, 0x8c, 0xcd, 0x83, 0x34, 0x0b, 0x1f, 0xe6 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – Volume labels gotten from EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL should be the same at TPL\_CALLBACK. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO on root directory.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL on root directory.  4. Volume labels gotten from EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL should be the same |
| 5.7.2.1.13 | 0x2b9fe6a3, 0xd6b0, 0x4ab9, 0x9e, 0x92, 0xbe, 0x93, 0xba, 0x4f, 0xcd, 0xe1 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – Delete() root directory returns EFI\_WARN\_DELETE\_FAILURE at TPL\_APPLICATION. | 1. Call OpenVolume() to open root directory at TPL\_APPLICATION.  2. Call Delete() to delete root directory. The return code should be EFI\_WARN\_DELETE\_FAILURE. |
| 5.7.2.1.14 | 0xf958f344, 0xa399, 0x437e, 0xa8, 0x85, 0x29, 0xab, 0x58, 0xe6, 0x88, 0x91 | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL.OpenVolume – Delete() root directory returns EFI\_WARN\_DELETE\_FAILURE at TPL\_CALLBACK. | 1. Call OpenVolume() to open root directory at TPL\_CALLBACK.  2. Call Delete() to delete root directory. The return code should be EFI\_WARN\_DELETE\_FAILURE. |

## EFI\_FILE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_FILE\_ PROTOCOL Section.

### Open()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.1.1 | 0x9c974f8c, 0x9e6a, 0x4188, 0x81, 0xc5, 0x7f, 0x1a, 0x12, 0x33, 0x60, 0x94 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with pure filename returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under root directory with pure filename at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.2 | 0x02e9e015, 0x3ed6, 0x4c43, 0x91, 0xec, 0x6e, 0x70, 0x05, 0xe1, 0xfd, 0xc0 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with pure filename returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file under root directory with pure filename at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.3 | 0x76e95e01, 0xf92b, 0x4068, 0xab, 0x80, 0x06, 0x25, 0x30, 0x8b, 0x8a, 0x06 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under root directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.4 | 0xa5073db1, 0x277c, 0x4714, 0xb2, 0x67, 0x24, 0xd2, 0x2f, 0xbc, 0x4b, 0x96 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under root directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS |
| 5.7.3.1.5 | 0xecc31b62, 0x9297, 0x454d, 0xbd, 0x50, 0x9c, 0x63, 0xd4, 0x8a, 0x01, 0xe9 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with filename containing sub directory name returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under root directory with filename containing sub directory name at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.6 | 0x99a1fb48, 0xe279, 0x4b2f, 0x9c, 0x74, 0x42, 0xa1, 0x35, 0x7b, 0x83, 0x93 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with filename containing sub directory name returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file under root directory with filename containing sub directory name at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.7 | 0xc2a6e394, 0x4e56, 0x41a0, 0x84, 0xce, 0xf2, 0xd3, 0x30, 0x74, 0xda, 0xa3 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under root directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.8 | 0x6e444a6d, 0x6eb0, 0x42cc, 0x9b, 0xcb, 0x26, 0x79, 0x29, 0xc1, 0x69, 0x25 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under root directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.9 | 0x355911f3, 0x0f0e, 0x4deb, 0x9e, 0x8b, 0x70, 0xa2, 0x04, 0x6b, 0x77, 0x38 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under sub directory with pure filename returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under sub directory with pure filename at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.10 | 0xc2c3a263, 0x7b56, 0x4845, 0x8f, 0x50, 0x8c, 0xf4, 0x61, 0xdb, 0x7f, 0x53 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under sub directory with pure filename returns EFI\_SUCCESS at TPL\_CALLBACK | 1. Call Open() to create file under sub directory with pure filename at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.11 | 0xaffa623a, 0x30f8, 0x44e3, 0xad, 0x85, 0x36, 0xa3, 0xa3, 0xdb, 0xfd, 0x9f | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under root directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.12 | 0xed784eaf, 0x75db, 0x4bde, 0x8d, 0x5e, 0xeb, 0x5d, 0x22, 0x9a, 0x59, 0x39 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under root directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.13 | 0xf9517e49, 0x4aea, 0x4b7b, 0xa3, 0x92, 0xd9, 0x37, 0x55, 0x3e, 0x3a, 0x6c | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under sub directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under sub directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.14 | 0x9294bf3e, 0x589f, 0x498b, 0x97, 0xca, 0xf3, 0xb4, 0xda, 0x1a, 0xb8, 0x4c | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under sub directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under sub directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.15 | 0xe01a3218, 0x4f72, 0x4c8f, 0x9d, 0x13, 0x41, 0xbf, 0x02, 0xc4, 0x39, 0xb3 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory(dir1) under root directory at TPL\_APPLICATION.  2. Call Open() to create directory(dir2) under sub directory(dir1) .  3. Call Open() to create file with sub directory handle(dir1) and filename containing sub directory name(dir2\filename). The return code should be EFI\_SUCCESS. |
| 5.7.3.1.16 | 0x6b32a44f, 0x5670, 0x4ce6, 0xbb, 0xb5, 0x36, 0xd8, 0x29, 0x0e, 0x2c, 0x50 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory(dir1) under root directory at TPL\_CALLBACK.  2. Call Open() to create directory(dir2) under sub directory(dir1) .  3. Call Open() to create file with sub directory handle(dir1) and filename containing sub directory name(dir2\filename). The return code should be EFI\_SUCCESS. |
| 5.7.3.1.17 | 0x36c16a36, 0x0891, 0x4108, 0x84, 0x86, 0x9f, 0x24, 0x3d, 0xde, 0x25, 0xe2 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under root directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.18 | 0xf9f0d04b, 0x1409, 0x4157, 0x9b, 0x51,0x80, 0xf0, 0xb5, 0xea, 0xa4, 0x92 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under root directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under root directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.19 | 0xda80d9df, 0xa96b, 0x44d1, 0xac, 0xba, 0x0b, 0x92, 0x1d, 0xe1, 0xf2, 0x72 | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under sub directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory under sub directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.20 | 0xdf2be803, 0x6ae8, 0x477f, 0x99, 0xf3, 0xd4, 0x90, 0x80, 0x90, 0x15, 0x2c | EFI\_FILE\_PROTOCOL.Open - Open() to create directory under sub directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory under sub directory at TPL\_CALLBACK. The return code should be EFI\_SUCCESS |
| 5.7.3.1.21 | 0xc48ebac5, 0xc94a, 0x434d, 0x8a, 0x35, 0xb6, 0x40, 0x61, 0x98, 0xf9, 0xa3 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with root handle and filename containing absolute file path returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory(dir1) under root directory at TPL\_APPLICATION.  2. Call Open() to create directory(dir2) under sub directory(dir1) .  3. Call Open() to create file with root handle and filename containing absolute file path (dir1\dir2\filename). The return code should be EFI\_SUCCESS. |
| 5.7.3.1.22 | 0x9ae5e6ce, 0x1e6e, 0x42b7, 0x93, 0x6b, 0x66, 0xd6, 0x94, 0x2f, 0x9b, 0x98 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with root handle and filename containing absolute file path returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory(dir1) under root directory at TPL\_CALLBACK.  2. Call Open() to create directory(dir2) under sub directory(dir1) .  3. Call Open() to create file with root handle and filename containing absolute file path (dir1\dir2\filename). The return code should be EFI\_SUCCESS. |
| 5.7.3.1.23 | 0x533f1869, 0xebc8, 0x444c, 0x8c, 0xf6, 0x44, 0x09, 0x80, 0x31, 0xce, 0xa4 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with pure filename returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under root directory with pure filename at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.24 | 0xe2ba78af, 0xa282, 0x45f4, 0xaa, 0x92, 0xe6, 0xa2, 0xc7, 0xad, 0x8c, 0x70 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with pure filename returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file under root directory with pure filename at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.25 | 0x9eb5fd5d, 0x3d06, 0x4e49, 0x98, 0xb4, 0x41, 0x77, 0x61, 0xca, 0x3a, 0x75 | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_APPLICATION. | 1. Call Open() to create an existing file under root directory with pure filename at TPL\_APPLICATION. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.26 | 0x6ed38ac8, 0x0f4a, 0x4294, 0x9d, 0x9c, 0xb6, 0x6f, 0xa6, 0x00, 0xcf, 0xd1 | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_CALLBACK. | 1. Call Open() to create an existing file under root directory with pure filename at TPL\_CALLBACK. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.27 | 0x1a6ec46e, 0x5a2b, 0x43e0, 0x98, 0x59, 0x36, 0x6a, 0xbb, 0xdf, 0xf4, 0x86 | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_APPLICATION. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.28 | 0x5e81beb3, 0x3cee, 0x4724, 0xa9, 0xa4, 0x6d, 0x64, 0xd4, 0x80, 0x87, 0x5d | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_CALLBACK | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.29 | 0x249b05c8, 0x931f, 0x4d21, 0xb3, 0x09, 0xbc, 0x0f, 0x32, 0x8f, 0x17, 0xc6 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with filename containing sub directory name returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under root directory with filename containing sub directory name at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.30 | 0x2c6a8296, 0x3fd8, 0x4e72, 0x80, 0x84, 0x8f, 0x3e, 0x61, 0x59, 0x10, 0xe2 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under root directory with filename containing sub directory name returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file under root directory with filename containing sub directory name at TPL\_CALLBACK. The return code should be EFI\_SUCCESS |
| 5.7.3.1.31 | 0xf2ec0ec0, 0xc79b, 0x4035, 0xbf, 0x70, 0x3a, 0x0f, 0x02, 0xf7, 0xe9, 0x4f | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_APPLICATION. | 1. Call Open() to create an existing file under root directory with pure filename at TPL\_APPLICATION. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.32 | 0x18b07457, 0x2108, 0x4c00, 0xb4, 0xb6, 0x88, 0xcb, 0xb1, 0x0e, 0x79, 0xfe | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_CALLBACK | 1. Call Open() to create an existing file under root directory with pure filename at TPL\_CALLBACK. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.33 | 0x4ee79e47, 0x1530, 0x42ee, 0xbb, 0x70, 0x1a, 0xf3, 0xad, 0x6a, 0xef, 0xda | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_APPLICATION. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.34 | 0x0e5ad766, 0x5368, 0x4465, 0xa5, 0x15, 0x1d, 0x5e, 0x65, 0xc9, 0x28, 0x9b | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_CALLBACK. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.35 | 0x5f2d183d, 0x748e, 0x4b7b, 0x82, 0xd8, 0xa9, 0xf3, 0x27, 0xa1, 0x96, 0xe3 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under directory handle with pure filename returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file under directory handle with pure filename at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.36 | 0x953e3193, 0x444c, 0x47d0, 0x8f, 0x79, 0xb8, 0xa3, 0x02, 0xd2, 0x31, 0x85 | EFI\_FILE\_PROTOCOL.Open - Open() to create file under directory handle with pure filename returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file under directory handle with pure filename at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.37 | 0xbf004c75, 0x42b1, 0x4038, 0xac, 0x38, 0x1c, 0xfb, 0x6d, 0x24, 0xa9, 0xfa | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_APPLICATION. | 1. Call Open() to create an existing file under directory handle with pure filename at TPL\_APPLICATION. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.38 | 0xe5bae1ec, 0x1ce7, 0x4fde, 0xad, 0x6d, 0xfd, 0x0c, 0x85, 0xe8, 0x51, 0x44 | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_CALLBACK. | 1. Call Open() to create an existing file under directory handle with pure filename at TPL\_CALLBACK. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.39 | 0x16fb933e, 0x1f91, 0x46e6, 0x9e, 0xff, 0xfc, 0x4f, 0x6c, 0x91, 0xde, 0xc4 | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_APPLICATION. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.40 | 0x1225566e, 0xb893, 0x4059, 0xa2, 0x55, 0xfc, 0x4c, 0x0c, 0xb5, 0x72, 0x9c | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_CALLBACK. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.41 | 0x62066bfd, 0x6a13, 0x43db, 0x99, 0x85, 0x3f, 0xeb, 0x92, 0xd3, 0x00, 0x7d | EFI\_FILE\_PROTOCOL.Open - Open() to create file with directory handle and filename containing sub directory name returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file with directory handle and filename containing sub directory name at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.42 | 0x2c61c286, 0xd23a, 0x414e, 0x9a, 0x1a, 0x5a, 0xe0, 0xf6, 0xb5, 0x40, 0x33 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with directory handle and filename containing sub directory name returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file with directory handle and filename containing sub directory name at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.43 | 0x0f0c6895, 0x5d36, 0x4ec9, 0xa4, 0xd8, 0x10, 0x32, 0x94, 0xf2, 0x8a, 0x91 | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_APPLICATION | 1. Call Open() to create an existing file with directory handle and filename containing sub directory name at TPL\_APPLICATION. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.44 | 0x961d3514, 0x0fa1, 0x46d0, 0x83, 0x63, 0x0e, 0xa9, 0x96, 0x45, 0xe4, 0xec | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_CALLBACK. | 1. Call Open() to create an existing file with directory handle and filename containing sub directory name at TPL\_CALLBACK. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.45 | 0x84c25d8c, 0xc15c, 0x4b18, 0x8c, 0xf8, 0x75, 0x82, 0x73, 0xb1, 0x3f, 0x3e | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_APPLICATION. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.46 | 0x59f0b532, 0x9f66, 0x44f7, 0xa4, 0x7b, 0x0e, 0xb3, 0x65, 0xe8, 0x47, 0x06 | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_CALLBACK. | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.47 | 0xcf2f3c12, 0x0608, 0x4661, 0xa3, 0x86, 0xf7, 0xc3, 0x13, 0x93, 0xef, 0x7a | EFI\_FILE\_PROTOCOL.Open - Open() to create file with directory handle and filename containing absolute directory name returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file with directory handle and filename containing absolute directory name at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.48 | 0x4b3cdcfd, 0xf479, 0x43c2, 0xbb, 0x48, 0xd6, 0xa4, 0x06, 0x06, 0xc5, 0xc2 | EFI\_FILE\_PROTOCOL.Open - Open() to create file with directory handle and filename containing absolute directory name returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file with directory handle and filename containing absolute directory name at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.1.49 | 0x7c4c7717, 0x89cf, 0x46b0, 0x84, 0x89, 0xd6, 0x18, 0x54, 0xa3, 0xc3, 0x2b | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_APPLICATION. | 1. Call Open() to create an existing file with directory handle and filename containing absolute directory name at TPL\_APPLICATION. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.50 | 0xc4849d07, 0x41e8, 0x4636, 0xa8, 0x3e, 0xb1, 0x7c, 0xc0, 0xe9, 0x4f, 0x26 | EFI\_FILE\_PROTOCOL.Open - Open() to create an existing file opens the existing file at TPL\_CALLBACK | 1. Call Open() to create an existing file with directory handle and filename containing absolute directory name at TPL\_CALLBACK. The existing file should be opened and the return code should be EFI\_SUCCESS. |
| 5.7.3.1.51 | 0xddd23c97, 0xecc8, 0x434d, 0xb0, 0x69, 0x22, 0xcb, 0x26, 0xb5, 0x88, 0xfe | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_APPLICATION | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.52 | 0x0e86769e, 0xe067, 0x4593, 0x82, 0x4c, 0xc9, 0x85, 0x97, 0x51, 0xac, 0x61 | EFI\_FILE\_PROTOCOL.Open – Write() and SetInfo() to existing file returns EFI\_SUCCESS except read-only mode at TPL\_CALLBACK | 1. Call Open() to create a file.  2. Call Write() and SetInfo() to the new file. The return code should be EFI\_SUCCESS and the file size should be equal to the set value. |
| 5.7.3.1.53 | 0x77240620, 0xcee3, 0x481d, 0xa6, 0xb4, 0x8d, 0x68, 0x50, 0x83, 0x91, 0xd1 | EFI\_FILE\_PROTOCOL.Open – Open() with non‑existent file name returns EFI\_NOT\_FOUND. | 1. Call Open() to open a non‑existent file. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.1.54 | 0xa08a7f58, 0xbedb, 0x467b, 0x99, 0x43, 0xe7, 0xe9, 0x6e, 0x62, 0x0d, 0x11 | EFI\_FILE\_PROTOCOL.Open – Open() with non‑existent file path returns EFI\_NOT\_FOUND. | 1. Call Open() to create a file handle with non‑existent file path. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.1.55 | 0xe2310546, 0xf1ac, 0x47ce, 0xa5, 0x65, 0x88, 0xd0, 0x03, 0x2a, 0x50, 0xa7 | EFI\_FILE\_PROTOCOL.Open – Open() with invalid open-mode returns EFI\_INVALID\_PARAMETER. | 1. Call Open() to open file handle with invalid open-mode. The return code should be EFI\_INVALID\_PARAMETER. |

### Close()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.2.1 | 0x8f787cb1, 0xe4d7, 0x4d58, 0x97, 0x5b, 0xb6, 0xf1, 0x42, 0xc8, 0xcb, 0xc8 | EFI\_FILE\_PROTOCOL.Close – Close() file handle or directory handle returns EFI\_SUCCESS at TPL\_APPLICATION | 1. Call Open() to create file or directory handles at TPL\_APPLICATION.  2. Call Close() to close file handle and directory handles. The return code should be EFI\_SUCCESS. |
| 5.7.3.2.2 | 0x301114f7, 0x1f9d, 0x4dcb, 0xb2, 0xc7, 0x24, 0x17, 0x24, 0x66, 0xc6, 0xd9 | EFI\_FILE\_PROTOCOL.Close – Close() file handle or directory handle returns EFI\_SUCCESS at TPL\_CALLBACK | 1. Call Open() to create file or directory handles at TPL\_CALLBACK.  2. Call Close() to close file handle and directory handles. The return code should be EFI\_SUCCESS. |
| 5.7.3.2.3 | 0x134343f0, 0xee4d, 0x4c3d, 0xa5, 0x5d, 0xa2, 0x3c, 0x48, 0x75, 0x51, 0x0c | EFI\_FILE\_PROTOCOL.Close – Closing a directory does not affect access to files under that directory if the files were opened before the directory was closed at TPL\_APPLICATION. | 1. Call Open() to create directory and file handles under the directory at TPL\_APPLICATION.  2. Call Close() to close the directory handle.  3. Read/Write/GetInfo/SetInfo/GetPosition/SetPosition to the file handles under the closed directory should be a success. |
| 5.7.3.2.4 | 0x46f37004, 0x407a, 0x481f, 0x9a, 0xe6, 0x9f, 0x74, 0x40, 0x93, 0xd7, 0xe8 | EFI\_FILE\_PROTOCOL.Close – Closing a directory does not affect access to files under that directory if the files were opened before the directory was closed at TPL\_CALLBACK. | 1. Call Open() to create directory and file handles under the directory at TPL\_CALLBACK.  2. Call Close() to close the directory handle.  3. Read/Write/GetInfo/SetInfo/GetPosition/SetPosition to the file handles under the closed directory should be a success. |
| 5.7.3.2.5 | 0xc5da488d, 0x0bbb, 0x49f2, 0xb5, 0xc5, 0xb0, 0x3a, 0xbb, 0x40, 0xe0, 0x42 | EFI\_FILE\_PROTOCOL.Close – Re-Open closed file or directory handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create file or directory handles at TPL\_APPLICATION.  2. Call Close() to close file handle and directory handles.  3. Call Open() to re‑open the closed handles. The return code should be EFI\_SUCCESS. |
| 5.7.3.2.6 | 0xb9478756, 0x46c4, 0x4eaa, 0xa0, 0x35, 0x8b, 0xd2, 0x28, 0xbb, 0xd7, 0x9c | EFI\_FILE\_PROTOCOL.Close – Re-Open closed file or directory handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create file or directory handles at TPL\_CALLBACK.  2. Call Close() to close file handle and directory handles.  3. Call Open() to re‑open the closed handles. The return code should be EFI\_SUCCESS. |

### Delete()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.3.1 | 0xaf9e9d9c, 0x1814, 0x4623, 0x87, 0xac, 0xe5, 0xa3, 0xff, 0x79, 0xfa, 0xf2 | EFI\_FILE\_PROTOCOL.Delete – Delete() file handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Delete() to delete file handles at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.2 | 0x7db63d3b, 0x7819, 0x4f45, 0xa1, 0xfd, 0x75, 0xeb, 0x18, 0xcc, 0xfc, 0x33 | EFI\_FILE\_PROTOCOL.Delete – Delete() file handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Delete() to delete file handles at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.3 | 0xb250cf45, 0x9dd8, 0x41f7, 0x8e, 0x27, 0x96, 0x5e, 0x89, 0xc2, 0xd6, 0x32 | EFI\_FILE\_PROTOCOL.Delete – Re‑open deleted file handle returns EFI\_NOT\_FOUND at TPL\_APPLICATION. | 1. Call Delete() to delete file handles at TPL\_APPLICATION.  2. Call Open() to re‑open the deleted file handle. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.3.4 | 0xf4dc2e77, 0xd9c7, 0x40d0, 0x83, 0xbd, 0x8f, 0x1e, 0xc6, 0x64, 0x86, 0x69 | EFI\_FILE\_PROTOCOL.Delete – Re‑open deleted file handle returns EFI\_NOT\_FOUND at TPL\_CALLBACK. | 1. Call Delete() to delete file handles at TPL\_CALLBACK.  2. Call Open() to re‑open the deleted file handle. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.3.5 | 0xb656663f, 0x5c23, 0x4e47, 0xa1, 0x77, 0xc3, 0x34, 0x14, 0x0c, 0x11, 0x07 | EFI\_FILE\_PROTOCOL.Delete – Delete() directory handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Delete() to delete directory handles at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.6 | 0x0f51d637, 0xa67a, 0x4c97, 0x81, 0xcf, 0xbb, 0x8c, 0x4d, 0xf2, 0xdb, 0xdf | EFI\_FILE\_PROTOCOL.Delete – Delete() directory handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Delete() to delete directory handles at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.7 | 0xe0678dae, 0x5aa6, 0x426c, 0xa4, 0xcb, 0x58, 0xa2, 0x7a, 0x9a, 0xa7, 0xb2 | EFI\_FILE\_PROTOCOL.Delete – Re‑open deleted directory handle returns EFI\_NOT\_FOUND at TPL\_APPLICATION. | 1. Call Delete() to delete directory handles at TPL\_APPLICATION.  2. Call Open() to re‑open the deleted directory handle. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.3.8 | 0xb9c79e4e, 0x187f, 0x46c6, 0x8d, 0x0a, 0x71, 0x70, 0xca, 0x99, 0x31, 0xa7 | EFI\_FILE\_PROTOCOL.Delete – Re‑open deleted directory handle returns EFI\_NOT\_FOUND at TPL\_CALLBACK. | 1. Call Delete() to delete directory handles at TPL\_CALLBACK.  2. Call Open() to re‑open the deleted directory handle. The return code should be EFI\_NOT\_FOUND. |
| 5.7.3.3.9 | 0x12f4e25b, 0x77c7, 0x4b47, 0x98, 0xb3, 0xd4, 0xf1, 0x54, 0x24, 0x68, 0x98 | EFI\_FILE\_PROTOCOL.Delete – Delete() nonempty directory returns EFI\_WARN\_DELETE\_FAILURE at TPL\_APPLICATION. | 1. Call Open() to create directory and file handles under the directory at TPL\_APPLICATION.  2. Call Delete() to delete the directory handle. The return code should be EFI\_WARN\_DELETE\_FAILURE |
| 5.7.3.3.10 | 0x11860155, 0x016e, 0x4c07, 0x83, 0x7a, 0xf1, 0x27, 0x59, 0x2b, 0xf0, 0x75 | EFI\_FILE\_PROTOCOL.Delete – Delete() nonempty directory returns EFI\_WARN\_DELETE\_FAILURE at TPL\_CALLBACK. | 1. Call Open() to create directory and file handles under the directory at TPL\_CALLBACK.  2. Call Delete() to delete the directory handle. The return code should be EFI\_WARN\_DELETE\_FAILURE. |
| 5.7.3.3.11 | 0x619d8713, 0xd755, 0x4293, 0xbe, 0x3d, 0x19, 0xb0, 0x17, 0xa8, 0xd4, 0x09 | EFI\_FILE\_PROTOCOL.Delete – Re‑open of undeleted directory handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Open() to create directory and file handles under the directory at TPL\_APPLICATION.  2. Call Delete() to delete the directory handle. The return code should be EFI\_WARN\_DELETE\_FAILURE.  3. Call Open() to re‑open the directory. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.12 | 0xb9306618, 0x2613, 0x4a6a, 0xaa, 0x72, 0x5e, 0xf7, 0x2e, 0xc8, 0x07, 0xf6 | EFI\_FILE\_PROTOCOL.Delete – Re‑open of undeleted directory handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Open() to create directory and file handles under the directory at TPL\_CALLBACK.  2. Call Delete() to delete the directory handle. The return code should be EFI\_WARN\_DELETE\_FAILURE.  3. Call Open() to re‑open the directory. The return code should be EFI\_SUCCESS. |
| 5.7.3.3.13 | 0xca4a0455, 0xee2a, 0x4260, 0x8e, 0xdc, 0x12, 0xb4, 0xd2, 0xc0, 0x1b, 0x79 | EFI\_FILE\_PROTOCOL.Delete – Delete() on root directory returns EFI\_WARN\_DELETE\_FAILURE. | 1. Call Delete() on root directory. The return code should be EFI\_WARN\_DELETE\_FAILURE. |
| 5.7.3.3.14 | 0xda598731, 0xf3da, 0x4f63, 0xa3, 0x49, 0x15, 0x1e, 0x0b, 0x77, 0xe3, 0x6f | EFI\_FILE\_PROTOCOL.Delete – Open() on root directory returns EFI\_SUCCESS after Delete() on root fails. | 1. Call Delete() on root directory. It returns EFI\_WARN\_DELETE\_FAILURE.  2. Call Open() on root. The return code should be EFI\_SUCCESS. |

### Read()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.4.1 | 0xf98a984c, 0x0043, 0x481e, 0x93, 0x3a, 0x24, 0x4d, 0xc8, 0x6e, 0x71, 0x1a | EFI\_FILE\_PROTOCOL.Read – Read() from file handle returns EFI\_SUCCESS except when read position is beyond file end at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. If read position is beyond file end, the return code should be EFI\_DEVICE\_ERROR. |
| 5.7.3.4.2 | 0x192d00c3, 0x604e, 0x49bb, 0xb0, 0xc2, 0x5b, 0x25, 0x69, 0x6e, 0xa9, 0x2f | EFI\_FILE\_PROTOCOL.Read – Read() from file handle returns EFI\_SUCCESS except when read position is beyond file end at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. If read position is beyond file end, the return code should be EFI\_DEVICE\_ERROR. |
| 5.7.3.4.3 | 0xfbff4d9d, 0xe021, 0x482b, 0x8d, 0x92, 0x99, 0xd5, 0x26, 0x89, 0xe0, 0xd3 | EFI\_FILE\_PROTOCOL.Read – GetPosition() after read returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION.  2. Call GetPosition() to get current file position. The return code should be EFI\_SUCCESS. |
| 5.7.3.4.4 | 0x522c18d5, 0xe922, 0x4844, 0xbb, 0x59, 0x5f, 0xdd, 0x48, 0xf8, 0xfe, 0xbc | EFI\_FILE\_PROTOCOL.Read – GetPosition() after read returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK.  2. Call GetPosition() to get current file position. The return code should be EFI\_SUCCESS. |
| 5.7.3.4.5 | 0x69decc47, 0xbc8d, 0x44e9, 0x92, 0x3c, 0x63, 0x02, 0x2d, 0xd2, 0xe1, 0x1f | EFI\_FILE\_PROTOCOL.Read – If read position is beyond file end, buffer size should be truncated at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION.  2. Call GetPosition() to get current file position.  3. If read position is beyond file end, buffer size should be truncated. |
| 5.7.3.4.6 | 0x4ba1060f, 0xdaba, 0x4d5b, 0xb9, 0xce, 0xf8, 0x59, 0xbb, 0xbf, 0x52, 0x69 | EFI\_FILE\_PROTOCOL.Read – If read position is beyond file end, buffer size should be truncated at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK.  2. Call GetPosition() to get current file position.  3. If read position is beyond file end, buffer size should be truncated. |
| 5.7.3.4.7 | 0xe0ebe6bd, 0x0fd2, 0x4c14, 0x84, 0xd5, 0xec, 0xd3, 0x96, 0x6a, 0x04, 0xed | EFI\_FILE\_PROTOCOL.Read – If read beyond file end, file position updated to the end of the file at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION.  2. Call GetPosition() to get current file position.  3. If read beyond file end, file position updated to the end of the file. |
| 5.7.3.4.8 | 0xca6d5592, 0x48a9, 0x46c8, 0xa8, 0xa4, 0x5a, 0xd8, 0x4b, 0x07, 0x68, 0xf1 | EFI\_FILE\_PROTOCOL.Read – If read postion is beyond file end, file position updated to the end of the file at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK.  2. Call GetPosition() to get current file position.  3. If read position is beyond file end, file position updated to the end of the file. |
| 5.7.3.4.9 | 0x0b158040, 0xb603, 0x49e2, 0xab, 0x3c, 0xfb, 0x75, 0x31, 0xdf, 0x68, 0xaa | EFI\_FILE\_PROTOCOL.Read – **BufferSize** is equal to the number of bytes read at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION. **BufferSize** is equal to the number of bytes read. |
| 5.7.3.4.10 | 0xad1fd527, 0xf8d7, 0x4875, 0xab, 0x3d, 0x9c, 0x1f, 0xe0, 0x7e, 0x52, 0x41 | EFI\_FILE\_PROTOCOL.Read – BufferSize is equal to the number of bytes read at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK. **BufferSize** is equal to the number of bytes read. |
| 5.7.3.4.11 | 0x3ee4c586, 0x9f92, 0x4cc0, 0x9f, 0x32, 0xba, 0xaa, 0xb9, 0x56, 0xce, 0x7b | EFI\_FILE\_PROTOCOL.Read – If read position is within file size, file position is updated to the start position plus read bytes at TPL\_APPLICATION. | 1. Call Read() to read from file handles at TPL\_APPLICATION.  2. Call GetPosition() to get current file position.  3. If read position is within file size, file position is updated to the start position plus read bytes. |
| 5.7.3.4.12 | 0x2fa03a35, 0x34d7, 0x4ede, 0x94, 0xfa, 0xca, 0x2b, 0x78, 0xe1, 0xe5, 0xd6 | EFI\_FILE\_PROTOCOL.Read – If read within file size, file position updated to the start position plus read bytes at TPL\_CALLBACK. | 1. Call Read() to read from file handles at TPL\_CALLBACK.  2. Call GetPosition() to get current file position.  3. If read position is within file size, file position is updated to the start position plus read bytes. |
| 5.7.3.4.13 | 0x54013277, 0xde8a, 0x4f8b, 0xa5, 0x8a, 0x60, 0xe4, 0x17, 0x4c, 0xcd, 0xa2 | EFI\_FILE\_PROTOCOL.Read – Read content should be the same as written at TPL\_APPLICATION. | 1. Call Write() to write bytes into file handle.  2. Call Read() to read from file handles at TPL\_APPLICATION. Read content should be the same as written. |
| 5.7.3.4.14 | 0x74ab30a4, 0xcb1b, 0x4d9b, 0x8c, 0x69, 0x3d, 0xf0, 0xda, 0x61, 0x16, 0x32 | EFI\_FILE\_PROTOCOL.Read – Read content should be the same as written at TPL\_CALLBACK. | 1. Call Write() to write bytes into file handle.  2. Call Read() to read from file handles at TPL\_CALLBACK. Read content should be the same as written. |
| 5.7.3.4.15 | 0x2ff71629, 0x8548, 0x4f11, 0x92, 0x24, 0x43, 0x0e, 0xd1, 0x8e, 0xe9, 0x82 | EFI\_FILE\_PROTOCOL.Read – Read() from directory handle with too small buffer returns EFI\_BUFFER\_TOO\_SMALL at TPL\_APPLICATION. | 1. Call Read() to read from directory handle with too small buffer at TPL\_APPLICATION. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.4.16 | 0x3b46d893, 0x289e, 0x4186, 0x9d, 0x13, 0x94, 0xcc, 0x4e, 0x96, 0x1b, 0xd4 | EFI\_FILE\_PROTOCOL.Read – Read() from directory handle with too small buffer returns EFI\_BUFFER\_TOO\_SMALL at TPL\_CALLBACK. | 1. Call Read() to read from directory handle with too small buffer at TPL\_CALLBACK. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.4.17 | 0x19979967, 0xf6cb, 0x4043, 0xba, 0x15, 0xdd, 0x80, 0x5e, 0x9f, 0x62, 0xe8 | EFI\_FILE\_PROTOCOL.Read – Read() from directory handle with valid parameter returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Read() to read from directory handle with valid parameter at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.4.18 | 0x25c7de0c, 0x56b7, 0x4e8b, 0x94, 0x9e, 0x59, 0x83, 0x0b, 0x46, 0x4a, 0xf4 | EFI\_FILE\_PROTOCOL.Read – Read() from directory handle with valid parameter returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Read() to read from directory handle with valid parameter at TPL\_APPLICATION. The return code should be EFI\_CALLBACK. |
| 5.7.3.4.19 | 0xacc83dc2, 0x84d4, 0x46fd, 0xa9, 0x51, 0x1c, 0x2f, 0x49, 0xd5, 0x97, 0x9c | EFI\_FILE\_PROTOCOL.Read – Read() at the end of the directory returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Read() to at the end of the directory at TPL\_APPLICATION. The return code should be EFI\_SUCCESS and read buffer size is set to 0. |
| 5.7.3.4.20 | 0x882f4162, 0xb6b9, 0x456f, 0xbe, 0xb9, 0x2e, 0x2b, 0xa4, 0xc9, 0x58, 0x5a | EFI\_FILE\_PROTOCOL.Read – Read() at the end of the directory returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Read() to read at the end of the directory at TPL\_APPLICATION. The return code should be EFI\_CALLBACK and read buffer size is set to 0. |

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### Write()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.5.1 | 0x73c93917, 0xad5e, 0x4e21, 0xaa, 0xaa, 0x8e, 0x6a, 0x35, 0x85, 0xe9, 0x51 | EFI\_FILE\_PROTOCOL.Write – Write() to file handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.5.2 | 0xb58c7d6a, 0x90f6, 0x4a0b, 0xb8, 0x49, 0xdb, 0xba, 0x08, 0x4c, 0x22, 0xb6 | EFI\_FILE\_PROTOCOL.Write – Write() to file handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.5.3 | 0x9f38fdc4, 0xbbf6, 0x4d1b, 0xae, 0x1c, 0xbb, 0xe8, 0x89, 0xda, 0x8c, 0xc5 | EFI\_FILE\_PROTOCOL.Write – GetPostion() after call of Write() returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION.  2. Call GetPosition(). The return code should be EFI\_SUCCESS. |
| 5.7.3.5.4 | 0x1ca546ad, 0xac23, 0x4304, 0xa2, 0xff, 0xec, 0xb0, 0x23, 0xd5, 0xfb, 0x21 | EFI\_FILE\_PROTOCOL.Write – GetPostion() after call of Write() returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK.  2. Call GetPosition(). The return code should be EFI\_SUCCESS. |
| 5.7.3.5.5 | 0xca3fdc12, 0x3e36, 0x4a38, 0xb9, 0x46, 0xb5, 0x83, 0x31, 0x67, 0x13, 0xc0 | EFI\_FILE\_PROTOCOL.Write – BufferSize is updated as the number of bytes written at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION. BufferSize should be updated as the number of bytes written. |
| 5.7.3.5.6 | 0x4e3680d0, 0xf1dc, 0x4736, 0x86, 0xcb, 0x6e, 0xb0, 0xc0, 0xc0, 0x8e, 0xdd | EFI\_FILE\_PROTOCOL.Write – BufferSize is updated as the number of bytes written at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK. **BufferSize** should be updated as the number of bytes written. |
| 5.7.3.5.7 | 0x99e9e364, 0xeefb, 0x4b2a, 0xb3, 0x29, 0xe4, 0x8b, 0x31, 0x2c, 0xe4, 0x7c | EFI\_FILE\_PROTOCOL.Write – File position is updated after call of Write() at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION.  2. Call GetPosition(). Current file postion is updated to the end of written contents. |
| 5.7.3.5.8 | 0x06a30897, 0xe2ed, 0x4c76, 0x99, 0xa4, 0xc4, 0x5d, 0x00, 0x9f, 0xef, 0x8d | EFI\_FILE\_PROTOCOL.Write – File position is updated after call of Write() at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK.  2. Call GetPosition().Current file postion is updated to the end of written contents. |
| 5.7.3.5.9 | 0x0af7cb57, 0x661e, 0x4b4f, 0xb4, 0xa4, 0xf6, 0xe3, 0x16, 0xe1, 0x52, 0x76 | EFI\_FILE\_PROTOCOL.Write – File size is updated after call of Write() at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION.  2. Call GetInfo(). If write is beyond the end of the file, file size has grown. |
| 5.7.3.5.10 | 0x1d6b4c54, 0x51fe, 0x406e, 0xb5, 0x92, 0x22, 0xe2, 0xa8, 0x74, 0x7e, 0xdc | EFI\_FILE\_PROTOCOL.Write – File size is updated after call of Write() at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK.  2. Call GetInfo(). If write is beyond the end of the file, file size has grown. |
| 5.7.3.5.11 | 0x67428a37, 0x56f9, 0x400a, 0xb1, 0x00, 0xd7, 0xf7, 0x68, 0x0c, 0x65, 0x5c | EFI\_FILE\_PROTOCOL.Write – Read() after Write() returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION.  2. Call Read().The return code should be EFI\_SUCCESS. |
| 5.7.3.5.12 | 0xe5242bc2, 0x0b10, 0x462f, 0x89, 0xa4, 0xfb, 0xe1, 0x41, 0x55, 0xdb, 0x84 | EFI\_FILE\_PROTOCOL.Write - Read() after Write() returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK.  2. Call Read().The return code should be EFI\_SUCCESS. |
| 5.7.3.5.13 | 0x4838f93c, 0xd601, 0x4d76, 0x8c, 0x7a, 0x59, 0xfa, 0xfa, 0xa5, 0xb6, 0x6d | EFI\_FILE\_PROTOCOL.Write – Read() after Write() gets the same contents as written at TPL\_APPLICATION. | 1. Call Write() to write to file handle at TPL\_APPLICATION.  2. Call Read(). It should return the same contents as written. |
| 5.7.3.5.14 | 0x3ff81ec0, 0xf7ae, 0x42da, 0x82, 0xdd, 0xb8, 0x59, 0xa1, 0x14, 0x72, 0xe7 | EFI\_FILE\_PROTOCOL.Write - Read() after Write() gets the same contents as written at TPL\_CALLBACK. | 1. Call Write() to write to file handle at TPL\_CALLBACK.  2. Call Read().It should return the same contents as written. |
| 5.7.3.5.15 | 0x29eb1c7e, 0xf4aa, 0x4fc4, 0xa9, 0x68, 0x98, 0xde, 0xa1, 0x75, 0x52, 0x0e | EFI\_FILE\_PROTOCOL.Write – Write() to the directory returns EFI\_UNSUPPORTED. | 1. Call Write() to write to a directory. The return code should be EFI\_UNSUPPORTED. |
| 5.7.3.5.16 | 0xd1b25896, 0x9f3d, 0x467a, 0xbc, 0x92, 0x8a, 0x52, 0x04, 0x96, 0x6a, 0x10 | EFI\_FILE\_PROTOCOL.Write – Write() to a read-only opened file returns EFI\_ACCESS\_DENIED. | 1. Call Write() to write to a read-only opened file. The return code should be EFI\_ACCESS\_DENIED. |

### Flush()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.6.1 | 0xa2070225, 0x0018, 0x4953, 0xb8, 0xfa, 0xbd, 0x17, 0x21, 0xca, 0x68, 0x46 | EFI\_FILE\_PROTOCOL.Flush – Flush() on file handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Flush() on file handle at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.6.2 | 0x83b6cdc5, 0xd813, 0x4000, 0xa9, 0x84, 0x07, 0xb6, 0x54, 0xc5, 0x1f, 0xe4 | EFI\_FILE\_PROTOCOL.Flush – Flush() on file handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Flush() on file handle at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.6.3 | 0x9f7bfe1e, 0xd617, 0x4920, 0xab, 0x63, 0x2f, 0xae, 0x6d, 0xce, 0x77, 0x5d | EFI\_FILE\_PROTOCOL.Flush – Flush() on directory handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call Flush() on directory handle at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.6.4 | 0x42985ef5, 0x8c9b, 0x49df, 0x93, 0x3c, 0x30, 0xf8, 0xc0, 0x22, 0x8e, 0x4b | EFI\_FILE\_PROTOCOL.Flush – Flush() on directory handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call Flush() on directory handle at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.6.5 | 0xc7900513, 0xe931, 0x404a, 0xa5, 0xe3, 0xe3, 0x48, 0x40, 0x7a, 0xb2, 0xa2 | EFI\_FILE\_PROTOCOL.Flush - Flush() to a read-only opened file returns EFI\_ACCESS\_DENIED. | 1. Call Flush() to flush a read-only opened file. The return code should be EFI\_ACCESS\_DENIED. |

### SetPosition()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.7.1 | 0x6b383ca4, 0xc8e4, 0x4fe2, 0xa8, 0xdb, 0x8b, 0x87, 0x85, 0x38, 0xb7, 0x7b | EFI\_FILE\_PROTOCOL.SetPosition – SetPosiiton() on file handle returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call SetPosition() on file handle at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.7.2 | 0x546093bf, 0x1ab1, 0x445c, 0x9e, 0x36, 0xb3, 0x90, 0x4c, 0xe5, 0x74, 0x7e | EFI\_FILE\_PROTOCOL.SetPosition – SetPosiiton() on file handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetPosition() on file handle at TPL\_APPLICATION. The return code should be EFI\_CALLBACK. |
| 5.7.3.7.3 | 0x7fa447e4, 0xae1e, 0x490b, 0x89, 0x53, 0x60, 0xd7, 0xef, 0xd3, 0x0f, 0xed | EFI\_FILE\_PROTOCOL.SetPosition – GetPosiiton() on file handle after call of SetPosition() returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call SetPosition() on file handle at TPL\_APPLICATION.  2. Call GetPosition(). The return code should be EFI\_SUCCESS. |
| 5.7.3.7.4 | 0x89e7eb29, 0xd715, 0x47bc, 0x94, 0xb1, 0xcd, 0xdf, 0x67, 0xd8, 0x44, 0x0a | EFI\_FILE\_PROTOCOL.SetPosition – GetPosiiton() on file handle after call of SetPosition() returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetPosition() on file handle at TPL\_APPLICATION.  2. Call GetPosition(). The return code should be EFI\_CALLBACK. |
| 5.7.3.7.5 | 0x19ca2741, 0x4dd5, 0x4df8, 0x9d, 0xb4, 0x84, 0xdb, 0xea, 0xc6, 0x7c, 0x63 | EFI\_FILE\_PROTOCOL.SetPosition – GetPosiiton() on file handle after call of SetPosition() returns the same position as set at TPL\_APPLICATION | 1. Call SetPosition() on file handle at TPL\_APPLICATION.  2. Call GetPosition(). The return position should be the same as set. |
| 5.7.3.7.6 | 0x6e22f1ef, 0x664e, 0x4c58, 0x90, 0xea, 0x32, 0x92, 0x39, 0x02, 0xa6, 0x4f | EFI\_FILE\_PROTOCOL.SetPosition – GetPosiiton() on file handle after call of SetPosition() returns the same position as set at TPL\_CALLBACK. | 1. Call SetPosition() on file handle at TPL\_APPLICATION.  2. Call GetPosition(). The return position should be the same as set. |
| 5.7.3.7.7 | 0xde3f7243, 0xc732, 0x45d7, 0x97, 0x17, 0x4f, 0x85, 0x98, 0x8c, 0x85, 0xd8 | EFI\_FILE\_PROTOCOL.SetPosition – SetPosiiton() on directory handle with 0 position returns EFI\_SUCCESS at TPL\_APPLICATION | 1. Call SetPosition() on directory handle with 0 position at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.7.8 | 0x0f4c0762, 0x9746, 0x42a0, 0xba, 0xbf, 0x64, 0x32, 0xb8, 0xd8, 0x1f, 0xf9 | EFI\_FILE\_PROTOCOL.SetPosition – SetPosiiton() on directory handle with 0 position returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetPosition() on directory handle with 0 position at TPL\_APPLICATION. The return code should be EFI\_CALLBACK. |
| 5.7.3.7.9 | 0x5e0586cd, 0x7718, 0x4605, 0x9b, 0xa1, 0x4d, 0xa3, 0xd4, 0x2b, 0xf2, 0x51 | EFI\_FILE\_PROTOCOL.SetPosition – SetPosiiton() on directory handle with non-0 position returns EFI\_UNSUPPORTED. | 1. Call SetPosition() on directory handle with non-0 position. The return code should be EFI\_UNSUPPORTED. |

### GetPosition()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.8.1 | 0x9787af2d, 0xda90, 0x4945, 0xba, 0xaa, 0xe4, 0x13, 0x4e, 0x25, 0xe8, 0x8e | EFI\_FILE\_PROTOCOL.GetPosition – GetPosition() on file handle returns EFI\_SUCCESS at TPL\_APPLICATION | 1. Call GetPosition() on file handle at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.8.2 | 0xfaf1daae, 0x3dbc, 0x484d, 0x9c, 0xe0, 0xd5, 0xc7, 0x30, 0xf3, 0x1d, 0x05 | EFI\_FILE\_PROTOCOL.GetPosition – GetPosition() on file handle returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call GetPosition() on file handle at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.8.3 | 0x50e547cb, 0x0d88, 0x447b, 0xaa, 0x07, 0x22, 0x08, 0x8a, 0xc0, 0x05, 0xb5 | EFI\_FILE\_PROTOCOL.GetPosition – GetPosition() on file handle after call of SetPosition() returns the set value at TPL\_APPLICATION. | 1. Call SetPosition() on file handle.  2. Call GetPosition() on file handle at TPL\_APPLICATION. The return position should be the same value as set. |
| 5.7.3.8.4 | 0x8c1a0c2b, 0x0362, 0x4ba8, 0x90, 0x80, 0x41, 0x66, 0x00, 0xcd, 0x12, 0x87 | EFI\_FILE\_PROTOCOL.GetPosition – GetPosition() on file handle after call of SetPosition() returns the set value at TPL\_CALLBACK. | 1. Call SetPosition() on file handle.  2. Call GetPosition() on file handle at TPL\_CALLBACK. The return position should be the same value as set. |
| 5.7.3.8.5 | 0x9664e456, 0x0e74, 0x4d1f, 0x8e, 0x7b, 0x2c, 0x49, 0xf8, 0x94, 0xdb, 0x49 | EFI\_FILE\_PROTOCOL.GetPosition – GetPosition() on directory handle returns EFI\_UNSUPPORTED. | 1. Call GetPosition() on directory handle. The return code should be EFI\_UNSUPPORTED. |

### GetInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.9.1 | 0xf93e4251, 0x75a8, 0x464e, 0xaa, 0xf9, 0x03, 0xa2, 0x9e, 0x6e, 0xdd, 0x6b | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.2 | 0xa40d7f41, 0x959f, 0x4c1a, 0x82, 0x02, 0x83, 0xc5, 0xda, 0x58, 0xbe, 0x9c | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.3 | 0x2055cdd1, 0xce8b, 0x4e95, 0xad, 0x6b, 0xfb, 0x5f, 0x95, 0x8c, 0xcc, 0x68 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same buffer size as FileInfo->Size at TPL\_APPLICATION. | 1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_APPLICATION. The return buffer size should be the same as FileInfo->Size. |
| 5.7.3.9.4 | 0xe8099e1b, 0x193e, 0x4383, 0x88, 0x67, 0x06, 0xb1, 0xb8, 0x1f, 0x48, 0x38 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same buffer size as FileInfo->Size at TPL\_CALLBACK. | 1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_CALLBACK. The return buffer size should be the same as FileInfo->Size. |
| 5.7.3.9.5 | 0x788dc48a, 0xdaac, 0x4c4d, 0x82, 0x5d, 0xe9, 0x46, 0x14, 0x00, 0x71, 0xbe | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same attribute set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() on file handle.  1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_APPLICATION. The return attribute should be the same as set value. |
| 5.7.3.9.6 | 0x32abd0a4, 0x768d, 0x45a8, 0x9c, 0xf6, 0x2d, 0xc3, 0x56, 0x80, 0x58, 0xa0 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same attribute set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() on file handle.  1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_CALLBACK. The return attribute should be the same as set value. |
| 5.7.3.9.7 | 0xfea5ef36, 0x87e1, 0x4282, 0xbc, 0xb9, 0xde, 0x54, 0x5d, 0x20, 0xb7, 0x06 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same filename as created at TPL\_APPLICATION. | 1. Call Open() to create file handle.  1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_APPLICATION. The return filename should be the same as created. |
| 5.7.3.9.8 | 0x93c186a6, 0x4e31, 0x4395, 0x87, 0x1a, 0x90, 0xcc, 0x91, 0xa2, 0x2f, 0xc2 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on file handle for EFI\_FILE\_INFO returns the same filename as created at TPL\_CALLBACK. | 1. Call Open() to create file handle.  1. Call GetInfo() on file handle for EFI\_FILE\_INFO at TPL\_CALLBACK. The return filename should be the same as created filename. |
| 5.7.3.9.9 | 0x35187534, 0xba64, 0x4be4, 0xaa, 0x9c, 0xc2, 0x07, 0x53, 0x12, 0x0f, 0x57 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_INFO from root returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_INFO from root. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.10 | 0xcd2e69ad, 0xe1ce, 0x42ea, 0x80, 0xfe, 0xfc, 0x2b, 0x1e, 0x72, 0xb0, 0x3b | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_INFO from root returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call GetInfo() to retrieve EFI\_FILE\_INFO from root. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.11 | 0x7fc5deb9, 0xf216, 0x462e, 0xbf, 0x6b, 0xa3, 0x02, 0x6f, 0x13, 0x88, 0xea | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on root handle for EFI\_FILE\_INFO returns the same buffer size as FileInfo->Size at TPL\_APPLICATION | 1. Call GetInfo() on root handle for EFI\_FILE\_INFO at TPL\_APPLICATION. The return buffer size should be the same as FileInfo->Size. |
| 5.7.3.9.12 | 0x8d390587, 0xe4ff, 0x4c55, 0xa1, 0x55, 0xba, 0x80, 0x7a, 0x19, 0xbe, 0xf1 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() on root handle for EFI\_FILE\_INFO returns the same buffer size as FileInfo->Size at TPL\_CALLBACK. | 1. Call GetInfo() on root handle for EFI\_FILE\_INFO at TPL\_CALLBACK. The return buffer size should be the same as FileInfo->Size. |
| 5.7.3.9.13 | 0xc01d216d, 0x9fdf, 0x4504, 0x99, 0x61, 0x3f, 0x4a, 0x08, 0xb7, 0x61, 0x43 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.14 | 0x04ae8ab0, 0xe2d6, 0x46e6, 0x98, 0x35, 0x63, 0x14, 0x21, 0x09, 0x5f, 0xac | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.15 | 0x75cd35a8, 0x8f56, 0x441d, 0x8a, 0x4a, 0x2a, 0xcd, 0x8a, 0x79, 0xea, 0x01 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns correct buffer size of EFI\_FILE\_SYSTEM\_INFO structure at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. It should return correct buffer size of EFI\_FILE\_SYSTEM\_INFO structure. |
| 5.7.3.9.16 | 0xe4f4f6a2, 0x7538, 0x4c79, 0xaa, 0x3c, 0x67, 0x18, 0x4e, 0xc7, 0x0e, 0x16 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns correct buffer size of EFI\_FILE\_SYSTEM\_INFO structure at TPL\_CALLBACK | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO It should return correct buffer size of EFI\_FILE\_SYSTEM\_INFO structure. |
| 5.7.3.9.17 | 0x59afd349, 0xf5a1, 0x4052, 0x9b, 0xb9, 0x22, 0x51, 0x24, 0x0f, 0xe3, 0x47 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns correct file system info set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo().  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. It should return correct file system info set by SetInfo(). |
| 5.7.3.9.18 | 0xbe4e594f, 0x43c4, 0x42fc, 0xbe, 0x9e, 0xdc, 0xb7, 0xa8, 0x5a, 0x76, 0x7d | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns correct filesystem info set by SetInfo() at TPL\_CALLBACK | 1. Call SetInfo().  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO It should return returns correct file system info set by SetInfo(). |
| 5.7.3.9.19 | 0x4e8fa0c4, 0x95bc, 0x415b, 0x93, 0x65, 0x12, 0x11, 0xea, 0x40, 0x6b, 0xad | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO after create new file and free space decreases at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO and record free space number.  2. Call Open() to create new file.  3. Call GetInfo() again. Free space should decrease. |
| 5.7.3.9.20 | 0x9fa8a442, 0x572f, 0x4d04, 0xba, 0x0d, 0x17, 0x17, 0x72, 0x8d, 0x7e, 0x27 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO after create new file and free space decreases at TPL\_CALLBACK. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO and record free space number.  2. Call Open() to create new file.  3. Call GetInfo() again. Free space should decrease. |
| 5.7.3.9.21 | 0x2970bb0b, 0xb080, 0x48a9, 0x93, 0x64, 0x5e, 0x78, 0xbe, 0xb3, 0xf1, 0x02 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.22 | 0xf5fe94d3, 0x0269, 0x44ff, 0xb1, 0x3b, 0x23, 0x63, 0xd0, 0x33, 0xfe, 0xd5 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.23 | 0xa5d8f95a, 0x5bba, 0x4f1b, 0x83, 0x35, 0x12, 0x3e, 0x29, 0x6e, 0xda, 0xb2 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.24 | 0xf8dea2ab, 0xef13, 0x4544, 0xbd, 0x76, 0x42, 0xad, 0x6c, 0xd6, 0x17, 0x96 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return code should be EFI\_SUCCESS. |
| 5.7.3.9.25 | 0x22837b7c, 0x46fc, 0x4439, 0x95, 0x3b, 0xb0, 0x18, 0xce, 0xd3, 0xd7, 0x67 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() returns the same volume label for EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL at TPL\_APPLICATION. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  3. They should return the same volume label. |
| 5.7.3.9.26 | 0x0772aef8, 0x1c09, 0x47e9, 0x83, 0xef, 0x76, 0xaa, 0x3d, 0x21, 0xfa, 0xa4 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() returns the same volume label for EFI\_FILE\_SYSTEM\_INFO and EFI\_FILE\_SYSTEM\_VOLUME\_LABEL at TPL\_CALLBACK. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  3. They should return the same volume label. |
| 5.7.3.9.27 | 0xfeb18200, 0x0904, 0x46cb, 0x81, 0x2b, 0x1e, 0xea, 0x00, 0xc3, 0x29, 0xc3 | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() with unsupported info type for the file returns EFI\_UNSUPPORTED. | 1. Call GetInfo() to retrieve unsupported info type for the file. The return code should be EFI\_UNSUPPORTED. |
| 5.7.3.9.28 | 0xdbdc09cc, 0x03d3, 0x4d56, 0x88, 0x76, 0xab, 0xa1, 0x3b, 0xf6, 0x68, 0xae | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_INFO with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call GetInfo() to retrieve EFI\_FILE\_INFO with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.9.29 | 0x50e087ce, 0x802d, 0x46de, 0xa9, 0x13, 0x29, 0xa1, 0x8d, 0x2c, 0xc2, 0xff | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.9.30 | 0x7a60bd66, 0x3b1e, 0x4818, 0xa1, 0x4b, 0xf8, 0x65, 0xf2, 0xc4, 0x76, 0x4e | EFI\_FILE\_PROTOCOL.GetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |

### SetInfo()

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| Number | GUID | Assertion | Test Description |
| 5.7.3.10.1 | 0x5eb09d11, 0x22ee, 0x43f7, 0xa6, 0xc1, 0x95, 0x92, 0xb5, 0x04, 0x70, 0xe7 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.2 | 0x19f9c6f4, 0x2b6d, 0x4eb3, 0x80, 0xfb, 0x25, 0x55, 0x58, 0xf8, 0x47, 0x2f | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.3 | 0x99f2a97f, 0xb249, 0x4cc3, 0xa4, 0x50, 0x56, 0x51, 0x7c, 0x2a, 0xfb, 0x35 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() on file handle to retrieve EFI\_FILE\_INFO returns values set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO. It should return the values set by SetInfo(). |
| 5.7.3.10.4 | 0x26615965, 0xe6b3, 0x43cb, 0x90, 0xb1, 0xcb, 0x00, 0x42, 0xe3, 0x34, 0xc5 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to retrieve EFI\_FILE\_INFO returns values set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO. It should return the values set by SetInfo(). |
| 5.7.3.10.5 | 0xb46741e9, 0x3545, 0x4b0e, 0x80, 0x12, 0xc9, 0x56, 0x6a, 0x7f, 0x83, 0xc5 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.6 | 0xa1cc0c27, 0x55dc, 0x4cd8, 0x96, 0xe8, 0x57, 0x1b, 0x65, 0xc1, 0xdb, 0xde | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.7 | 0x16494a12, 0xfc45, 0x4e30, 0x91, 0xac, 0x88, 0x1c, 0x9c, 0x88, 0xae, 0x4b | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() on file handle to retrieve EFI\_FILE\_INFO returns values set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO. It should return the values set by SetInfo(). |
| 5.7.3.10.8 | 0xd843eacb, 0x2468, 0x4d4b, 0xa3, 0x51, 0xbf, 0x41, 0xd5, 0xdd, 0x9a, 0x16 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() on file handle to retrieve EFI\_FILE\_INFO returns values set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_INFO.  2. Call GetInfo() to retrieve EFI\_FILE\_INFO. It should return the values set by SetInfo(). |
| 5.7.3.10.9 | 0x4be420a1, 0xd7e7, 0x4327, 0x8e, 0x63, 0x59, 0x41, 0xef, 0x4b, 0xfd, 0x2a | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_APPLICATION | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_INFO at TPL\_APPLICATION. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.10 | 0x57880cd6, 0x6eb1, 0x40b5, 0xa3, 0xef, 0x28, 0x26, 0x94, 0x9a, 0xf8, 0x9c | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_INFO returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_INFO at TPL\_CALLBACK. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.11 | 0x0cf2c5c5, 0xd976, 0x4fd4, 0x85, 0x07, 0x0a, 0x81, 0x88, 0x62, 0x45, 0x78 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns volume label set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() for EFI\_FILE\_SYSTEM\_INFO to set volume label.  2. Call GetInfo() to to retrieve EFI\_FILE\_SYSTEM\_INFO. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.12 | 0xc68c8288, 0x020f, 0x460f, 0x81, 0xf8, 0x67, 0x35, 0x10, 0xd1, 0xfe, 0x6a | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO returns volume label set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() for EFI\_FILE\_SYSTEM\_INFO to set volume label.  2. Call GetInfo() to to retrieve EFI\_FILE\_SYSTEM\_INFO. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.13 | 0x12b68173, 0x7c8d, 0x4023, 0xaf, 0xcc, 0xf1, 0xc6, 0xbe, 0xb6, 0x1c, 0xef | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns EFI\_SUCCESS at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.14 | 0x6e869806, 0x1bc2, 0x40d5, 0xb3, 0x02, 0x61, 0xf8, 0xce, 0x56, 0xeb, 0xfe | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns EFI\_SUCCESS at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.15 | 0x725364f6, 0x6a23, 0x424a, 0x82, 0xaf, 0xd0, 0xd0, 0x47, 0xd3, 0xb8, 0x08 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() for EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns the same volume label as set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.16 | 0xcdab6fd9, 0x93aa, 0x4820, 0xb1, 0xa1, 0x71, 0xea, 0x3e, 0x7f, 0xab, 0x26 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() for EFI\_FILE\_SYSTEM\_VOLUME\_LABEL returns the same volume label as set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_VOLUME\_LABEL. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.17 | 0xf700f5f8, 0xecac, 0x45fb, 0x9d, 0x2d, 0x34, 0xe9, 0x46, 0x66, 0x07, 0x38 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() for EFI\_FILE\_SYSTEM\_INFO returns the same volume label as set by SetInfo() at TPL\_APPLICATION. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.18 | 0x384840cd, 0x9a3f, 0x44c3, 0x87, 0xd8, 0xcd, 0xd9, 0xab, 0xd2, 0x17, 0x96 | EFI\_FILE\_PROTOCOL.SetInfo – GetInfo() for EFI\_FILE\_SYSTEM\_INFO returns the same volume label as set by SetInfo() at TPL\_CALLBACK. | 1. Call SetInfo() on file handle to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL.  2. Call GetInfo() to retrieve EFI\_FILE\_SYSTEM\_INFO. The return volume label should be the same as set by SetInfo(). |
| 5.7.3.10.19 | 0x2a58594e, 0xd06a, 0x4f44, 0xa2, 0x6e, 0xa3, 0x49, 0x36, 0xde, 0x05, 0xef | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() with unsupported info type returns EFI\_UNSUPPORTED. | 1. Call SetInfo() with unsupported info type. The return code should be EFI\_UNSUPPORTED. |
| 5.7.3.10.20 | 0x164feeba, 0xf3ed, 0x482a, 0x83, 0xac, 0x89, 0x48, 0x0a, 0x1d, 0x9a, 0xc9 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() with the read-only opened file handle to change file size returns EFI\_ACCESS\_DENIED. | 1. Call Open() to open file handle in read-only mode.  2. Call SetInfo() to change file size. The return code should be EFI\_ACCESS\_DENIED. |
| 5.7.3.10.21 | 0x1a74e8f3, 0x62ad, 0x47ef, 0x92, 0xe6, 0x6d, 0x47, 0x23, 0x21, 0xd2, 0xb0 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() with the read-only opened file handle to change file name returns EFI\_ACCESS\_DENIED. | 1. Call Open() to open file handle in read-only mode.  2. Call SetInfo() to change file name. The return code should be EFI\_ACCESS\_DENIED. |
| 5.7.3.10.22 | 0x75c4d3e4, 0x17fa, 0x4f02, 0xb1, 0x15, 0x72, 0x0c, 0x0f, 0x1a, 0xe2, 0xe1 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set EFI\_FILE\_INFO with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call SetInfo() to set EFI\_FILE\_INFO with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.10.23 | 0x36d0ed31, 0x21f0, 0x48c2, 0x89, 0x74, 0x6b, 0x6e, 0xca, 0x41, 0x20, 0x3c | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set EFI\_FILE\_SYSTEM\_INFO with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call SetInfo() to set EFI\_FILE\_SYSTEM\_INFO with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.10.24 | 0xc7bfe9bf, 0x92bf, 0x4301, 0x82, 0x17, 0x75, 0x66, 0x2e, 0xa5, 0x24, 0x37 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL with too small of a buffer returns EFI\_BUFFER\_TOO\_SMALL. | 1. Call SetInfo() to set EFI\_FILE\_SYSTEM\_VOLUME\_LABEL with too small of a buffer. The return code should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.7.3.10.25 | 0x86eb2a14, 0x668a, 0x4ad6, 0xbc, 0x8a, 0x56, 0x67, 0x79, 0x09, 0x94, 0xe5 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set illegal size, physical size and invalid attribute of EFI\_FILE\_INFO for the file does not change the original settings. | 1. Call GetInfo() to store original size, physical size and attribute of EFI\_FILE\_INFO of the file.  2. Call SetInfo() to set illegal size, physical size and invalid attribute of EFI\_FILE\_INFO for the file.  3. Call GetInfo() again to get current size, physical size and attribute of EFI\_FILE\_INFO of the file. It should return the same value as original settings. |
| 5.7.3.10.26 | 0x63c55abc, 0x16d6, 0x4ac9, 0xb7, 0x8c, 0x45, 0x44, 0xbe, 0x70, 0x81, 0x54 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set illegal filename of EFI\_FILE\_INFO for the file does not change the filename. | 1. Call Open() to create file handle with valid filename.  2. Call SetInfo() to set illegal filename of EFI\_FILE\_INFO for the file.  3. Call GetInfo() to get current filename of EFI\_FILE\_INFO of the file. It should return the same value as original filename. |
| 5.7.3.10.27 | 0x7ba04c1e, 0xcd95, 0x4a3c, 0xa3, 0xba, 0xa5, 0x82, 0xf1, 0x6c, 0x46, 0xbc | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set illegal size, physical size and invalid attribute of EFI\_FILE\_INFO for the directory does not change the original settings. | 1. Call GetInfo() to store original size, physical size and attribute of EFI\_FILE\_INFO of the directory.  2. Call SetInfo() to set illegal size, physical size and invalid attribute of EFI\_FILE\_INFO for the directory.  3. Call GetInfo() again to get current size, physical size and attribute of EFI\_FILE\_INFO of the directory. It should return the same value as original settings. |
| 5.7.3.10.28 | 0x6a09725c, 0x51c7, 0x44f3, 0x85, 0x74, 0xda, 0xc3, 0x6e, 0xc7, 0x0f, 0x86 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to set illegal filename of EFI\_FILE\_INFO for the directory does not change the filename. | 1. Call Open() to create directory handle with valid filename.  2. Call SetInfo() to set illegal filename of EFI\_FILE\_INFO for the directory.  3. Call GetInfo() to get current filename of EFI\_FILE\_INFO of the directory. It should return the same value as original filename. |
| 5.7.3.10.29 | 0x5bef76ad, 0x4a40, 0x401c, 0x83, 0xd3, 0x9c, 0x73, 0x72, 0x3b, 0xb4, 0x58 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to change all the fields except the **VolumeLabel** of the EFI\_FILE\_SYSTEM\_INFO does not change the original settings. | 1. Call GetInfo() to store original value of fields of EFI\_FILE\_SYSTEM\_INFO.  2. Call SetInfo() to change all the fields except the **VolumeLabel** of the EFI\_FILE\_SYSTEM\_INFO.  3. Call GetInfo() again to get current value of fields of EFI\_FILE\_SYSTEM\_INFO. It should return the same value as original settings. |
| 5.7.3.10.30 | 0x4857f42c, 0xb998, 0x4667, 0x8f, 0x11, 0xdb, 0xed, 0x7a, 0xd5, 0xe0, 0xac | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to change file attribute to read-only returns EFI\_SUCCESS. | 1. Call Open() to create a file handle.  2. Call SetInfo() to set file attribute to read-only. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.31 | 0xa9df1e64, 0xe769, 0x4d16, 0xa0, 0xd5, 0xb5, 0x59, 0xce, 0x90, 0xcf, 0x2b | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to change file attribute to read-only changes the file attribute from read-write to read-only. | 1. Call Open() to create a file handle.  2. Call SetInfo() to set file attribute to read-only.  3. Call GetInfo() to get file attribute. It should be read-only. |
| 5.7.3.10.32 | 0xb5481965, 0xf157, 0x4037, 0x89, 0xab, 0x14, 0x6e, 0xa6, 0xc9, 0x44, 0x1a | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to change file attribute from read-only to read-write returns EFI\_SUCCESS. | 1. Call Open() with read-only open mode to open a read-only file.  2. Call SetInfo() to set file attribute to read-write. The return code should be EFI\_SUCCESS. |
| 5.7.3.10.33 | 0x3535af93, 0x32df, 0x44bb, 0xa0, 0xaf, 0xce, 0x2d, 0x38, 0xe7, 0xd6, 0xfb | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo() to change file attribute to read-write changes the file attribute from read-only to read-write. | 1. Call Open() with read-only open mode to open a read-only file.  2. Call SetInfo() to set file attribute to read-write.  3. Call GetInfo() to get file attribute. It should be read-write. |
| 5.7.3.10.34 | 0x8821c678, 0xde6e, 0x49bf, 0x94, 0xcd, 0x9f, 0x4b, 0xa0, 0xa2, 0x15, 0x22 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo()to change  file name to an existing file name returns EFI\_ACCESS\_DENIED | 1. Call Open() to create two file handle.  2. Call SetInfo()to set one file name to the other file name. The return code should be EFI\_ACCESS\_DENIED. |
| 5.7.3.10.35 | 0x69afc35a, 0xcf85, 0x4365, 0xac, 0xca, 0xa5, 0x3c, 0x48, 0xcb, 0xd3, 0x51 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo()to change  file system volume info on a read-only media returns EFI\_WRITE\_PROTECTED | 1. Get system volume info to see if it is a read-only media  2. Call **SetInfo()** to change file system volume info. The return code should be EFI\_WRITE\_PROTECTED |
| 5.7.3.10.36 | 0x669bf242, 0xd3ca, 0x4b73, 0xa6, 0xdd, 0x8b, 0x2a, 0xf3, 0xfb, 0xa6, 0x28 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo()to change  file system volume label on a read-only media returns EFI\_WRITE\_PROTECTED | 1. Get system volume info to see if it is a read-only media  2. Call SetInfo()to change file system volume label. The return code should be EFI\_WRITE\_PROTECTED |
| 5.7.3.10.37 | 0x33218d68, 0x5245, 0x4bab, 0x9c, 0x1d, 0xc, 0x4b, 0xca, 0xd9, 0x4, 0x87 | EFI\_FILE\_PROTOCOL.SetInfo – SetInfo()to change  file info on a read-only media returns EFI\_WRITE\_PROTECTED | 1. Get system volume info to see if it is a read-only media  2. Call SetInfo()to change file info of root dir. The return code should be EFI\_WRITE\_PROTECTED |

### OpenEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.11.1 | 0xb6cff935, 0x32ef, 0x4865,0x9e, 0xd9, 0x09, 0x62, 0x87, 0xf2, 0x2a, 0x66 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create file under root directory with pure filename returnsEFI\_SUCCESS. | Async call OpenEx()to create file under root directory with pure filename, the return status should be EFI\_SUCCESS. The status in OpenFileFinishList should be EFI\_SUCCESS. |
| 5.7.3.11.2 | 0x5e767a63, 0x577a, 0x4628,0xb6, 0xe9, 0x91, 0xb7, 0xd9, 0xaa, 0x05, 0xcb | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create file under root directory with pure filename returnsEFI\_SUCCESS. | Async call OpenEx()to create file under root directory with pure filename, the return status should be EFI\_SUCCESS.  The OpenFileFailList should be empty. |
| 5.7.3.11.3 | 0x611a8daf, 0x274c, 0x4bd5,0xa7, 0xba, 0xc1, 0x85, 0x43, 0xd3, 0x7f, 0x74 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under root directory with pure filename returnsEFI\_SUCCESS. | Async call OpenEx()to create file under root directory with pure filename, the return status should be EFI\_SUCCESS.  The OpenFileExecuteList should be empty. |
| 5.7.3.11.4 | 0x0a6985e4, 0xfe17, 0x4740,0x95, 0x7a, 0xe9, 0xc0, 0x5b, 0x45, 0x02, 0xe0 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to sync create file under root directory with pure filename returnsEFI\_SUCCESS. | Sync call OpenEx()to create file under root directory with pure filename, the return status should be EFI\_SUCCESS. |
| 5.7.3.11.5 | 0x0c61f052, 0x2ae3, 0x4219,0xad, 0x79, 0x4b, 0xdd, 0x95, 0xc1, 0x78, 0xc3 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create directory under root directory returnsEFI\_SUCCESS. | Async call OpenEx()to create subdirectory under root directory, the return status should be EFI\_SUCCESS. |
| 5.7.3.11.6 | 0x41087c41, 0xb9a9, 0x4943,0xb8, 0x22, 0x9f, 0x9b, 0x41, 0x78, 0xa6, 0x49 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create file under root directory with filename containing sub directory name returnsEFI\_SUCCESS. | Async call OpenEx()to create file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS. |
| 5.7.3.11.7 | 0x6277ccac, 0x481c, 0x4cb2, 0xac, 0x96, 0x89, 0x96, 0x79, 0xf2, 0xa9, 0x19 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create directory under root directory returns EFI\_SUCCESS. | Async call OpenEx()to create directory under root directory, the return status should be EFI\_SUCCESS. The OpenDirFailList should be empty. |
| 5.7.3.11.8 | 0x518c70d5, 0x4070, 0x4b81,0x9d, 0xb3, 0xcb, 0x20, 0xd6, 0x7f, 0x11, 0x1c | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create file under root directory with filename containing sub directory name returnsEFI\_SUCCESS. | Async call OpenEx()to create file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS. The OpenFileFailList should be empty. |
| 5.7.3.11.9 | 0x44fa0576, 0x08cd, 0x48c2,0x9b, 0x71, 0x5f, 0x63, 0xc2, 0xb3, 0x97, 0x10 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create directory under root directory returnsEFI\_SUCCESS. | Async call OpenEx() to create directory under root directory, the return status should be EFI\_SUCCESS. The OpenDirExecuteList should be empty. |
| 5.7.3.11.10 | 0xef745935, 0x0937, 0x4b11,0xa7, 0xca, 0x65, 0xaf, 0x0b, 0xf0, 0x45, 0x44 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx()to async create file under root directory with filename containing sub directory name returnsEFI\_SUCCESS. | Async call OpenEx() to create file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS. The OpenFileExecuteList should be empty. |
| 5.7.3.11.11 | 0x3c64e927, 0x68e7, 0x4668,0xae, 0xa8, 0xc2, 0xc7, 0xdc, 0x15, 0x0c, 0x3f | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync create directory under root directory returns EFI\_SUCCESS. | Sync call OpenEx()to create directory under root directory, the return status should be EFI\_SUCCESS. |
| 5.7.3.11.12 | 0x233a928b, 0x8f5d, 0x483a,0xab, 0x03, 0x2d, 0x03, 0xf1, 0xa3, 0xdc, 0x26 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync create file under root directory with filename containing sub directory name returns EFI\_SUCCESS. | Sync call OpenEx() to create file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS. |
| 5.7.3.11.13 | 0x959a9093, 0xa975, 0x42a9,0x9b, 0x83, 0x32, 0x4a, 0x79, 0xca, 0x2f, 0x1b | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory with pure name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Async call OpenEx() to create file with  pure file name under directory(dir1) , the return status should be EFI\_SUCCESS. |
| 5.7.3.11.14 | 0x43ad5688, 0xbc02, 0x4870,0xb8, 0x85, 0x02, 0x86, 0xdd, 0x54, 0xb2, 0x76 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory with pure name returns EFI\_SUCCESS. | Call Open() to create directory(dir1) under root.  Async call OpenEx() to create file with pure file name under directory(dir1) , the return status should be EFI\_SUCCESS. The OpenFileFailList should be empty. |
| 5.7.3.11.15 | 0x90908639, 0x141f, 0x4632,0x85, 0xca, 0x7d, 0x6e, 0x83, 0xe5, 0x57, 0x47 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory with pure name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Async call OpenEx() to create file with  pure file name under directory(dir1) , the return status should be EFI\_SUCCESS. The OpenFileExecuteList should be empty. |
| 5.7.3.11.16 | 0x8eb7f8cc, 0x6d0d, 0x4c10, 0xbd, 0x94, 0xdc, 0x32, 0x7d, 0x2e, 0x6d, 0x3d | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync create file under sub directory with pure name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Sync call OpenEx() to create file with  pure file name under directory(dir1) , the return status should be EFI\_SUCCESS. |
| 5.7.3.11.17 | 0x3431780c, 0x56da, 0x4628,0x86, 0xa2, 0xa3, 0x08, 0xf2, 0xe9, 0x88, 0x27 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file with  file name containing sub directory name (dir2/pure name) under directory(dir1) , the return status should be EFI\_SUCCESS. |
| 5.7.3.11.18 | 0x7d9eacf0, 0x0167, 0x4ef7, 0xa7, 0xf2, 0x31, 0xb5, 0x3e, 0xc4, 0xcb, 0x8a | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file with  file name containing sub directory name (dir2/pure name) under directory(dir1) , the return status should be EFI\_SUCCESS. The OpenFileFailList should be empty. |
| 5.7.3.11.19 | 0xf9dad61f, 0xfc35, 0x4fd6, 0x86, 0x0b, 0x7b, 0x8b, 0x2e, 0xbf, 0x89, 0x63 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file under sub directory and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file with  file name containing sub directory name (dir2/pure name) under directory(dir1) , the return status should be EFI\_SUCCESS. The OpenFileExecuteList should be empty. |
| 5.7.3.11.20 | 0xf87622cf, 0x13c6, 0x412e,0x86, 0xa6, 0x8e, 0x7f, 0xf2, 0x63, 0x0a, 0x8e | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync create file under sub directory and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Sync call OpenEx() to create file with  file name containing sub directory name (dir2/pure name) under directory(dir1) , the return status should be EFI\_SUCCESS. |
| 5.7.3.11.21 | 0xbfc2a163, 0xe8d5, 0x45df, 0x8f, 0x6b, 0x01, 0x0a, 0xee, 0x48, 0x89, 0xc0 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file  containing absolute file path (/dir1/dir2/pure name) under sub directory(dir2), the return status should be EFI\_SUCCESS. |
| 5.7.3.11.22 | 0x8ffd05e8, 0xaa76, 0x4fcb, 0x93, 0xe4, 0x19, 0xa2, 0x0c, 0x2b, 0xa9, 0x04 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file  containing absolute file path (/dir1/dir2/pure name) under sub directory(dir2), the return status should be EFI\_SUCCESS. The OpenFileFailList should be empty. |
| 5.7.3.11.23 | 0x41fe9684, 0x113b, 0x415f, 0xaf, 0xbf, 0xee, 0x48, 0x10, 0x8a, 0x70, 0xc2 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async create file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1)  under root.  Call Open() to create directory(dir2)  under dir1.  Async call OpenEx() to create file  containing absolute file path (/dir1/dir2/pure name) under sub directory(dir2), the return status should be EFI\_SUCCESS. The OpenFileExecuteList should be empty. |
| 5.7.3.11.24 | 0xd5c326a3, 0x07ad, 0x490e,0x9b, 0xdc, 0xa8, 0xe3, 0x4d, 0x7a, 0xae, 0x8a | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync create file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open()to create directory(dir1)  under root.  Call Open()to create directory(dir2)  under dir1.  Sync call OpenEx()to create file  containing absolute file path (/dir1/dir2/pure name) under sub directory(dir2), the return status should be EFI\_SUCCESS. |
| 5.7.3.11.25 | 0x55825138, 0x793d, 0x4aaa, 0xab, 0xcc, 0x4d, 0x4a, 0xbd, 0xb2, 0x17, 0xef | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with pure filename returns EFI\_SUCCESS. | Call Open()to create file under root.  Call SetInfo()to set file size to 1.  Async call OpenEx() to open the file  Again, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.26 | 0xa4a53615, 0x7939, 0x4dcf, 0xbf, 0xb6, 0xc7, 0x4e, 0xe3, 0x3e, 0x93, 0x30 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with pure filename returns EFI\_SUCCESS. | Call Open() to create file under root.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the file  Again, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.27 | 0x4014c563, 0x7c95, 0x4323,0xa2, 0xd1, 0xbb, 0x94, 0x26, 0x74, 0xc9, 0xa3 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with pure filename returns EFI\_SUCCESS. | Call Open() to create file under root.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the file  Again, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.28 | 0x5a646037, 0xbe58, 0x41d8,0xb4, 0x91, 0x84, 0x03, 0xb9, 0xf8, 0xa7, 0x44 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync open the existing file under root directory with pure filename returns EFI\_SUCCESS. | Call Open()to create file under root.  Call SetInfo()to set file size to 1.  Sync call OpenEx()to open the existing file again, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.29 | 0xa398b24a, 0x568f, 0x4762,0xb1, 0xcb, 0x52, 0x25, 0xa7, 0x0e, 0x2f, 0x1f | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.30 | 0xbab0c3fc, 0x8630, 0x43bf, 0x97, 0x88, 0x6d, 0x96, 0xcd, 0x3a, 0x6e, 0x7c | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.31 | 0xffc5787b, 0x29a5, 0x4704,0x84, 0xd9, 0xd8, 0xb6, 0x6e, 0x62, 0x9c, 0xc2 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under root directory with filename containing sub directory name returns EFI\_SUCCESS. | Call Open()to create directory(dir1).  Call Open()to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.32 | 0xe9d202ed, 0x2e34, 0x4686,0x9a, 0xe3, 0x9b, 0x41, 0x5b, 0xaa, 0xbc, 0x72 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync open the existing file under root directory with filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Sync call OpenEx() to open the  existing file under root directory with filename containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.33 | 0x3c57480f, 0xc2f3, 0x4cee, 0xab, 0xef, 0x54, 0x8d, 0x69, 0x56, 0xae, 0x89 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under sub directory with pure filename returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under sub directory with pure filename, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.34 | 0x5850bc3c, 0x1b0f, 0x4bda,0x9e, 0x3c, 0x9c, 0x17, 0xf1, 0x9d, 0xf7, 0x53 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under sub directory with pure filename returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under sub directory with pure filename, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.35 | 0x13ce6d88, 0xd770, 0x470f, 0xb7, 0x3d, 0x60, 0x25, 0x18, 0xc2, 0xd2, 0xbf | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file under sub directory with pure filename returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open()to create file under dir1.  Call SetInfo() to set file size to 1.  Async call OpenEx() to open the  existing file under sub directory with pure filename, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.36 | 0xc2535525, 0xbe07, 0x4980,0xb9, 0x46, 0x7f, 0x87, 0x09, 0xe2, 0x12, 0xbe | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync open the existing file under sub directory with pure filename returns EFI\_SUCCESS. | Call Open()to create directory(dir1).  Call Open() to create file under dir1.  Call SetInfo() to set file size to 1.  Sync call OpenEx() to open the  existing file under sub directory with pure filename, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.37 | 0x7b0dcc35, 0xc3ea, 0x43cc, 0xac, 0xa9, 0x6a, 0x60, 0x1c, 0x3d, 0xe5, 0x45 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2)under dir1.  Call Open() to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory(dir1) handle and filename(/dir2/filename) containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.38 | 0x8a6ef609, 0xe8dc, 0x40a2,0xb4, 0x18, 0xd0, 0xa4, 0xdf, 0x4d, 0x3f, 0xa3 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2)under dir1.  Call Open() to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory(dir1) handle and filename(/dir2/filename) containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.39 | 0x5cfc5d39, 0x197c, 0x48dd, 0x9c, 0x7f, 0x98, 0x51, 0x64, 0x96, 0x79, 0xe7 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2)under dir1.  Call Open()to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory(dir1) handle and filename(/dir2/filename) containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.40 | 0x1f3f5ccf, 0xdc02, 0x4200,0x81, 0xd0, 0x02, 0x34, 0x32, 0x60, 0xf2, 0xe5 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync open the existing file with sub directory handle and filename containing sub directory name returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2)under dir1.  Call Open()to create file under dir2.  Call SetInfo() to set file size to 1.  Sync call OpenEx() to sync open  the existing file with sub directory(dir1) handle and filename(/dir2/filename) containing sub directory name, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.41 | 0x83351bef, 0x2368, 0x442e,0x89, 0xe6, 0xd2, 0xd5, 0xe9, 0xaf, 0x4a, 0x40 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2) under dir1.  Call Open()to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory handle and filename containing absolute file path, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.42 | 0x1e8c1e14, 0x47d8, 0x4a23,0xb2, 0xd6, 0x4b, 0xe0, 0x99, 0xf4, 0xa5, 0xdf | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2) under dir1.  Call Open() to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory handle and filename containing absolute file path, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.43 | 0x70486db6, 0x12f9, 0x4f6e, 0xa3, 0xf2, 0xed, 0xb4, 0x21, 0x27, 0x45, 0xbc | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async open the existing file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2) under dir1.  Call Open() to create file under dir2.  Call SetInfo() to set file size to 1.  Async call OpenEx() to async open  the existing file with sub directory handle and filename containing absolute file path, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal  to 1.  Call SetInfo() & Write(), if the Open Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.44 | 0x69996cd2, 0xf087, 0x42e9,0xb7, 0xf6, 0x7c, 0x04, 0x18, 0x76, 0x36, 0xd7 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to sync open the existing file with sub directory handle and filename containing absolute file path returns EFI\_SUCCESS. | Call Open() to create directory(dir1).  Call Open() to create sub  directory(dir2) under dir1.  Call Open() to create file under dir2.  Call SetInfo() to set file size to 1.  Sync call OpenEx() to sync open  the existing file with sub directory handle and filename containing absolute file path, the return status should be EFI\_SUCCESS.  To get the file size, it should be equal to 1.  Call SetInfo() & Write(), if the Open  Mode is read-only, the return status should be EFI\_ACCESS\_DENIED. Otherwise, it should be EFI\_SUCCESS. |
| 5.7.3.11.45 | 0xad02d93d, 0xf2e8, 0x4f25, 0x93, 0xce, 0x94, 0x06, 0x77, 0xb6, 0xe1, 0xb2 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async & sync open with non-existent file name returns EFI\_NOT\_FOUND. | Async & Sync call OpenEx() to open with non-existent file name, the return status should be EFI\_NOT\_FOUND. |
| 5.7.3.11.46 | 0xcab7c260, 0xa290, 0x4845,0xb7, 0x03, 0xb1, 0x9f, 0xed, 0xf9, 0x84, 0xeb | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async & sync open with non-existent file path returns EFI\_NOT\_FOUND. | Async & Sync call OpenEx() to open with non-existent file path, the return status should be EFI\_NOT\_FOUND. |
| 5.7.3.11.47 | 0x33273ae, 0x2471, 0x4c08,0xb0, 0x8d, 0xeb, 0xd9, 0xdd, 0xbd, 0x57, 0x81 | EFI\_FILE\_PROTOCOL.OpenEx - OpenEx() to async & sync open with invalid open-mode returns EFI\_INVALID\_PARAMETER. | Async & Sync call OpenEx() to open with invalid open-mode, the return status should be EFI\_INVALID\_PARAMETER. |

### ReadEx

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| Number | GUID | Assertion | Test Description |
| 5.7.3.12.1 | 0xce038e00, 0x833c, 0x4b2e, 0x9e, 0x50, 0x79, 0xed, 0xc, 0x74, 0xf2, 0x50 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the  file.  Async Call ReadEx()from valid  setposition & ReadLength, the return status should be EFI\_SUCCESS and ReadLength should be equal to the Token’s BufferSize.  Call GetPosition()the  PositionAfterRead should be equal to the sum of SetPosition and ReadLength.  Compare the content of ReadBuffer  with the data set in step2. |
| 5.7.3.12.2 | 0x05857ebf, 0xc920, 0x474a, 0x97, 0x4d, 0x85, 0x8d, 0x83, 0x98, 0x81, 0x6f | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the  file.  Async Call ReadEx()from valid  setposition & ReadLength, the return status should be EFI\_SUCCESS and ReadLength should be equal to the Token’s BufferSize.  Call GetPosition()the  PositionAfterRead should be equal to the sum of SetPosition and ReadLength.  Compare the content of ReadBuffer  with the data set in step2.  The ReadFailList should be empty. |
| 5.7.3.12.3 | 0x858ccc86, 0x9739, 0x437e, 0x82, 0xff, 0x29, 0x8a, 0x34, 0x7f, 0xc4, 0x45 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the  file.  Async Call ReadEx()from valid  setposition & ReadLength, the return status should be EFI\_SUCCESS and ReadLength should be equal to the Token’s BufferSize.  Call GetPosition()the  PositionAfterRead should be equal to the sum of SetPosition and ReadLength.  Compare the content of ReadBuffer  with the data set in step2.  The ReadExecuteList should be empty. |
| 5.7.3.12.4 | 0xccb9106f, 0x79ee, 0x4ec1, 0x98, 0xa5, 0x16, 0x8d, 0xe1, 0xa6, 0xb8, 0xf3 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to sync read data from a file returns  EFI\_SUCCESS. | Call Open()to create a file.  Call Write()to write data to the  file.  Sync Call ReadEx()from valid  setposition & ReadLength, the return status should be EFI\_SUCCESS and ReadLength should be equal to the Token’s BufferSize.  Call GetPosition()the  PositionAfterRead should be equal to the sum of SetPosition and ReadLength.  Compare the content of ReadBuffer  with the data set in step2. |
| 5.7.3.12.5 | 0xd01cdf69, 0x1b1b, 0x42fc, 0x92, 0x3f, 0x1d, 0xc1, 0x90, 0x92, 0x03, 0xc7 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a directory. | Call Open() to create a directory.  Call Open() to create a file under the  directory opened in step1.  Async Call ReadEx()from different  setposition & ReadLength, if the Setposition is 0 and the ReadLength is smaller than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_BUFFER\_TOO\_SMALL, else if the Setposition is 0 and the ReadLength is not less than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_SUCCESS, if the Setposition is at the end of directory, the return status should be EFI\_SUCCESS. |
| 5.7.3.12.6 | 0x05241cbf, 0xf260, 0x41d7, 0xb1, 0x93, 0x3b, 0x27, 0x7f, 0x72, 0x12, 0x4c | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a directory. | Call Open()to create a directory.  Call Open()to create a file under the  directory opened in step1.  Async Call ReadEx()from different  setposition & ReadLength, if the Setposition is 0 and the ReadLength is smaller than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_BUFFER\_TOO\_SMALL, else if the Setposition is 0 and the ReadLength is not less than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_SUCCESS, if the Setposition is at the end of directory, the return status should be EFI\_SUCCESS. |
| 5.7.3.12.7 | 0xcfbb86c0, 0xc6c6, 0x40ca, 0x8e, 0xc8, 0x0d, 0x76, 0xd0, 0xef, 0x50, 0xe7 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to async read data from a directory. | Call Open() to create a directory.  Call Open()to create a file under the  directory opened in step1.  Async Call ReadEx()from different  setposition & ReadLength, if the Setposition is 0 and the ReadLength is smaller than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_BUFFER\_TOO\_SMALL, else if the Setposition is 0 and the ReadLength is not less than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_SUCCESS, if the Setposition is at the end of directory, the return status should be EFI\_SUCCESS.  The ReadExecuteList should be empty. |
| 5.7.3.12.8 | 0xe8e8665c, 0xa44f, 0x491b, 0xb7, 0xe0, 0x56, 0x09, 0xc2, 0xbc, 0x20, 0xee | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() to sync read data from a directory. | Call Open() to create a directory.  Call Open() to create a file under the  directory opened in step1.  Sync Call ReadEx()from different  setposition & ReadLength, if the Setposition is 0 and the ReadLength is small than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_BUFFER\_TOO\_SMALL, else if the Setposition is 0 and the ReadLength is not less than SIZE\_OF\_EFI\_FILE\_INFO + 4, the return status should be EFI\_SUCCESS, if the Setposition is at the end of directory, the return status should be EFI\_SUCCESS. |
| 5.7.3.12.9 | 0x864c9887, 0x7205, 0x4e15,0xad, 0x9f, 0x7a, 0x94, 0xec, 0xf0, 0xc2, 0xd8 | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() async & sync read data from a file with the fileposition beyond the end of the file returns EFI\_DEVICE\_ERROR. | Async & Sync Call ReadEx()read  data from a file with the fileposition beyond the end of the file, the return status should be EFI\_DEVICE\_ERROR. |
| 5.7.3.12.10 | 0x12bc7ab7, 0x4ac5, 0x4cf3, 0xa5, 0x54, 0x6b, 0x34, 0xc9, 0x5d, 0x0c, 0xea | EFI\_FILE\_PROTOCOL.ReadEx - ReadEx() async & sync read data from a file which has been deleted returns EFI\_DEVICE\_ERROR. | Async & Sync Call ReadEx()read  data from a file which has been deleted, the return status should be EFI\_DEVICE\_ERROR. |

### WriteEX

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| Number | GUID | Assertion | Test Description |
| 5.7.3.13.1 | 0x077c1f80, 0xa887, 0x417d, 0xa9, 0xd6, 0xd9, 0x54, 0xca, 0x0b, 0x94, 0x7b | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Async Call WriteEx()from valid  setposition & WriteLength, the return status should be EFI\_SUCCESS and FileHandle’s position after write should be equal to the sum of Setposition and WriteLength.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same. |
| 5.7.3.13.2 | 0xf75bdc5a, 0xfd02, 0x444d, 0x9b, 0xb1, 0xda, 0x70, 0x2e, 0x2a, 0x86, 0x13 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Async Call WriteEx()from valid  setposition & WriteLength, the return status should be EFI\_SUCCESS and FileHandle’s position after write should be equal to the sum of Setposition and WriteLength.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same.  The WriteFailList should be empty. |
| 5.7.3.13.3 | 0xc105380e, 0x4c6d, 0x4e49, 0x8d, 0xe8, 0x1a, 0x0c, 0xc0, 0x77, 0x3e, 0xdc | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Async Call WriteEx()from valid  setposition & WriteLength, the return status should be EFI\_SUCCESS and FileHandle’s position after write should be equal to the sum of Setposition and WriteLength.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same.  The WriteExecuteList should be empty. |
| 5.7.3.13.4 | 0x67e49003, 0xf68c, 0x44bd, 0xb6, 0xee, 0xa5, 0xc8, 0x01, 0x06, 0xe7, 0xc1 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Sync Call WriteEx()from valid  setposition & WriteLength, the return status should be EFI\_SUCCESS and FileHandle’s position after write should be equal to the sum of Setposition and WriteLength.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same. |
| 5.7.3.13.5 | 0xbe6ccb33, 0x351f, 0x488c, 0x86, 0x42, 0x65, 0x47, 0xa1, 0x35, 0x79, 0x0c | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into multi files returns EFI\_SUCCESS. | Call Open() to create three file.  Async Call WriteEx()to write data  to different file with different position and write length, the return status should be EFI\_SUCCESS.  Compare the position after write, the  writelength with the expect value.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same. |
| 5.7.3.13.6 | 0x0aaacd7f, 0xeb8b, 0x4e91, 0x9b, 0xcd, 0x30, 0x57, 0xe6, 0x10, 0x57, 0x69 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into multi files returns EFI\_SUCCESS. | Call Open() to create three file.  Async Call WriteEx()to write data  to different file with different position and write length, the return status should be EFI\_SUCCESS.  Compare the position after write, the  writelength with the expect value.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same.  The WriteMultiFailList should be empty. |
| 5.7.3.13.7 | 0x4c7ec69e, 0x9615, 0x4274, 0xa0, 0x99, 0xb1, 0xd3, 0x48, 0x88, 0xd6, 0x70 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into multi files returns EFI\_SUCCESS. | Call Open() to create three file.  Async Call WriteEx()to write data  to different file with different position and write length, the return status should be EFI\_SUCCESS.  Compare the position after write, the  writelength with the expect value.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same.  The WriteMultiExecuteList should be empty. |
| 5.7.3.13.8 | 0x03186ac5, 0xb4b2, 0x4d2d, 0xa8, 0x67, 0xb9, 0x10, 0xdd, 0x1f, 0x64, 0xad | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async write data into multi files returns EFI\_SUCCESS. | Call Open() to create three file.  Sync Call WriteEx()to write data  to different file with different position and write length, the return status should be EFI\_SUCCESS.  Compare the position after write, the  writelength with the expect value.  Call Read(),then compare the  content of ReadBuffer with the data writed to the file in step2, they should be the same. |
| 5.7.3.13.9 | 0xc51c0c6d, 0xdfc6, 0x4ea7,0xb4, 0x36, 0x83, 0xae, 0x3a, 0x3f, 0x49, 0xd2 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async & sync write data to a directory returns EFI\_UNSUPPORTED. | Call WriteEx() to async & sync write data to a directory, the return status should be EFI\_DEVICE\_ERROR. |
| 5.7.3.13.10 | 0xc9af9973, 0x76af, 0x4701,0x88, 0xc0, 0xff, 0x61, 0x0e, 0x37, 0x74, 0x0a | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async & sync write data to a file which was opened read-only returns EFI\_ACCESS\_DENIED. | Async & sync Call WriteEx() to write data to a file which was opened read-only, the return status should be EFI\_ACCESS\_DENIED. |
| 5.7.3.13.11 | 0xa056bcff, 0xdb0b, 0x4733,0x88, 0x9a, 0xb1, 0xca, 0x52, 0xac, 0x58, 0xe9 | EFI\_FILE\_PROTOCOL.WriteEx - WriteEx() to async & sync write data to a file which has been deleted returns EFI\_DEVICE\_ERROR. | Async & sync Call WriteEx() to write data to a file which has been deleted, the return status should be EFI\_DEVICE\_ERROR. |

### FlushEx

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.14.1 | 0x31473e47, 0xa40d, 0x43a0, 0xb7, 0xb8, 0x91, 0xd3, 0x29, 0x41, 0x75, 0x9d | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the file.  Async Call FlushEx(), the return  status should be EFI\_SUCCESS. |
| 5.7.3.14.2 | 0x55702a2c, 0x0eef,  0x4ded, 0xa6, 0xd9, 0x2f, 0xd7, 0x9a, 0xbb, 0x88, 0x5f | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the file.  Async Call FlushEx(), the return  status should be EFI\_SUCCESS.  The flushFileFailList should be empty. |
| 5.7.3.14.3 | 0x258a6597, 0xd2ef, 0x4711, 0xa9, 0x89, 0xaa, 0xf0, 0xf9, 0x6f, 0x01, 0x0c | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the file.  Async Call FlushEx(), the return  status should be EFI\_SUCCESS.  The FlushFileExecuteList should be empty. |
| 5.7.3.14.4 | 0xafd40ec9, 0x5027, 0x42a8, 0xb0, 0x2c, 0x0c, 0xb5, 0x80, 0x86, 0xd7, 0x9c | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to sync flush data into a normal file returns EFI\_SUCCESS. | Call Open() to create a file.  Call Write() to write data to the file.  Sync Call FlushEx(), the return  status should be EFI\_SUCCESS. |
| 5.7.3.14.5 | 0x6aa8b399, 0x1b2f, 0x48d7, 0xa5, 0x34, 0x56, 0xc9, 0x68, 0xd6, 0xae, 0x11 | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal directory returns EFI\_SUCCESS. | Call Open() to create a directory.  Call Open() to Create files under the directory.  Async Call FlushEx(), the return status should be EFI\_SUCCESS. |
| 5.7.3.14.6 | 0xac3897ad, 0xd9c1, 0x4442, 0x84, 0x4b, 0x5c, 0xa1, 0x5c, 0x32, 0x80, 0x0b | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal directory returns EFI\_SUCCESS. | Call Open() to create a directory.  Call Open() to Create files under the directory.  Async Call FlushEx(), the return  status should be EFI\_SUCCESS.  The FlushDirFailList should be empty. |
| 5.7.3.14.7 | 0x3b9ed07d, 0xa0ea, 0x4719, 0xa2, 0xc9, 0xad, 0x54, 0x57, 0xc1, 0x5a, 0x73 | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async flush data into a normal directory returns EFI\_SUCCESS. | Call Open() to create a directory.  Call Open() to Create files under the  directory.  Async Call FlushEx(), the return  status should be EFI\_SUCCESS.  The FlushDirExecuteList should be empty. |
| 5.7.3.14.8 | 0x93ebe8a5, 0xf66b, 0x4532, 0x95, 0x77, 0x51, 0xe9, 0xdc, 0xda, 0xb6, 0x81 | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to sync flush data into a normal directory returns EFI\_SUCCESS. | Call Open() to create a directory.  Call Open() to Create files under the  directory.  Sync Call FlushEx(), the return  status should be EFI\_SUCCESS. |
| 5.7.3.14.9 | 0xce7774fa, 0xd04c, 0x45a6, 0xb7, 0x0b, 0xcd, 0x91, 0xa2, 0x76, 0xf9, 0x15 | EFI\_FILE\_PROTOCOL.FlushEx - FlushEx () to async & sync flush data to a file whose open mode was read-only returns EFI\_ACCESS\_DENIED. | Call Open() to create a directory.  Call Open() to open the file in the  mode of Read-Only.  Async & Sync Call FlushEx(), the  return status should be EFI\_ACCESS\_DENIED. |

### Read-Only File System check points

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.3.15.1 | 0xad3516c1, 0xbf24, 0x4923, 0xb8, 0x84, 0x53, 0x8b, 0x04, 0x2f, 0xb8, 0x25 | EFI\_FILE\_PROTOCOL.GetInfo - GetInfo () get the consistent ReadOnly attribute from EFI\_FILE\_INFO and EFI\_FILE\_SYSTEM\_INFO. | Call GetInfo() to check the ReadOnly attribute from EFI\_FILE\_INFO and EFI\_FILE\_SYSTEM\_INFO. The value should be consistent. |
| 5.7.3.15.2 | 0x5b704b82, 0xe081, 0x4c4a, 0x9d, 0x65, 0x71, 0x00, 0x79, 0xd1, 0x1f, 0x64 | EFI\_FILE\_PROTOCOL.SetPosition - SetPosition  () return EFI\_UNSUPPORTED when the position is not 0 and file handle is the root directory on a volume. | Call SetPosition() when the position is not 0 and file handle is the root directory on a volume, the return status should be EFI\_UNSUPPORTED. |
| 5.7.3.15.3 | 0xd9cbe15a, 0x956a, 0x4e54, 0xa3, 0x50, 0xdf, 0x53, 0xdc, 0x7d, 0xe2, 0x5b | EFI\_FILE\_PROTOCOL.SetPosition - SetPosition () return EFI\_SUCCESS when the position is 0 and file handle is the root directory on a volume. | Call SetPosition ()  return EFI\_SUCCESS when the position is 0 and file handle is the root directory on a volume. |
| 5.7.3.15.4 | 0xa8aadad0, 0x8545, 0x4098, 0x8a, 0x34, 0x2a, 0x03, 0xc2, 0x2b, 0xc0, 0xf6 | EFI\_FILE\_PROTOCOL.GetPosition - GetPosition () return EFI\_UNSUPPORTED when the file handle is the root directory on a volume. | Call GetPosition ()  return EFI\_UNSUPPORTED when the file handle is the root directory on a volume. |
| 5.7.3.15.5 | 0xb20660fc, 0xb957, 0x49d7, 0x8d, 0x93, 0x5c, 0x3f, 0x73, 0x6e, 0xd5, 0xf5 | EFI\_FILE\_PROTOCOL.SetInfo - SetInfo () return EFI\_WRITE\_PROTECTED when the InformationType is  EFI\_FILE\_SYSTEM\_VOLUME\_LABEL\_ID or EFI\_FILE\_PROTOCOL\_SYSTEM\_INFO\_ID  and the media is read-only. | Call SetInfo()  return EFI\_WRITE\_PROTECTED when the InformationType is  EFI\_FILE\_SYSTEM\_VOLUME\_LABEL\_ID or EFI\_FILE\_PROTOCOL\_SYSTEM\_INFO\_ID  and the media is read-only. |
| 5.7.3.15.6 | 0x04d6b761, 0xdeac, 0x4801, 0xb7, 0x39, 0xdb, 0x81, 0x8f, 0x46, 0xcf, 0x11 | EFI\_FILE\_PROTOCOL.Write - Write () return EFI\_UNSUPPORTED when the file handle is one directory. | Call Write()  return EFI\_UNSUPPORTED when the file handle is one directory. |
| 5.7.3.15.7 | 0xbe5cddad, 0x2d54, 0x463e, 0xaf, 0xde, 0x68, 0x1c, 0xb9, 0x08, 0xa8, 0xa0 | EFI\_FILE\_PROTOCOL.Read - Read ()  return EFI\_BUFFER\_TOO\_SMALL when the file handle is one directory and buffer  is not large enough to hold the directory entry. | Call Read() return EFI\_BUFFER\_TOO\_SMALL when the file handle is one directory and buffer is not large enough to hold the directory entry. |
| 5.7.3.15.8 | 0x06950775, 0xa32a, 0x421e, 0x8f, 0xce, 0xd8, 0xb4, 0xc1, 0x43, 0x17, 0xd1 | EFI\_FILE\_PROTOCOL.Open - Open ()  return EFI\_WRITE\_PROTECTED when try to open the file with EFI\_FILE\_MODE\_READ|EFI\_FILE\_MODE\_WRITE or EFI\_FILE\_MODE\_READ|EFI\_FILE\_MODE\_WRITE|EFI\_FILE\_MODE\_CREATE attribute while the file is on the read-only media. | Call Open() return EFI\_WRITE\_PROTECTED when try to open the file with EFI\_FILE\_MODE\_READ|EFI\_FILE\_MODE\_WRITE or EFI\_FILE\_MODE\_READ|EFI\_FILE\_MODE\_WRITE|EFI\_FILE\_MODE\_CREATE attribute while the file is on the read-only media.. |
| 5.7.3.15.9 | 0xd529dfd8, 0x23cb, 0x4548, 0xa2, 0x81, 0x6f, 0x59, 0x1f, 0x9c, 0x54, 0x8d | EFI\_FILE\_PROTOCOL.Open - Open () return EFI\_NOT\_FOUND when try to open one no-existed file. | Call Open()  return EFI\_NOT\_FOUND when try to open one no-existed file. |
| 5.7.3.15.10 | 0xb0091f09, 0x6121, 0x40e8, 0x93, 0x1d, 0xea, 0x6b, 0xa4, 0x6b, 0xbb, 0x09 | EFI\_FILE\_PROTOCOL.Open - Open ()  return EFI\_SUCCESS when try to open one existed file with EFI\_FILE\_MODE\_READ attribute. | Call Open() return EFI\_SUCCESS when try to open one existed file with EFI\_FILE\_MODE\_READ attribute. |
| 5.7.3.15.11 | 0xa42a8e9c, 0x4a31, 0x4b0a, 0xab, 0x2e, 0x7f, 0xd4, 0x2d, 0x42, 0x45, 0xf1 | EFI\_FILE\_PROTOCOL.GetInfo - GetInfo () return EFI\_UNSUPPORTED when the InformationType is not defined in the UEFI Specification. | Call GetInfo()  return EFI\_UNSUPPORTED when the InformationType is not defined in the UEFI Specification. |
| 5.7.3.15.12 | 0x07dc8d79, 0x8349, 0x4e9e, 0x9b, 0xa4, 0x72, 0x68, 0x92, 0x0d, 0x2e, 0x35 | EFI\_FILE\_PROTOCOL.GetInfo - GetInfo ()  return EFI\_BUFFER\_TOO\_SMALL when the Buffer is not large enough to hold the EFI\_FILE\_INFO. | Call GetInfo() return EFI\_BUFFER\_TOO\_SMALL when the Buffer is not large enough to hold the EFI\_FILE\_INFO. |
| 5.7.3.15.13 | 0x54afc2f4, 0x26bd, 0x4161, 0x90, 0x5e, 0xd9, 0x24, 0xd1, 0x34, 0x24, 0x27 | EFI\_FILE\_PROTOCOL.GetInfo - GetInfo () return EFI\_SUCCESS with the correct parameters. | Call GetInfo()  return EFI\_SUCCESS with the correct parameters. |
| 5.7.3.15.14 | 0xabaea718, 0xe1f9, 0x4edc, 0x98, 0xb2, 0x47, 0x18, 0xe4, 0xf7, 0x6b, 0x70 | EFI\_FILE\_PROTOCOL.SetInfo - SetInfo () return  EFI\_WRITE\_PROTECTED to retrieve the EFI\_FILE\_INFO or EFI\_UNSUPPORTED when InformationType is not defined in the UEFI Specification. | Call SetInfo()  return EFI\_WRITE\_PROTECTED to retrieve the EFI\_FILE\_INFO or EFI\_UNSUPPORTED when InformationType is not defined in the UEFI Specification. |
| 5.7.3.15.15 | 0x68a6c62b, 0xc1e0, 0x44d0, 0xba, 0xdb, 0x08, 0x85, 0x63, 0x37, 0x3f, 0xd7 | EFI\_FILE\_PROTOCOL. GetPosition - GetPosition ()  return EFI\_SUCCESS and one reasonable Position. | Call GetPosition() return EFI\_SUCCESS and one reasonable Position. |
| 5.7.3.15.16 | 0x2f83c19f, 0xc757, 0x4975, 0xa5, 0xea, 0x6a, 0x4e, 0xab, 0xa7, 0xce, 0x48 | EFI\_FILE\_PROTOCOL. Write - Write ()  return EFI\_WRITE\_PROTECTED when the media is read-only. | Call Write() return EFI\_WRITE\_PROTECTED when the media is read-only. |
| 5.7.3.15.17 | 0x3c0a4e4a, 0x43f4, 0x4b24, 0xb7, 0x64, 0xd8, 0x3c, 0x18, 0x63, 0xab, 0x81 | EFI\_FILE\_PROTOCOL. Flush - Flush ()  return EFI\_WRITE\_PROTECTED when the media is read-only. | Call Flush() return EFI\_WRITE\_PROTECTED when the media is read-only. |
| 5.7.3.15.18 | 0xece0ade2, 0x027e, 0x4c21, 0x91, 0x50, 0x33, 0x3c, 0x3e, 0x47, 0xea, 0x0b | EFI\_FILE\_PROTOCOL. Read - Read ()  return EFI\_SUCCESS and the output should be consistent in multi read operations. | 1. Call SetPosition() to set the position at 0.  2. Call Read() to read all content and save to FileBuf and get the file size.  3. Call GetPosition() to get the current position after the read operation.  4. Three returned status should be EFI\_SUCCESS, Position should equal with file size, and the FileSize of EFI\_FILE\_INFO should be equal with file size.  5. Read the file from variable positions, the output should be consistent with file content read from step 2. |
| 5.7.3.15.19 | 0x5ee32a7f, 0x0a63, 0x4803, 0x8a, 0xe8, 0x01, 0x9c, 0x07, 0x2a, 0xed, 0xb1 | EFI\_FILE\_PROTOCOL. Delete - Delete ()  return EFI\_WARN\_DELETE\_FAILURE. | Call Delete () return EFI\_WARN\_DELETE\_FAILURE |
| 5.7.3.15.20 | 0x3f8b11ec, 0x6b9e, 0x440c, 0x92, 0x0b, 0xb5, 0x63, 0xf3, 0xfd, 0x2b, 0xa7 | EFI\_FILE\_PROTOCOL. Close - Close ()  one existed opened file return EFI\_SUCCESS. | 1. Call Open() to open one existed file.  2. Call Close () return EFI\_SUCCESS. |

## EFI\_DISK\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_FILE\_PROTOCOL Section.

### ReadDisk()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.4.1.1 | 0x26912470, 0xf463, 0x4f8e, 0x8a, 0x33, 0xf3, 0x8f, 0x9c, 0xc8, 0x0d, 0x04 | EFI\_DISK\_IO\_PROTOCOL.ReadDisk – ReadDisk() returns EFI\_SUCCESS with valid parameter. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE, and for different valid OffSet parameter and BufferSize parameter:  1. Call ReadDisk() with the OffSet and BufferSize  Expected Behavior:  The return code of ReadDisk() should be EFI\_SUCCESS. |
| 5.7.4.1.2 | 0x9603aba0, 0xb4dd, 0x4ab6, 0x93, 0xcb, 0x52, 0x3a, 0x5b, 0x6f, 0xa5, 0x58 | EFI\_DISK\_IO\_PROTOCOL.ReadDisk – ReadDisk() returns EFI\_MEDIA\_CHANGED with MediaId is not the ID for the current media in the device. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE:  1. Call ReadDisk() with valid parameters and a MediaId value of actual MediaId + 5.  2. Call ReadDisk() with valid parameters and a MediaId value of actual MediaId + 1.  3. Call ReadDisk() with valid parameters and a MediaId value of actual MediaId – 1.  4. Call ReadDisk() with valid parameters and a MediaId value of actual MediaId – 5.  5. Call ReadDisk() with valid parameters and a MediaId value of 0.  Expected Behavior:  For that new MediaId not equal to old MediaId, the return code must be EFI\_MEDIA\_CHANGED. |
| 5.7.4.1.3 | 0x6a6d39d0, 0x311d, 0x410f, 0x96, 0x2e, 0x96, 0xef, 0xfb, 0x39, 0x99, 0x44 | EFI\_DISK\_IO\_PROTOCOL.ReadDisk – ReadDisk() returns EFI\_INVALID\_PARAMETER with invalid device addresses. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE:  1. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize** + 1.  2. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize** + 10.  3. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 1.  4. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 2.  5. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 3.  6. Call ReadDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 4.  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.4.1.4 | 0xb0d7a6e7, 0x49f1, 0x40d5, 0xa9, 0x29, 0x1a, 0xd5, 0xd4, 0x27, 0x70, 0xbf | EFI\_DISK\_IO\_PROTOCOL.ReadDisk – ReadDisk() returns EFI\_NO\_MEDIA with no media present in the device. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of FALSE:  1. Call ReadDisk() with valid parameter.  Expected Behavior:  The return code must be EFI\_NO\_MEDIA. |

### WriteDisk()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.4.2.1 | 0xc3d66c15, 0xb8ad, 0x45ad, 0xbe, 0xb7, 0x38, 0xfe, 0xc9, 0x52, 0x81, 0x5e | EFI\_DISK\_IO\_PROTOCOL.WriteDisk – WriteDisk() returns EFI\_SUCCESS to write proper data to non-readonly disk with valid parameter. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For non-readonly disk with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE and for different valid OffSet parameter and BufferSize parameter:  1. Call ReadDisk() with the OffSet and BufferSize.  2. Call WriteDisk() with same OffSet and BufferSize to write the specified buffer (different to buffer read from the last call of ReadDisk()) to the disk.  3. Call ReadDisk() with same OffSet and BufferSize.  4. Call WriteDisk() with same OffSet and BufferSize to write the buffer data read from the first ReadDisk() call.  5. Call ReadDisk() with same OffSet and BufferSize again.  Expected Behavior:  For each action, the return code should be EFI\_SUCCESS.  For each OffSet and BufferSize, the buffer data read by first and last calling ReadDisk() should be the same.  For each OffSet and BufferSize, the buffer data return in the second call of ReadDisk() should be the same with the originally buffer data written to device in the first call of WriteDisk(). |
| 5.7.4.2.2 | 0x36d696b1, 0x1902, 0x46b7, 0x9a, 0x62, 0x85, 0x25, 0x1d, 0xf5, 0xec, 0x25 | EFI\_DISK\_IO\_PROTOCOL.WriteDisk – WriteDisk() returns EFI\_MEDIA\_CHANGED with MediaId is not the ID for the current media in the device. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For non-readonly device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE:  1. Call WriteDisk() with valid parameters and a MediaId value of actual **EFI\_BLOCK\_IO\_MEDIA.MediaId** + 5.  2. Call WriteDisk() with valid parameters and a MediaId value of actual EFI\_BLOCK\_IO\_MEDIA**.MediaId** + 1.  3. Call WriteDisk() with valid parameters and a MediaId value of actual EFI\_BLOCK\_IO\_MEDIA**.MediaId** – 1.  4. Call WriteDisk() with valid parameters and a MediaId value of actual EFI\_BLOCK\_IO\_MEDIA**.MediaId** – 5.  5. Call WriteDisk() with valid parameters and a MediaId value of 0.  Expected Behavior:  For that new MediaId not equal to old MediaId, the return code must be EFI\_MEDIA\_CHANGED. |
| 5.7.4.2.3 | 0xc6eea54a, 0xde3a, 0x425a, 0xa6, 0x42, 0x79, 0xf4, 0xb7, 0x9a, 0x62, 0x36 | EFI\_DISK\_IO\_PROTOCOL.WriteDisk – WriteDisk() returns EFI\_INVALID\_PARAMETER with invalid device addresses. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For non-readonly device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE:  1. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize** + 1.  2. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize** + 10.  3. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 1.  4. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 2.  5. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 3.  6. Call WriteDisk() with an OffSet value of **EFI\_BLOCK\_IO\_MEDIA.LastBlock \* EFI\_BLOCK\_IO\_MEDIA.BlockSize –** BufferSize + 4.  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.4.2.4 | 0x83a99320, 0x0831, 0x42d6, 0x8b, 0xec, 0x8d, 0xfd, 0x3d, 0xe4, 0x63, 0x78 | EFI\_DISK\_IO\_PROTOCOL.WriteDisk – WriteDisk() returns EFI\_WRITE\_PROTECTED with a write-protected device. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For read-only device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of TRUE:  1. Call WriteDisk() with valid parameter to write data to device.  Expected Behavior:  The return code must be EFI\_WRITE\_PROTECTED. |
| 5.7.4.2.5 | 0x0299b063, 0x21a8, 0x4811, 0x80, 0xe2, 0x8c, 0x4f, 0xfd, 0x3e, 0xd0, 0xa4 | EFI\_DISK\_IO\_PROTOCOL.WriteDisk – WriteDisk() returns EFI\_NO\_MEDIA with no media in the device. | Locate Block I/O interface that is associated with specified Disk I/O interface.  For device with a **EFI\_BLOCK\_IO\_MEDIA.MediaPresent** value of FALSE:  1. Call WriteDisk() with valid parameter to write data to device.  Expected Behavior:  The return code must be EFI\_NO\_MEDIA. |

## 

## EFI\_BLOCK\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_BLOCK\_IO\_ PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.5.1.1 | 0x61ee3a34, 0x62a2, 0x4214, 0xb0, 0x76, 0x50, 0x73, 0xb1, 0x77, 0x15, 0x6c | EFI\_BLOCK\_IO\_PROTOCOL.Reset - Reset() returns EFI\_SUCCESS with an ExtendedVerification value of TRUE. | 1. Call Reset() with an ExtendedVerification value of TRUE  Expected Behavior:  The return code should be EFI\_SUCCESS.  The private data for the device, which is stored in Media data structure, should be kept unchanged, |
| 5.7.5.1.2 | 0x98530f3d, 0x8bd8, 0x44a1, 0x9d, 0x06, 0x08, 0x03, 0x9f, 0xdf, 0xec, 0x63 | EFI\_BLOCK\_IO\_PROTOCOL.Reset - Reset() returns EFI\_SUCCESS with an ExtendedVerification value of FALSE. | 1. Call Reset() with an ExtendedVerification value of FALSE  Expected Behavior:  The return code should be EFI\_SUCCESS.  The private data for the device, which is stored in Media data structure, should be kept unchanged. |

### ReadBlocks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.5.2.1 | 0x9efe26c2, 0xc565, 0x478a, 0xa0, 0xb4, 0x05, 0xa8, 0xfd, 0x2e, 0x7e, 0x3e | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_SUCCESS with valid parameter. | (Can only be invoked when media is present.)  1. Call ReadBlocks() with different LBA and BufferSize. The return code should be EFI\_SUCCESS. |
| 5.7.5.2.2 | 0x6dec8f5c, 0xf6ec, 0x47b4, 0xbb, 0x0c, 0xaa, 0x4a, 0x69, 0x39, 0xe2, 0xf0 | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_MEDIA\_CHANGED with MediaId is not the ID for the current media in the device. | For device with a **MediaPresent** value of TRUE:  1. Call ReadBlocks() with valid parameters and a MediaId value of actual MediaId + 5  2. Call ReadBlocks() with valid parameters and a MediaId value of actual MediaId + 1  3. Call ReadBlocks() with valid parameters and a MediaId value of actual MediaId – 1  4. Call ReadBlocks() with valid parameters and a MediaId value of actual MediaId – 5  5. Call ReadBlocks() with valid parameters and a MediaId value of 0  Expected Behavior:  The return code must be EFI\_MEDIA\_CHANGED. |
| 5.7.5.2.3 | 0x05927e73, 0x8b41, 0x4cc7, 0x8e, 0xf2, 0x7c, 0x7a, 0xfb, 0x78, 0xf5, 0x3e | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_BAD\_BUFFER\_SIZE with invalid BufferSize parameter. (Can only be invoked when media is present.) | For device with a **MediaPresent** value of TRUE and a **BlockSize** value other than 1:  1. Call ReadBlocks() with valid parameters and a BufferSize value of **BlockSize** + 1  2. Call ReadBlocks() with valid parameters and a BufferSize value of 2\*BlockSize – 1  3. Call ReadBlocks() with valid parameters and a BufferSize value of 2\***BlockSize** + 1  4. Call ReadBlocks() with valid parameters and a BufferSize value of 3\***BlockSize** – 1  Expected Behavior:  All return codes must be EFI\_BAD\_BUFFER\_SIZE. |
| 5.7.5.2.4 | 0x09de1965, 0x3719, 0x463b, 0xa8, 0xd1, 0xd2, 0x78, 0xd7, 0xd6, 0x58, 0x2c | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_INVALID\_PARAMETER with invalid *LBA* parameter. | For device with a **MediaPresent** value of TRUE:  1. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** + 1  2. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** + 100  3. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** – BufferSize**/BlockSize** + 1  4. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** – BufferSize**/BlockSize** + 2  5. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** – BufferSize**/BlockSize** + 3  6. Call ReadBlocks() with valid parameters and an *LBA* value of **LastBlock** – BufferSize**/BlockSize** + 100  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.5.2.5 | 0x91cfde2c, 0x619e, 0x4c88, 0x80, 0x0d, 0x99, 0xce, 0x53, 0xad, 0x3b, 0x25 | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_NO\_MEDIA with no media present in the device. | For device with a **MediaPresent** value of FALSE:  1. Call ReadBlocks() with valid parameter.  Expected Behavior:  The return code must be EFI\_NO\_MEDIA. |
| 5.7.5.2.6 | 0x8cf48053, 0x8e2e, 0x40c9, 0x90, 0xfa, 0x65, 0x33, 0x0b, 0xbf, 0x33, 0x69 | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_INVALID\_PARAMETER with Buffer is not on proper lower alignment. (Can only be invoked when media present and **IoAlign** is larger than 1.) | For device with a **MediaPresent** value of TRUE and **IoAlign** more than 1:  1. Call ReadBlocks() with valid parameter and a Buffer value of (Buffer/**IoAlign**) \* **IoAlign** + Remainder (Remainder goes from 1 to Min(**IoAlign**-1, 5)).  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.5.2.7 | 0x9284cf69, 0x7570, 0x4da4, 0xa7, 0xa2, 0x40, 0x5d, 0x27, 0x9d, 0x0c, 0xa7 | EFI\_BLOCK\_IO\_PROTOCOL.ReadBlocks – ReadBlocks() returns EFI\_INVALID\_PARAMETER with Buffer is not on proper alignment. (Can only be invoked when media present and **IoAlign** is larger than 1.) | For device with a **MediaPresent** value of TRUE and **IoAlign** more than 1:  1. Call ReadBlocks() with valid parameter and a Buffer value of (Buffer/**IoAlign**) \* **IoAlign** + Remainder (Remainder goes from **IoAlign**-1 down to Max(**IoAlign**-6, 1)).  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |

### 

### WriteBlocks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.5.3.1 | 0x7bbdf28f, 0xb2ea, 0x42c0, 0xa8, 0xfe, 0x6a, 0xdc, 0x00, 0x38, 0x35, 0x77 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_SUCCESS with valid parameters. | (Can only be invoked when media is present and not read-only.)  1. Call ReadBlocks() to get the original data in the media.  2. Call WriteBlocks() with the new data. The return code should be EFI\_SUCCESS. |
| 5.7.5.3.2 | 0x1fb19cbd, 0x7219, 0x4853, 0xa2, 0xaa, 0xeb, 0xe5, 0x17, 0xaa, 0xad, 0xe6 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – ReadBlocks() gets the same data as what are written before. | (Can only be invoked when media is present and not read-only.)  1. Call ReadBlocks() to get the original data in the media.  2. Call WriteBlocks() with the new data.  3. Call ReadBlocks() to get the data in the media.  The data should be the same as the new data written before. |
| 5.7.5.3.3 | 0x48340af1, 0x8425, 0x4847, 0xaa, 0x69, 0x56, 0x52, 0xd6, 0x61, 0x6e, 0x08 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() must return EFI\_SUCCESS after being called twice with valid parameters. | (Can only be invoked when media is present and not read-only.)  1. Call ReadBlocks() to get the original data in the media.  2. Call WriteBlocks() with the new data.  3. Call ReadBlocks() to get the data in the media  4. Call WriteBlocks() with the original data. The return code should be EFI\_SUCCESS. |
| 5.7.5.3.4 | 0xa4383f2b, 0xf875, 0x4f57, 0x95, 0xfe, 0xce, 0x65, 0x5a, 0x4d, 0xc6, 0xb0 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_MEDIA\_CHANGED with invalid MediaId. | For non-readonly device with a **MediaPresent** value of TRUE:  1. Call WriteBlocks() with valid parameters and a MediaId value of actual MediaId + 5  2. Call WriteBlocks() with valid parameters and a MediaId value of actual MediaId + 1  3. Call WriteBlocks() with valid parameters and a MediaId value of actual MediaId – 1  4. Call WriteBlocks() with valid parameters and a MediaId value of actual MediaId – 5  5. Call WriteBlocks() with valid parameters and a MediaId value of 0  Expected Behavior:  The return code must be EFI\_MEDIA\_CHANGED. |
| 5.7.5.3.5 | 0xbf9eabdd, 0x1745, 0x4418, 0xaf, 0xf8, 0x12, 0x5e, 0x02, 0x18, 0x94, 0xaa | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – ReadBlocks() get the original data written before. | (Can only be invoked when media is present and not read-only.)  1. Call ReadBlocks() to get the original data in the media.  2. Call WriteBlocks() with the new data.  3. Call ReadBlocks() to get the data in the media  4. Call WriteBlocks() with the original data.  5. Call ReadBlocks() to get the data in the media. The data should be the same as the original data written before. |
| 5.7.5.3.6 | 0xa77c46e0, 0x6df6, 0x4d63, 0xaf, 0x8d, 0xae, 0xb7, 0xae, 0x7d, 0x2b, 0x12 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_BAD\_BUFFER\_SIZE with invalid BufferSize. | For non-readonly device with a **MediaPresent** value of TRUE:  1. Call WriteBlocks() with valid parameters and a BufferSize value of **BlockSize** + 1.  2. Call WriteBlocks() with valid parameters and a BufferSize value of 2\***BlockSize** – 1.  3. Call WriteBlocks() with valid parameters and a BufferSize value of 2\***BlockSize** + 1  4. Call WriteBlocks() with valid parameters and a BufferSize value of 3\***BlockSize** – 1.  Expected Behavior:  The return code must be EFI\_BAD\_BUFFER\_SIZE. |
| 5.7.5.3.7 | 0x98e637f8, 0x9a1c, 0x42f9, 0xa6, 0xe2, 0x2e, 0xe8, 0x5f, 0x70, 0x2b, 0x98 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() return EFI\_INVALID\_PARAMETER with invalid LBA parameter. | For non-readonly device with a **MediaPresent** value of TRUE:  1. Call WriteBlocks() with valid parameters and an LBA value of **LastBlock** + 1.  2. Call ReadBlocks() with valid parameters and an LBA value of **LastBlock** + 100.  3. Call ReadBlocks() with valid parameters and an LBA value of **LastBlock** – BufferSize**/BlockSize** + 1  4. Call ReadBlocks() with valid parameters and an LBA value of **LastBlock** – BufferSize**/BlockSize** + 2.  5. Call ReadBlocks() with valid parameters and an LBA value of **LastBlock** – BufferSize**/BlockSize** + 3.  6. Call ReadBlocks() with valid parameters and an LBA value of **LastBlock** – BufferSize**/BlockSize** + 100.  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.5.3.8 | 0xedb9cf57, 0x1900, 0x45f2, 0x9a, 0x5a, 0xf1, 0x3b, 0x31, 0xdf, 0x36, 0x6a | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_WRITE\_PROTECTED with write-protected device. | For read-only device with a **MediaPresent** value of TRUE:  1. Call WriteBlocks() with valid parameter to write data to device.  Expected Behavior:  The return code must be EFI\_WRITE\_PROTECTED. |
| 5.7.5.3.9 | 0x7abcfa31, 0x7456, 0x40ae, 0x93, 0x51, 0x1c, 0xf4, 0x50, 0x1c, 0x08, 0xc9 | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_NO\_MEDIA with no media in the device. | For non-readonly device with a **MediaPresent** value of FALSE:  1. Call WriteBlocks() with valid parameter to write data to device.  Expected Behavior:  The return code must be EFI\_NO\_MEDIA. |
| 5.7.5.3.10 | 0x8a7d6ab3, 0x2c11, 0x41e3, 0xa4, 0x30, 0xfe, 0x3c, 0x50, 0xcc, 0x57, 0xad | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_INVALID\_PARAMETER with Buffer is not on proper lower alignment. | For non-readonly device with a **MediaPresent** value of TRUE and **IoAlign** more than 1:  1. Call WriteBlocks() with valid parameter and a Buffer value of (Buffer/**IoAlign**) \* **IoAlign** + Remainder (Remainder goes from 1 to Min(**IoAlign**-1, 5)).  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |
| 5.7.5.3.11 | 0xb9d363bf, 0x9c50, 0x4671, 0x88, 0x55, 0xce, 0xfc, 0xc6, 0xb8, 0x24, 0xaa | EFI\_BLOCK\_IO\_PROTOCOL.Writeblocks – WriteBlocks() returns EFI\_INVALID\_PARAMETER with Buffer is not on proper alignment. | For non-readonly device with a **MediaPresent** value of TRUE and **IoAlign** more than 1:  1. Call WriteBlocks() with valid parameter and a Buffer value of (Buffer/**IoAlign**) \* **IoAlign** + Remainder (Remainder goes from **IoAlign**-1 down to Max(**IoAlign**-6, 1)).  Expected Behavior:  The return code must be EFI\_INVALID\_PARAMETER. |

### FlushBlocks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.5.4.1 | 0x5f220c61, 0x24b5, 0x4c71, 0x8e, 0x5a, 0x78, 0xbd, 0x0a, 0xc6, 0x77, 0xf6 | EFI\_BLOCK\_IO\_PROTOCOL.FlushBlocks – FlushBlocks() returns EFI\_NO\_MEDIA with no media presented | For device with a **MediaPresent** value of FALSE and a WriteCaching value of TRUE:  1. Call FlushBlocks.  Expected Behavior:  The return code must be EFI\_NO\_MEDIA. |

### Media Info Check

|  |  |  |  |
| --- | --- | --- | --- |
| No | GUID | Assertion | Test Description |
| 5.7.5.5.1 | 0xb8a45208, 0xf7b0, 0x443c, 0x8c, 0xce, 0xeb, 0x81, 0xb6, 0x6c, 0x00, 0x4a | EFI\_BLOCK\_IO\_PROTOCOL. Media–  LogicalBlocksPerPhysicalBlockshould be 0 when LogicalPartitionis TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION2. | LogicalBlocksPerPhysicalBlock should be 0 when LogicalPartition is TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION2**.** |
| 5.7.5.5.2 | 0xe08ff5f4, 0x92de, 0x4cc9, 0x81, 0x22, 0x6b, 0x48, 0x7c, 0x67, 0x0c, 0x9b | EFI\_BLOCK\_IO\_PROTO  COL. Media–  OptimalTransferLengthGranularity should be 0 when LogicalPartitionis TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION3. | OptimalTransferLengthGranularity should be 0 when LogicalPartitionis TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION3. |

## EFI\_UNICODE\_COLLATION\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_UNICODE\_COLLATION\_ PROTOCOL Section.

### StriColl()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.1.1 | 0x3bf9028a, 0x599c, 0x44e0, 0xa7, 0xdf, 0xa6, 0x87, 0xcf, 0x9e, 0x15, 0xf4 | EFI\_UNICODE\_COLLATION\_PROTOCOL.StriColl - StriColl() with valid parameter returns correct status of comparison between String1 and String2. | 1. Call StriColl(). The return code should correspond to the string comparison result. |

### MetaiMatch()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.2.1 | 0x60291ba4, 0x7170, 0x4f5c, 0x84, 0x20, 0x11, 0x07, 0x85, 0x49, 0x2e, 0x6d | EFI\_UNICODE\_COLLATION\_PROTOCOL.MetaiMatch - MetaiMatch() returns correct status of pattern match. | 1. Call MetaiMatch(). The return code should correspond to the pattern match result. |

### 

### StrLwr()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.3.1 | 0x9d69a782, 0x672b, 0x43db, 0xac, 0x24, 0x16, 0x59, 0xa3, 0x9d, 0xa7, 0x5e | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrLwr - StrLwr() convert the string to lowercase. | 1. Call StrLwr(). It should convert the string to lowercase. |
| 5.7.6.3.2 | 0x2e743a2a, 0x52a3, 0x411d, 0x95, 0x2a, 0x42, 0x0c, 0x47, 0x76, 0x90, 0x4c | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrLwr - StrLwr() convert the string to lowercase. | 1. Call StrLwr() to convert string to lowercase and store lowercase string in buffer.  2. Call StrUpr() to convert lower case string to uppercase.  3. Call StrLwr() to convert uppercase string to lowercase. The lowercase string should be equal to lowercase string stored in buffer. |

### StrUpr()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.4.1 | 0x1b8390f4, 0xc5ac, 0x4342, 0x85, 0x55, 0x70, 0x74, 0xe5, 0xa2, 0x10, 0x2b | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrUpr - StrUpr() convert the string to Uppercase. | 1. Call StrUpr(). It should convert the string to uppercase. |
| 5.7.6.4.2 | 0x6179f1fb, 0x54c5, 0x4844, 0xba, 0x17, 0x31, 0x4f, 0xe3, 0x57, 0xb4, 0xe3 | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrUpr - StrUpr() convert the string to Uppercase. | 1. Call StrUpr() to convert string to uppercase and store uppercase string in buffer.  2. Call StrLwr() to convert upper case string to lowercase.  3. Call StrUpr() to convert lowercase string to uppercase. The uppercase string should be equal to uppercase string stored in buffer. |

### FatToStr()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.5.1 | 0x07f17163, 0x6f7d, 0x428f, 0xad, 0x13, 0xe4, 0xd0, 0x0b, 0x3a, 0x45, 0x64 | EFI\_UNICODE\_COLLATION\_PROTOCOL.FatToStr - FatToStr() with FatSize equal to the size of Fat String converts Fat string to Unicode string correctly. | 1. Call FatToStr() with FatSize equal to the size of Fat String. It should convert Fat string to Unicode string correctly. |
| 5.7.6.5.2 | 0x17ea04a7, 0xa56e, 0x4733, 0x83, 0x20, 0x79, 0x33, 0x09, 0x31, 0xef, 0xac | EFI\_UNICODE\_COLLATION\_PROTOCOL.FatToStr - FatToStr() with FatSize larger than the size of Fat String converts Fat string to Unicode string correctly | 1. Call FatToStr() with FatSize larger than the size of Fat String. It should convert Fat string to Unicode string correctly. |
| 5.7.6.5.3 | 0x2e89ebe3, 0x44bd, 0x4e02, 0xba, 0x50, 0x90, 0x05, 0xc0, 0xfc, 0x08, 0xdd | EFI\_UNICODE\_COLLATION\_PROTOCOL.FatToStr - FatToStr() with FatSize smaller than the size of Fat String converts Fat string to Unicode string correctly. | 1. Call FatToStr() with FatSize smaller than the size of Fat String. It should convert Fat string to Unicode string correctly. |

### StrToFat()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.6.6.1 | 0x6f780647, 0xef48, 0x4c1c, 0x87, 0xa6, 0x95, 0xe2, 0x50, 0x0e, 0x2e, 0x0b | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrToFat - StrToFat() with FatSize equal to the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize equal to the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |
| 5.7.6.6.2 | 0x5eea066e, 0xf73e, 0x4d36, 0x91, 0x25, 0xa0, 0x8a, 0x54, 0x6e, 0xee, 0x27 | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrToFat - StrToFat() with FatSize larger than the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize larger than the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |
| 5.7.6.6.3 | 0x58ae3ae9, 0x3dac, 0x41bf, 0x8d, 0x01, 0xd5, 0x91, 0xe3, 0xef, 0x62, 0x62 | EFI\_UNICODE\_COLLATION\_PROTOCOL.StrToFat - StrToFat() with FatSize smaller than the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize smaller than the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |

## 

## EFI\_UNICODE\_COLLATION2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_UNICODE\_COLLATION2\_ PROTOCOL Section.

### StriColl()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.7.1.1 | 0x6a69637d, 0x5ada, 0x40fd, 0x93, 0x05, 0xe1, 0x06, 0xc9, 0xff, 0xa1, 0xbd | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StriColl - StriColl() with valid parameter returns correct status of comparison between String1 and String2. | 1. Call StriColl(). The return code should correspond to the string comparison result. |

### MetaiMatch()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.7.2.1 | 0x49f68d03, 0xfef1, 0x460f, 0x8e, 0xdd, 0x27, 0xdb, 0x15, 0x22, 0xa3, 0xa3 | **EFI\_UNICODE\_COLLATION2\_PROTOCOL.MetaiMatch - MetaiMatch()** returns correct status of pattern match. | 1. Call **MetaiMatch()**. The return code should correspond to the pattern match result. |

### StrLwr()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.7.3.1 | 0xa8a08682, 0xf9d9, 0x4471, 0x85, 0x53, 0x48, 0x0b, 0x42, 0x1d, 0x66, 0x5b | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrLwr - StrLwr() convert the string to lowercase. | 1. Call StrLwr(). It should convert the string to lowercase. |
| 5.7.7.3.2 | 0xfb87853f, 0xa47b, 0x405b, 0x85, 0x5f, 0xc6, 0xbe, 0x18, 0x8b, 0xc3, 0x30 | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrLwr - StrLwr() convert the string to lowercase. | 1. Call StrLwr() to convert string to lowercase and store lowercase string in buffer.  2. Call StrUpr() to convert lower case string to uppercase.  3. Call StrLwr() to convert uppercase string to lowercase. The lowercase string should be equal to lowercase string stored in buffer. |

### StrUpr()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.7.4.1 | 0x6f390d73, 0xe8c7, 0x4032, 0xb5, 0xcb, 0xc0, 0xf6, 0xa8, 0x18, 0xe1, 0x87 | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrUpr - StrUpr() convert the string to Uppercase. | 1. Call StrUpr(). It should convert the string to uppercase. |
| 5.7.7.4.2 | 0xf559dbaa, 0xdeb6, 0x4591, 0xbf, 0x16, 0xf1, 0x4b, 0x50, 0x6c, 0xac, 0xae | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrUpr - StrUpr() convert the string to Uppercase. | 1. Call StrUpr() to convert string to uppercase and store uppercase string in buffer.  2. Call StrLwr() to convert upper case string to lowercase.  3. Call StrUpr() to convert lowercase string to uppercase. The uppercase string should be equal to uppercase string stored in buffer. |

### FatToStr()

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Number | GUID |  | Assertion |  | Test Description |
| 5.7.7.5.1 | 0x99a47923, 0xd2e9, 0x4114, 0xba, 0xc0, 0x46, 0x2b, 0xaa, 0x5a, 0xe5, 0xf3 | EFI\_UNICODE\_COLLATION2\_PROTOCOL.FatToStr - FatToStr() with FatSize equal to the size of Fat String converts Fat string to Unicode string correctly. | | 1. Call FatToStr() with FatSize equal to the size of Fat String. It should convert Fat string to Unicode string correctly. | |
| 5.7.7.5.2 | 0xd5dc3c74, 0x268a, 0x499d, 0xb3, 0x8b, 0xcb, 0x2d, 0x69, 0x71, 0x19, 0xb3 | EFI\_UNICODE\_COLLATION2\_PROTOCOL.FatToStr - FatToStr() with FatSize larger than the size of Fat String converts Fat string to Unicode string correctly | | 1. Call FatToStr() with FatSize larger than the size of Fat String. It should convert Fat string to Unicode string correctly. | |
| 5.7.7.5.3 | 0x305c644e, 0x002f, 0x466f, 0xae, 0x41, 0x4f, 0x22, 0xff, 0xda, 0x05, 0xfc | EFI\_UNICODE\_COLLATION2\_PROTOCOL.FatToStr - FatToStr() with FatSize smaller than the size of Fat String converts Fat string to Unicode string correctly. | | 1. Call FatToStr() with FatSize smaller than the size of Fat String. It should convert Fat string to Unicode string correctly. | |

### StrToFat()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.7.6.1 | 0x7b8b1cb5, 0xa3b9, 0x410d, 0x96, 0xf0, 0x3d, 0x88, 0x96, 0xe9, 0x03, 0x9a | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrToFat - StrToFat() with FatSize equal to the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize equal to the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |
| 5.7.7.6.2 | 0x9c40c459, 0x0a09, 0x4382, 0x89, 0x79, 0x01, 0xea, 0x30, 0x35, 0xdd, 0xf4 | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrToFat - StrToFat() with FatSize larger than the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize larger than the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |
| 5.7.7.6.3 | 0x8d0e58cc, 0x4494, 0x4684, 0xaf, 0x6c, 0xdc, 0xf9, 0x1b, 0x77, 0x6c, 0x6b | EFI\_UNICODE\_COLLATION2\_PROTOCOL.StrToFat - StrToFat() with FatSize smaller than the size of Fat String converts Unicode string to Fat string correctly. | 1. Call StrToFat() with FatSize smaller than the size of Fat String. It should convert Unicode string to Fat string correctly. If one or more conversions failed, it returns TRUE and characters were substituted with ‘\_’. |

## EFI\_ATA\_PASS\_THRU\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ATA\_PASS\_THRU\_PROTOCOL Section .

### GetNextPort()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.1.1 | 0xbad50e59, 0x9423, 0x427d, 0xa7, 0x5d, 0x69, 0x1c, 0x90, 0xb7, 0xf9, 0x75 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextPort – GetNextPort() should return invalid parameter if input port is invalid. | 1. Call GetNextPort() with Port being a not available port.  2. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.1.2 | 0xc3e87aa1, 0x6e9c, 0x478f, 0x9b, 0xd5, 0x39, 0x50, 0x8, 0x01, 0x28, 0x96 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextPort – GetNextPort()  should return invalid parameter if port is not 0xFFFF and port was not returned on a previous call. | 1. Call GetNextPort() when Port is not 0xFFFF and Port was not returned on a previous call.  2. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.1.3 | 0x5f658292,  0xa409,  0x4d67, 0xba,  0x13, 0x4,  0xc2, 0x51,  0x85, 0xf2, 0x80 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextPort – GetNextPort()could iterate all available port. | 1. Call GetNextPort() with Port as 0xFFFF to start iterate ports.  2. The iteration should ended up with a return code EFI\_NOT\_FOUND. |

### BuildDevicePath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.2.1 | 0xd72e6a78, 0x5292, 0x4493, 0x90, 0x40, 0xb0, 0x44, 0x5a, 0x9c, 0x17, 0x14 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.BuildDevicePath – BuildDevicePath() with NULL parameter. | 1. Call BuildDevicePath() with with Port and PortMultiplierPort identifying an available device and DevicePath being NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.2.2 | 0xa42a0e01, 0x7b80, 0x46e4, 0xa7, 0x57, 0x86, 0xc4, 0xec, 0x53, 0xf4, 0xe4 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.BuildDevicePath – BuildDevicePath() with invalid port. | 1. Call BuildDevicePath() with with Port being not available and other parameters valid. The return code should be EFI\_NOT\_FOUND |
| 5.7.8.2.3 | 0x322f00c1, 0xf6bf, 0x41ed, 0xae, 0xfd, 0xaa, 0xc4, 0x8f, 0x3f, 0xa9, 0xdb | EFI\_ATA\_PASS\_THRU\_PROTOCOL.BuildDevicePath – BuildDevicePath() with invalid device. | 1. Call BuildDevicePath() with with PortMultiplierPort being not available and other parameters valid. The return code should be EFI\_NOT\_FOUND |
| 5.7.8.2.4 | 0x230d44b6, 0xce53, 0x42b6, 0x9b, 0xa6, 0x3d, 0x11, 0x5d, 0x49, 0x2b, 0x33 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.BuildDevicePath – BuildDevicePath() with available device, device path should be created. | 1. Call BuildDevicePath() with with Port and PortMultiplierPort identifying an available device. The return code should be EFI\_SUCCESS |

### GetDevice()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.3.1 | 0x0f2f0849, 0x690b, 0x48ea, 0x8e, 0x35, 0x64, 0x36, 0x3f, 0xaa, 0x8c, 0x5c | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetDevice – GetDevice() with NULL device path. | 1. Call GetDevice() with the DevicePath being NULL. The Port and PortMultiplierPort are valid, the return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.3.2 | 0x7602bd0a, 0x1c05, 0x49e5, 0xa8, 0xd4, 0xc6, 0x3, 0x8c, 0x43, 0x9a, 0xf9 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetDevice – GetDevice() with NULL port. | 1. Call GetDevice() with the DevicePath being valid. The Port being NULL, PortMultiplierPort is valid, the return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.3.3 | 0x2b64d49a, 0x1f1b, 0x4610, 0xa2, 0x66, 0xde, 0x32, 0xa1, 0x7, 0x2b, 0x32 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetDevice – GetDevice() with NULL device. | 1. Call GetDevice() with the DevicePath being valid. The Port being valid, PortMultiplierPort is NULL, the return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.3.4 | 0x07830eaf, 0xba30, 0x4224, 0xab, 0xc4, 0x42, 0x42, 0x8b, 0x7a, 0x4, 0x5d | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetDevice – GetDevice() with invalid device path. | 1. Call GetDevice() with the DevicePath being of type ‘End Device Path’. The Port and PortMultiplierPort are valid, the return code should be EFI\_UNSUPPORTED or EFI\_NOT\_FOUND |
| 5.7.8.3.5 | 0x7ea827e4, 0x522c, 0x44b6, 0x99, 0xe4, 0x25, 0x93, 0x19, 0xba, 0xcc, 0x57 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetDevice – GetDevice() with correct device path. The device represented by this device path should be achieved. | 1. Call GetDevice() with the DevicePath that representing one available device. The Port and PortMultiplierPort of the device should be got and the return code should be EFI\_SUCCESS |

### ResetPort()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.4.1 | 0x5e0080d2, 0x4065, 0x4b92, 0xa4, 0x61, 0x52, 0x49, 0xf3, 0x8f, 0xaf, 0x55 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.ResetPort – ResetPort() with available port. | 1. Call ResetPort() with Port as one available port. The return code should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

### ResetDevice()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.5.1 | 0x206ae2fc, 0x3f34, 0x4afe, 0x82, 0x44, 0x40, 0x27, 0x57, 0x60, 0x98, 0x31 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.ResetDevice – ResetDevice() with invalid port. | 1. Call ResetDevice() with Port being invalid and PortMultiplierPort as zero. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.5.2 | 0xd9378047, 0x9b4b, 0x4abf, 0xaa, 0x6b, 0xe3, 0xcd, 0xb6, 0xc4, 0x19, 0x39 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.ResetDevice – ResetDevice() with invalid device. | 1. Call ResetDevice() with Port being valid and PortMultiplierPort being invalid. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.8.5.3 | 0xa400bc81, 0x9e48, 0x469b, 0xa0, 0x97, 0xd0, 0x8, 0x45, 0xb6, 0x69, 0xe8 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.ResetDevice – ResetDevice() with available device. | 1. Call ResetDevice() with Port and PortMultiplierPort as one available device. The return code should be EFI\_SUCCESS or EFI\_UNSUPPORTED |

### GetNextDevice()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.6.1 | 0xc564ad60, 0x32ce, 0x4f5f, 0x86, 0x7a, 0xef, 0x9f, 0xef, 0x5e, 0x94, 0xa2 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextDevice – GetNextDevice() with invalid device number. | 1. Call GetNextPort() with Port as 0xFFFF to start iterate ports.  2. Call GetNextDevice() with Port as one available port and PortMultiplierPort being invalid.  3. The iteration should ended up with a return code EFI\_INVALID\_PARAMETER. |
| 5.7.8.6.2 | 0x0e5c99ba, 0xd36c, 0x4775, 0x91, 0x31, 0x76, 0x6a, 0x6e, 0x8c, 0x53, 0x6b | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextDevice – GetNextDevice() should return invalid parameter if PortMultiplierPort is not 0xFFFF and PortMultiplierPort was not returned on a previous call. | 1. Call GetNextPort()when PortMultiplierPort is not 0xFFFF and PortMultiplierPort was not returned on a previous call.  2. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.6.3 | 0xd89631f3,  0xbd59,  0x4959, 0xba,  0x10, 0x3f,  0xa9, 0x94,  0x62, 0x02, 0xdf | EFI\_ATA\_PASS\_THRU\_PROTOCOL.GetNextDevice – GetNextDevice()  could iterate all available  devices on one port. | 1.GetNextPort() with Port as  0xFFFFto start iterate ports.  2. Call GetNextPort() with Port  as one available port and  PortMultiplierPort as 0xFFFF to  start iterate devicess.  3. The iteration should ended up with a return code EFI\_NOT\_FOUND. |

### PassThru()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.7.1 | 0x7d6fcacd, 0x3463, 0x41c8, 0xa5, 0x1, 0xa2, 0x99, 0x40, 0x44, 0x59, 0xb8 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with Non-IoAligned InDataBuffer. | 1. Call PassThru()with Event being NULL Packet.InDataBuffer set to be not aligned with EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.7.2 | 0x745295b5, 0xc36b, 0x4b23, 0xaf, 0xc7, 0xd4, 0xcc, 0xc0, 0x1d, 0xb6, 0x4f | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with Non-IoAligned Asb. | 1. Call PassThru()with Event being NULL Packet.Asb set to be not aligned with EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.7.3 | 0xaf9489a2, 0x23f3, 0x4962, 0x9d, 0x8f, 0xd2, 0xc0, 0xa7, 0xcb, 0x2f, 0xb1 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with Non-IoAligned OutDataBuffer. | 1. Call PassThru()with Event being NULL Packet.OutDataBuffer set to be not aligned with EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.7.4 | 0xd584b074, 0xa8cd, 0x438c, 0xb5, 0x18, 0xb1, 0xec, 0x59, 0xfa, 0xc8, 0xee | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with invalid port. | 1. Call PassThru()with Event being NULL Packet contents valid, Port as invalid. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.7.5 | 0x4cd806fd, 0x3742, 0x44e9, 0xa6, 0x19, 0xdf, 0x2d, 0x37, 0x47, 0xe7, 0x8f | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with invalid device. | 1. Call PassThru()with Event being NULL Packet contents valid, Port as valid, PortMultiplierPort being invalid. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.7.8.7.6 | 0xa648ab45, 0x898b, 0x4b44, 0xab, 0x9e, 0x24, 0x6b, 0xc6, 0x49, 0xc9, 0xfd | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() with too long buffer size. | 1. Call PassThru()with Event being NULL Packet.InDataBufferLength being 0xFFFFFFFF, Port and PortMultiplierPort being valid. The return code should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.7.8.7.7 | 0xe5c8314a, 0xa2b8, 0x42d2, 0xb1, 0x27, 0x97, 0xad, 0x78, 0x74, 0xd5, 0x30 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() sends ATA command ‘Identify Device’ to an available device with several valid EFI\_ATA\_PASS\_THRU\_COMMAND\_PACKET and EFI\_EVENT inputs. | Below are the three possible separate test procedure that corresponds to this test assertion  1. Call PassThru()with Port and PortMultiplierPort representing one available device. The Packet.Acb.AtaCommand is set to be the value of ‘Identify Device’ command 0xEC, Packet.Asb and Packet.InDataBuffer are allocated and adjusted according to EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign value, Packet.Timeout set to be 2 seconds, Packet.Length set to be block granularity, Packet.InTransferLength being 1 to indicate one block, Packet.Protocol being EFI\_ATA\_PASS\_THRU\_PROTOCOL\_PIO\_DATA\_IN. The return code should be EFI\_SUCCESS and Packet.Asb.AtaStatus should reflect the ATA command has been executed successfully. |
|  |  |  | 2. Call PassThru()with Port and PortMultiplierPort representing one available device. The Packet.Acb.AtaCommand is set to be the value of ‘Identify Device’ command 0xEC, Packet.Asb and Packet.InDataBuffer are allocated and adjusted according to EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign value, Packet.Timeout set to be 2 seconds, Packet.Length set to be byte granularity, Packet.InTransferLength being 512 to indicate one block, Packet.Protocol being EFI\_ATA\_PASS\_THRU\_PROTOCOL\_PIO\_DATA\_IN. The return code should be EFI\_SUCCESS and Packet.Asb.AtaStatus should reflect the ATA command has been executed successfully. |
|  |  |  | 3. Call PassThru()with Port and PortMultiplierPort representing one available device. Event being a callback-TPL event with a notification function that updates a global vairable. By checking EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.Attributes to determine whether non-blocking IO is supported. The Packet.Acb.AtaCommand is set to be the value of ‘Identify Device’ command 0xEC, Packet.Asb and Packet.InDataBuffer are allocated and adjusted according to EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.IoAlign value, Packet.Timeout set to be 2 seconds, Packet.Length set to be block granularity, Packet.InTransferLength being 1 to indicate one block, Packet.Protocol being EFI\_ATA\_PASS\_THRU\_PROTOCOL\_PIO\_DATA\_IN. If non-blocking mode is not supported, the global variable should keep unchanged. The return code should be EFI\_SUCCESS and Packet.Asb.AtaStatus should reflect the ATA command has been executed successfully. |
| 5.7.8.7.8 | 0xeb7841b9, 0x2a4a, 0x45b1, 0xa9, 0x9f, 0x67, 0x7a, 0xb4, 0xcd, 0x79, 0xa2 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() returns EFI\_SUCCESS. | 1. Call PassThru()with Event being NULL Packet.Length set to be block granularity. The return code should be EFI\_SUCCESS. |
| 5.7.8.7.9 | 0x9662da7d, 0x6f98, 0x4051, 0xb1, 0x87, 0x85, 0xb0, 0xf4, 0xb5, 0x3a, 0xf1 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() returns EFI\_SUCCESS. | 1. Call PassThru()with Event being NULL Packet.Length set to be byte granularity. The return code should be EFI\_SUCCESS. |
| 5.7.8.7.10 | 0x5787ed6f, 0xa984, 0x4b15, 0xb2, 0xf3, 0xa0, 0xd1, 0xb8, 0xce, 0x61, 0x89 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() returns EFI\_SUCCESS. | 1. Call PassThru()with Event being a callback-TPL event with a notification function that updates a global variable. By checking EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.Attributes to determine whether non-blocking IO is supported. If supported, the global variable will be updated in the event’s notification function and the return code should be EFI\_SUCCESS. |
| 5.7.8.7.11 | 0x202b3252, 0x5c89, 0x41bf, 0x9b, 0x42, 0x94, 0x58, 0x56, 0xc8, 0xcc, 0x7e | EFI\_ATA\_PASS\_THRU\_PROTOCOL.PassThru – PassThru() returns EFI\_SUCCESS. | 1. Call PassThru()with Event being a  callback-TPL event with a notification  function that updates a global variable.  Packet.Length set to block  granularity. By checking  EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode.Attributes to determine whether nonblockingIO is supported. If supported, the global variable will be updated in the event’s notification function and the return code should be EFI\_SUCCESS. |

### Mode Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.8.8.1 | 0xdcb2c498, 0x4d12, 0x4351, 0xb4, 0xd7, 0x85, 0x33, 0x2c, 0x51, 0xd8, 0xf7 | EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode – Mode attributes should be physical, logical or both. | 1. Check Mode.Attributes to be EFI\_ATA\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL , EFI\_ATA\_PASS\_THRU\_ATTRIBUTES\_LOGICAL or EFI\_ATA\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL | EFI\_ATA\_PASS\_THRU\_ATTRIBUTES\_LOGICAL |
| 5.7.8.8.2 | 0x8ccb89ab, 0x2bbe, 0x4766, 0xa9, 0x5, 0x2d, 0x1e, 0xa6, 0xb4, 0x54, 0x6b | EFI\_ATA\_PASS\_THRU\_PROTOCOL.Mode – Mode IoAlign should be 0, 1 or a power of 2. | Check Mode.IoAlign to be 0, 1 or a power of 2. |

## EFI\_BLOCK\_IO2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_BLOCK\_IO2\_PROTOCOL Section.

### ReadBlocksEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.9.1.1 | 0x36a2dbdb, 0x6d88, 0x4807,0xaf, 0xa5, 0x7b, 0xef, 0xc4, 0xb1, 0xfe, 0xaa | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_MEDIA\_CHANGED with invalid MediaID | 1. Sync & Async Call ReadBlockEx() with invalid MediaID. The return code should be EFI\_MEDIA\_CHANGED |
| 5.7.9.1.2 | 0x45d515fd, 0xa64f, 0x47bd, 0x9a, 0x84, 0x1f, 0xe4, 0x86, 0x6a, 0x32, 0x8a | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_BAD\_BUFFER\_SIZE with bad blocksize | 1.Sync & Asnyc Call ReadblockEx()with BufferSize not being a multiple of the intrinsic block size of the device. The return code should be EFI\_BAD\_BUFFER\_SIZE |
| 5.7.9.1.3 | 0x896937aa, 0x65ba, 0x4354, 0xab, 0xf7, 0xd8, 0x4f, 0xe8, 0x9f, 0xbc, 0x8 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_INVALID\_PARAMETER with invalid LBA parameter | 1. Sync & Async Call ReadblockEx() call with invalid LBA parameter. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.1.4 | 0xd54c2dc4, 0x8fed, 0x4ce1, 0xac, 0x7b, 0xc6, 0x7a, 0x48, 0x4e, 0x2, 0x7 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_INVALID\_PARAMETER with return data which are smaller thanBufferSize passed in | 1. Sync & Async Call ReadblockEx() returns data which are smaller than BufferSize passed in. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.1.5 | 0xc75d447c, 0x29c5, 0x4882, 0x80, 0xc5, 0x42, 0x67, 0xe0, 0xa2, 0x5c, 0xfc | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_INVALID\_PARAMETERwith block alignment should be power of 2 | 1.Sync & Async Call ReadblockEx() block alignment should be power of 2. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.1.6 | 0x1ce01e1c, 0xedde, 0x4a37, 0x96, 0x2f, 0x3a, 0x32, 0x8a, 0x54, 0xc1, 0xf5 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_NO\_MEDIA when read from device without media present in the device | 1.Sync & Async Call ReadblockEx()from device without media present in the device. The return code should beEFI\_NO\_MEDIA |
| 5.7.9.1.7 | 0x47b8309d, 0xf783, 0x4679, 0x95, 0xbb, 0x47, 0x58, 0x10, 0x7, 0x2, 0x7c | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Async call with proper parameter from valid media | 1. Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.8 | 0x7abe441a, 0x7118, 0x4394, 0x81, 0xb8, 0xb9, 0x22, 0xa2, 0x87, 0xd2, 0x1f | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Async call with proper parameter from valid media | 1. Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.9 | 0x3167dc14, 0xcf85, 0x4158, 0x9c, 0xec, 0x7a, 0x3, 0xdd, 0xc, 0xfd, 0xa1 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Async call with proper parameter from valid media. The async registered events haven’t be signaled. | 1. Async Call ReadblockEx() from device with proper parameter from valid media. All events should be signaled successfully. |
| 5.7.9.1.10 | 0xc4726d6f, 0x148e, 0x4a06, 0xa0, 0x92, 0xd4, 0x6b, 0xa8, 0x7c, 0x16, 0x63 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Sync call with proper parameter from valid media | 1. Sync Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.11 | 0x6e61c6ee, 0x2328, 0x45c5, 0x99, 0xe9, 0xcb, 0x66, 0x99, 0xcf, 0x56, 0xe | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESSwhen Batch Async call with proper parameter from valid media | 1. Batch Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.12 | 0x639fca8b, 0x394e, 0x4c1a, 0x81, 0x15, 0xc2, 0x55, 0xc6, 0xbd, 0x4b, 0x95 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter from valid media. Async Read Call failed | 1. Mixed Sync & Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.13 | 0x6d90ad93, 0xf492, 0x4a10, 0xa0, 0xbc, 0xb5, 0x30, 0x54, 0x36, 0x28, 0x54 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter from valid media. | 1. Mixed Sync & Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.1.14 | 0x7ce315f8, 0xb5d1, 0x4691, 0x92, 0x63, 0x66, 0x4b, 0xe0, 0x70, 0x85, 0x47 | EFI\_BLOCK\_IO2\_PROTOCOL. ReadBlocksEx – ReadBlocksEx() returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter from valid media. Sync Read Call failed | 1. Mixed Sync & Async Call ReadblockEx() from device with proper parameter from valid media. The return code should be EFI\_SUCCESS |

### WriteBlocksEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.9.2.1 | 0xbe0e99b7, 0x62a0, 0x45ff, 0x92, 0x11, 0x55, 0xe7, 0xe4, 0xda, 0xa, 0x86 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx – WriteBlocksEx() returns EFI\_MEDIA\_CHANGED with invalidMediaID | 1. Sync & Async Call WriteBlockEx() with invalid MediaID. The return code should be EFI\_MEDIA\_CHANGED |
| 5.7.9.2.2 | 0x7253b26e, 0xbb34, 0x49fa, 0x92, 0xe, 0xfa, 0x5f, 0xef, 0xa6, 0xf5, 0x5a | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx – WriteBlocksEx() returns EFI\_BAD\_BUFFER\_SIZE with bad blocksize | 1.Sync & Asnyc Call WriteBlocksEx()with BufferSize not being a multiple of the intrinsic block size of the device. The return code should be EFI\_BAD\_BUFFER\_SIZE |
| 5.7.9.2.3 | 0x34009928, 0x8f89, 0x42d3, 0xb0, 0x20, 0x9f, 0x7f, 0x54, 0xef, 0x75, 0xe2 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx – WriteBlocksEx() returns EFI\_INVALID\_PARAMETERwith invalidLBA parameter | 1. Sync & Async Call WriteBlocksEx() call with invalid LBA parameter. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.2.4 | 0x3ca09c43, 0xfd3f, 0x4e88, 0x92, 0xc3, 0x97, 0xe6, 0xe1, 0x76, 0xb7, 0x3c | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_INVALID\_PARAMETER with block alignment should be power of 2 | 1.Sync & Async Call WriteBlocksEx() block alignment should be power of 2. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.2.5 | 0x27c8f6f8, 0x984d, 0x49ff, 0xa6, 0xab, 0xf9, 0xc1, 0x21, 0x39, 0x2f, 0x7e | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_INVALID\_PARAMETERwith unaligned data buffer | 1.Sync & Async Call WriteBlocksEx() unaligned data buffer. The return code should be EFI\_INVALID\_PARAMETER |
| 5.7.9.2.6 | 0xf3807d6, 0x930e, 0x4ea2, 0xaa, 0xd9, 0x54, 0xc6, 0x73, 0xe9, 0xb5, 0x51 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_NO\_MEDIA when write to device without media present in the device | 1.Sync & Async Call WriteBlocksEx() to device without media present in the device. The return code should be EFI\_NO\_MEDIA |
| 5.7.9.2.7 | 0xb9c4f106, 0x6658, 0x430f, 0x87, 0xcb, 0xe0, 0xde, 0x2c, 0xbf, 0xb9, 0x5c | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() when write to a read-only device | 1.Sync & Async Call WriteBlocksEx() to read-only device. The return code should be EFI\_NO\_MEDIA |
| 5.7.9.2.8 | 0x1a0cf746, 0xe5bf, 0x4b0d, 0x84, 0xf, 0x2e, 0x2b, 0xfe, 0x94, 0xdc, 0xdc | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx – WriteBlocksEx() returns EFI\_SUCCESS when Async call with proper parameter to valid media | 1. Async Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.9 | 0xf8a6b15d, 0xc85b, 0x4b59, 0xbe, 0x7f, 0x2f, 0x84, 0xf9, 0x77, 0xe, 0x4a | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx()returns EFI\_SUCCESS when Async call with proper parameter to valid media | 1. Async Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.10 | 0x964c1c44, 0xb693, 0x43ca, 0x88, 0xce, 0xb5, 0x34, 0xa6, 0x42, 0xff, 0x80 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_SUCCESSwhen Async call with proper parameter to valid media. The async registered events haven’t be signaled. | 1. Async Call WriteBlocksEx() to device with proper parameter to valid media. All events should be signaled successfully. |
| 5.7.9.2.11 | 0xad588be4, 0x138f, 0x4874, 0x92, 0xf, 0xef, 0xa1, 0xd3, 0x79, 0xe5, 0x17 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_SUCCESS when Sync call with proper parameter to valid media | 1. Sync Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.12 | 0x9e70ff56, 0x7e0e, 0x404f, 0xab, 0x10, 0x7f, 0x6a, 0x1e, 0x1f, 0xbb, 0xf7 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returnsEFI\_SUCCESS when Batch Async call with proper parameter to valid media | 1. Batch Async Call **WriteBlocksEx()** to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.13 | 0x6d41db68, 0xffe3, 0x4676, 0x89, 0xba, 0xe4, 0xc8, 0xdb, 0xc6, 0x4f, 0xcc | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter to valid media. Async Read Call failed | 1. Mixed Sync & Async Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.14 | 0xe532b760, 0xd561, 0x43be, 0xa5, 0x51, 0x62, 0xb5, 0x63, 0x16, 0x9f, 0xbc | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter to valid media. | 1. Mixed Sync & Async Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |
| 5.7.9.2.15 | 0x11a6bb4a, 0xa943, 0x4006, 0xbc, 0xb0, 0x57, 0x6c, 0xb8, 0x68, 0xae, 0x95 | EFI\_BLOCK\_IO2\_PROTOCOL. WriteBlocksEx– WriteBlocksEx() returns EFI\_SUCCESSwhen Mixed Sync & Async call with proper parameter to valid media. Sync Read Call failed | 1. Mixed Sync & Async Call WriteBlocksEx() to device with proper parameter to valid media. The return code should be EFI\_SUCCESS |

### FlashBlocksEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.9.3.1 | 0x457168d, 0x1ded, 0x4c01, 0xb7, 0x84, 0xa7, 0xa9, 0xd6, 0xaa, 0xb, 0x81 | EFI\_BLOCK\_IO2\_PROTOCOL. FlashBlocksEx– FlashBlocksEx() returns EFI\_NO\_MEDIA with a device with no media | 1. Sync & Async Call FlashBlocksEx() with no Media on device The return code should be EFI\_NO\_MEDIA |
| 5.7.9.3.2 | 0x6a1de6c8, 0xe02b, 0x4a50, 0x80, 0x6d, 0x9a, 0x51, 0x5c, 0xc1, 0xe4, 0xe3 | EFI\_BLOCK\_IO2\_PROTOCOL. FlashBlocksEx– FlashBlocksEx() returns EFI\_WRITE\_PROTECTED with a read-only device with media | 1. Sync & Async Call FlashBlocksEx() with a read-only media on device The return code should be EFI\_WRITE\_PROTECTED |
| 5.7.9.3.3 | 0xc97de60f, 0x87cf, 0x45b9, 0x98, 0x9b, 0x8, 0x9d, 0x3, 0xe0, 0xf3, 0xf6 | EFI\_BLOCK\_IO2\_PROTOCOL. FlashBlocksEx– FlashBlocksEx() returns EFI\_SUCCESS with a right device with media & all event signaled should be signaled | 1. Async Call FlashBlocksEx() with a media on a right device The return code should be EFI\_SUCCESS |

### Media Info Check

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.9.4.1 | 0x8251405e, 0xe716, 0x4ecd, 0x83, 0x55, 0xc9, 0xf5, 0x60, 0x4b, 0xf2, 0x4d | EFI\_BLOCK\_IO2\_PROTO  COL. Media–  LogicalBlocksPerPhysicalBlock should be 0 when LogicalPartition is TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION2. | LogicalBlocksPerPhysicalBlock should be 0 when LogicalPartition is TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION2. |
| 5.7.9.4.2 | 0x6739b945, 0x2498, 0x4a1c, 0x87, 0xb0, 0x85, 0xa4, 0xbe, 0xf6, 0x53, 0x7c | EFI\_BLOCK\_IO2\_PROTO  COL. Media–  OptimalTransferLengthGranularity should be 0 when LogicalPartition is TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION3. | OptimalTransferLengthGranularity should be 0 when LogicalPartition is TRUE and Revision is greater than or equal to EFI\_BLOCK\_IO\_PROTOCOL\_REVISION3. |

## EFI\_STORAGE\_SECURITY\_COMMAND\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_STORAGE\_SECURITY\_COMMAND\_PROTOCOL Section.

### ReceiveData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.10.1.1 | 0x35749acf, 0xeed8, 0x4230, 0xbc, 0x18, 0xde, 0x1f, 0x8b, 0x7c, 0xfa, 0xef | EFI\_STORAGE\_SECURITY\_ COMMAND.ReceiveData – ReceiveData() should not return EFI ERROR. When PayloadBufferSize is too small | Call ReceiveData () with PayloadBufferSize =10 & TCG command 0 to return security protocol info  The return status should not be EFI Error Status |
| 5.7.10.1.2 | 0x8e742768, 0x229a, 0x4aaa, 0xb5, 0x9d, 0xc9, 0xb2, 0x6e, 0x32, 0x44, 0x58 | EFI\_STORAGE\_SECURITY\_ COMMAND.ReceiveData – ReceiveData() should return EFI\_MEDIA\_CHANGED. When MediaID is not correct | Call ReceiveData () with Wrong MediaID & TCG command 0 to return security protocol info  The return status should be EFI\_MEDIA\_CHANGED |
| 5.7.10.1.3 | 0x2fe7a174, 0xa8a1, 0x45b3, 0x91, 0x5c, 0x1e, 0xd, 0x59, 0x13, 0x17, 0xa6 | EFI\_STORAGE\_SECURITY\_ COMMAND.ReceiveData – ReceiveData() should return EFI\_INVALID\_PARAMETER. When PayloadBuffer is NULL | Call ReceiveData() with NULL PayloadBuffer & TCG command 0 to return security protocol info  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.10.1.4 | 0xa55d41c7, 0x0ca4, 0x4ab1, 0xaa, 0x7b, 0x82, 0xee, 0x74, 0x30, 0xcf, 0x9d | EFI\_STORAGE\_SECURITY\_ COMMAND.ReceiveData – ReceiveData() should return EFI\_INVALID\_PARAMETER. When PayloadTransferSize is not NULL | Call ReceiveData() with NULL PayloadTransferSize & TCG command 0 to return security protocol info  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.10.1.5 | 0xcc0223b7, 0xf088, 0x4ea1, 0xa6, 0xcb, 0x73, 0x93, 0x8, 0x4e, 0x9f, 0xf2 | EFI\_STORAGE\_SECURITY\_ COMMAND.ReceiveData – ReceiveData()should return EFI\_NO\_MEDIA. When There is no media present | Call ReceiveData () with TCG command 0 to return security protocol info on a no media device  The return status should be EFI\_NO\_MEDIA. |

### SendData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.10.2.1 | 0x2e6fddd2, 0xce3b, 0x49fb, 0xa1, 0xd4, 0x43, 0xa2, 0x99, 0xf7, 0xec, 0xc2 | EFI\_STORAGE\_SECURITY\_ COMMAND.SendData – SendData() should return EFI\_MEDIA\_CHANGED. When MediaIDis not correct | Call SendData ()with Wrong MediaID & TCG command 0 to return security protocol info  The return status should be EFI\_MEDIA\_CHANGED |
| 5.7.10.2.2 | 0x2323be1a, 0xf73a, 0x46d5, 0xa2, 0x24, 0xbf, 0x9a, 0x7f, 0x6a, 0x53, 0x96 | **E**FI\_STORAGE\_SECURITY\_ COMMAND.SendData – SendData() should return EFI\_INVALID\_PARAMETER. When PayloadBuffer is NULL | Call ReceiveData () with NULL PayloadBuffer& TCG command 0 to return security protocol info  The return status should be EFI\_INVALID\_PARAMETER |
| 5.7.10.2.3 | 0x68acfb97, 0xcec1, 0x4015, 0xac, 0xca, 0x64, 0xad, 0x8c, 0xde, 0x5e, 0x71 | EFI\_STORAGE\_SECURITY\_ COMMAND.SendData – SendData() should return EFI\_NO\_MEDIA. When There is no media present | Call SendData () with TCG command 0 to return security protocol info on a no media device  The return status should be EFI\_NO\_MEDIA. |

## EFI\_DISK\_IO2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DISK\_IO2\_PROTOCOL Section.

### Cancel()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.11.1.1 | 0xd8cc30e4, 0xaac4, 0x415b, 0xb0, 0x12, 0x27, 0x13, 0x29, 0x8d, 0x0f, 0xfa | EFI\_DISK\_IO2\_PROTOCOL.Cancel - Cancel () returns EFI\_SUCCESS. | Call Cancel (),the return status should be EFI\_SUCCESS. |

### ReadDiskEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.11.2.1 | 0x9b457a7a, 0x9f63, 0x4627, 0x80, 0x6a, 0xfe, 0x39, 0x30, 0x9e, 0x29, 0xec | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call ReadDiskEx()with proper parameter, the return status should be  EFI\_SUCCESS. If possible, the data should be same as the result from ReadDisk(). |
| 5.7.11.2.2 | 0xac2b9d8c, 0xc35c, 0x4788, 0xa9, 0xcf, 0xb2, 0x93, 0x2e, 0x7c, 0xe2, 0x85 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call ReadDiskEx()with proper parameter, the return status should be  EFI\_SUCCESS. The ReadFaillist should be empty. |
| 5.7.11.2.3 | 0xe3aa41fc, 0x1275, 0x4d74, 0x80, 0x97, 0x85, 0x27, 0x5c, 0xc6, 0x22, 0x5c | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call ReadDiskEx()with proper parameter, the return status should be  EFI\_SUCCESS. The ReadExecuteList should be empty. |
| 5.7.11.2.4 | 0x979b7b0d, 0x22bb, 0x4507, 0x9d, 0x69, 0x21, 0xd1, 0xb8, 0x50, 0x6c, 0x9e | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Sync call with proper parameter. | Sync Call ReadDiskEx()with proper parameter, the return status should be  EFI\_SUCCESS.  If possible, the data should be same as the result from ReadDisk(). |
| 5.7.11.2.5 | 0xe09f04a1, 0x00ee,  0x4a48, 0x90, 0x5f, 0x2d, 0x23, 0xd2, 0xa6, 0x71, 0x2e | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Batch Async call with proper parameter. | Batch Async Call ReadDiskEx()with proper parameter, the return status should be EFI\_SUCCESS. If possible, the data should be same as the result from ReadDisk(). |
| 5.7.11.2.6 | 0xe6172d46, 0x3648, 0x4677, 0x8d, 0xde, 0xb1, 0xfd, 0x10, 0x6a, 0xe5, 0xe6 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter. | Mixed Sync & Async Call ReadDiskEx() with proper parameter, the return status should be EFI\_SUCCESS |
| 5.7.11.2.7 | 0x8048d7d8, 0x3e99, 0x4a32, 0x87, 0xac, 0x1f, 0x61, 0x3c, 0xf9, 0x13, 0x9c | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter. Async call failed. | Mixed Sync & Async Call ReadDiskEx()with proper parameter, the return status should be EFI\_SUCCESS. The MixReadFaillist should be empty. |
| 5.7.11.2.8 | 0x6e6179d0, 0xfbe3, 0x4ef8, 0xb5, 0xed, 0x1b, 0xb1, 0xc0, 0xe7, 0x69, 0xb0 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter.  Async Read Call failed | Mixed Sync & Async Call ReadDiskEx()with proper parameter, the return status should be EFI\_SUCCESS. The MixReadExecutelist should be empty. |
| 5.7.11.2.9 | 0x870cf02a, 0xb573, 0x40d6,0x91, 0x70, 0x8d, 0x83, 0x3d, 0x45, 0xf4, 0xc3 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter.  Sync Read Call success. | Mixed Sync & Async Call ReadDiskEx()with proper parameter, the return status should be EFI\_SUCCESS. The data in SyncReadList should be same as the output from Async read. |
| 5.7.11.2.10 | 0xb491381b, 0xf841, 0x44fb, 0x94, 0x62, 0xd5, 0x5c, 0x30, 0xde, 0xb1, 0x85 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_SUCCESS when Mixed Sync & Async call with proper parameter.  Sync Read Call failed. | Mixed Sync & Async Call ReadDiskEx()with proper parameter, the return status should be EFI\_SUCCESS. The SyncReadFailList should be empty. |
| 5.7.11.2.11 | 0xfb7b94af, 0x0368, 0x4a66, 0xaf, 0x52, 0x31, 0x00, 0x8a, 0xf1, 0xd5, 0xc7 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_MEDIA\_CHANGED when Sync & Async Read disk with MediaId not being the id for the current media in the device. | Sync & Async call ReadDiskEx() with MediaId not being the id for the current media in the device, the return status should be EFI\_MEDIA\_CHANGED. |
| 5.7.11.2.12 | 0x2e9486a6, 0x51c3, 0x4da7,0xa4, 0x81, 0xab, 0xae, 0x72, 0x35, 0xe9, 0x43 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_MEDIA\_CHANGED when Sync & Async Read disk with invalid offset. | Sync & Async call ReadDiskEx() with invalid offset, the return status should be EFI\_INVALID\_PARAMETERS. |
| 5.7.11.2.13 | 0x8851b5ee, 0x51ea, 0x4241,0xb8, 0x52, 0x40, 0xbc, 0x49, 0x1c, 0x62, 0x31 | EFI\_DISK\_IO2\_PROTOCOL.ReadDiskEx - ReadDiskEx () returns EFI\_MEDIA\_CHANGED when Sync & Async Read disk from device without media present in the device. | Sync & Async call ReadDiskEx()from device without media present in the device, the return status should be EFI\_NO\_MEDIA. |

### WriteDiskEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.11.3.1 | 0x3a74e001, 0x817a, 0x45b2, 0xb3, 0x12, 0x3d, 0x12, 0xbb, 0x36, 0x41, 0xc0 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call WriteDiskEx () with proper parameter, the return status should be  EFI\_SUCCESS. If possible, the date read from the same address should be same as the date written in. |
| 5.7.11.3.2 | 0xeeb0a39d, 0x6c51, 0x4152, 0xb5, 0x74, 0xa6, 0xec, 0xda, 0x4c, 0xdf, 0x80 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_SUCCESS when Async call with proper parameter.  Async call failed. | Async Call WriteDiskEx () with proper parameter, the return status should be  EFI\_SUCCESS. The WriteFailList should be empty. |
| 5.7.11.3.3 | 0x70b3b8f6, 0x91cf, 0x47a5, 0xbc, 0x12, 0x09, 0xe7, 0xb8, 0x27, 0x5d, 0x41 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call WriteDiskEx ()with proper parameter, the return status should be EFI\_SUCCESS. The WriteExecuteList should be empty. |
| 5.7.11.3.4 | 0x5107009f, 0xe732, 0x45ad, 0xbe, 0x8d, 0xe6, 0x79, 0xb8, 0x76, 0x6a, 0xf3 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_SUCCESS when Sync call with proper parameter. | Sync Call WriteDiskEx ()with proper parameter, the return status should be  EFI\_SUCCESS. If possible, the date read from the same address should be same as the date written in. |
| 5.7.11.3.5 | 0x72023591, 0x1ad7, 0x468c, 0xb4, 0x75, 0x31, 0xa4, 0x1b, 0x9d, 0x0c, 0x78 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_SUCCESS when Batch Async call with proper parameter. | Batch Async Call WriteDiskEx ()with proper parameter, the return status should be  EFI\_SUCCESS. |
| 5.7.11.3.6 | 0x75a4a0e7, 0x5d73, 0x4809, 0xa4, 0x0e, 0x20, 0x3a, 0x0f, 0xcf, 0x09, 0x94 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_MEDIA\_CHANGED when Sync & Async Write disk with MediaId not being the id for the current media in the device. | Sync & Async Call WriteDiskEx () with MediaId not being the id for the current media in the device, the return status should be  EFI\_MEDIA\_CHANGED. |
| 5.7.11.3.7 | 0xe0540275, 0x032e, 0x4507, 0xb3, 0x03, 0x01, 0xc5, 0xbf, 0x9c, 0xe1, 0x56 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_INVALID\_PARAMETERS when Sync & Async Write disk with invalid Offset & BufferSize. | Sync & Async Call WriteDiskEx () with invalid Offset & BufferSize, the return status should be  EFI\_INVALID\_PARAMETERS. |
| 5.7.11.3.8 | 0x8688e7ad, 0x4f3e, 0x432e, 0xaf, 0x3b, 0x03, 0x93, 0x6b, 0xe3, 0xe5, 0xa6 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_WRITE\_PROTECTED when Sync & Async Write disk to a write-protected device. | Sync & Async Call WriteDiskEx () to a write-protected device, the return status should be EFI\_WRITE\_PROTECTED. |
| 5.7.11.3.9 | 0xee9fa363, 0x2009, 0x429f, 0x92, 0x0b, 0x60, 0x3b, 0xc4, 0xdc, 0x6e, 0x64 | EFI\_DISK\_IO2\_PROTOCOL.WriteDiskEx - WriteDiskEx () returns EFI\_NO\_MEDIA when Sync & Async Write disk without media present in the device. | Sync & Async Call WriteDiskEx () without media present in the device, the return status should be EFI\_NO\_MEDIA. |

### FlushDiskEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.11.4.1 | 0x681169b1, 0xb5eb, 0x4cb0, 0x91, 0xc6, 0xfd, 0x2d, 0x9f, 0xe8, 0x24, 0x50 | EFI\_DISK\_IO2\_PROTOCOL.FlushDiskEx - FlushDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call FlushDiskEx ()with proper parameter, the return status should be  EFI\_SUCCESS. |
| 5.7.11.4.2 | 0x2cf71e16, 0xa399, 0x4a8c, 0xa2, 0xf8, 0x09, 0x5c, 0x9d, 0xcd, 0x25, 0xbd | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_SUCCESS when Async call with proper parameter.  Async call failed. | Async Call FlushDiskEx ()with proper parameter, the return status should be  EFI\_SUCCESS. The FlushFailList should be empty. |
| 5.7.11.4.3 | 0x48a3fb9b, 0xd65f, 0x44fe, 0x94, 0x29, 0x14, 0xa6, 0x7b, 0x94, 0x0d, 0xda | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_SUCCESS when Async call with proper parameter. | Async Call FlushDiskEx ()with proper parameter, the return status should be EFI\_SUCCESS. The FlushExecuteList should be empty. |
| 5.7.11.4.4 | 0x0003470c, 0x15a7, 0x468a, 0xa2, 0xb1, 0xd1, 0x03, 0x8c, 0x81, 0x70, 0xb5 | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_SUCCESS when Sync call with proper parameter. | Sync Call FlushDiskEx ()with proper parameter, the return status should be  EFI\_SUCCESS. |
| 5.7.11.4.5 | 0x14525c4c, 0x213e, 0x4985, 0xa6, 0x42, 0x75, 0x6f, 0x0a, 0x8b, 0x2e, 0xf1 | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_SUCCESS when Batch Async call with proper parameter. | Batch Async call FlushDiskEx ()with proper parameter, the return status should be EFI\_SUCCESS. |
| 5.7.11.4.6 | 0x2f6c3f4b, 0x5e09, 0x4ada, 0xb0, 0xea, 0xb2, 0x99, 0xe1, 0xf3, 0xd3, 0x50 | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_MEDIA\_CHANGED when Sync & Async flush disk with MediaId not being the id for the current media in the device. | Sync & Async call FlushDiskEx () with MediaId not being the id for the current media in the device, the return status should be  EFI\_MEDIA\_CHANGED. |
| 5.7.11.4.7 | 0x5243f002, 0x6d2e, 0x4267, 0xa5, 0x7b, 0x1f, 0xff, 0xb0, 0x98, 0x8c, 0x5f | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_INVALID\_PARAMETERS when Sync & Async flush disk with invalid Offset. | Sync & Async call FlushDiskEx () with invalid Offset, the return status should be  EFI\_INVALID\_PARAMETERS. |
| 5.7.11.4.8 | 0x0c0c5c6d, 0xd082, 0x4b2b, 0x9e, 0x6b, 0x8f, 0xaa, 0x5d, 0x72, 0xe8, 0xd4 | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_WRITE\_PROTECTED when Sync & Async flush disk to a write-protected device. | Sync & Async call FlushDiskEx () to a write-protected device, the return status should be EFI\_WRITE\_PROTECTED. |
| 5.7.11.4.9 | 0x28882b47, 0x5bb8, 0x4d8c, 0x84, 0x5c, 0x33, 0xf7, 0x66, 0x32, 0x44, 0x25 | EFI\_DISK\_IO2\_PROTOCOL. FlushDiskEx - FlushDiskEx () returns EFI\_NO\_MEDIA when Sync & Async flush disk without media present in the device. | Sync & Async call FlushDiskEx () without media present in the device, the return status should be EFI\_NO\_MEDIA. |

### EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL Section.

### PassThru()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.1.1 | 0x85ee4a17, 0xd2a1, 0x4857, 0x9d, 0xa1, 0xc, 0xa8, 0x2d, 0x45, 0x70, 0x19 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_INVALID\_PARAMETER when TransferBuffer does not meet the alignment requirement specified by the IoAlign field of the EFI\_NVM\_EXPRESS\_PASS\_THRU\_MODE. | 1. Call PassThru() when TransferBuffer does not meet the alignment requirement specified by the IoAlign field of the EFI\_NVM\_EXPRESS\_PASS\_THRU\_MODE, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.2 | 0xd6366b2c, 0x437c, 0x48c5, 0x9b, 0xcd, 0x9f, 0x17, 0x6d, 0xf8, 0x61, 0x93 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_INVALID\_PARAMETER when QueueType is not 0 (Admin Submission Queue) or 1 (I/O Submission Queue). | 1. Call PassThru() when QueueType is not 0 (Admin Submission Queue) or 1 (I/O Submission Queue), the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.3 | 0xeed32c13, 0x9232, 0x48aa, 0xb0, 0x44, 0xc9, 0xdc, 0x18, 0x47, 0x77, 0xc0 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. Mode –Modecheckreturns Failurewith neither EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_LOGICAL nor EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL set is an illegal configuration. | 1. An EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL with neither EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_LOGICAL nor EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL set in Mode.Attributes is an illegal configuration. |
| 5.7.12.1.4 | 0xe22b3a66, 0xb9c8, 0x479a, 0x9c, 0x80, 0x9, 0xa4, 0x44, 0x9c, 0xaf, 0x2e | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. Mode – Modecheckreturns Failure When Mode.IoAlign is neither the power of 2 nor 0. | 1. Mode.IoAlign is neither the power of 2 nor 0. |
| 5.7.12.1.5 | 0x976d1926, 0x862, 0x4f41, 0x84, 0x42, 0xa5, 0x23, 0xf3, 0xc7, 0x9e, 0x4b | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_SUCCESS with the valid Identify Command and NULL Event. | 1. Call PassThru() with the valid Identify Command and NULL Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.6 | 0x9c88d95c, 0x228a, 0x48e0, 0xbd, 0x17, 0xd1, 0x87, 0x31, 0x9, 0xf1, 0xfc | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_SUCCESS with the valid Identify Command and Event. | 1. Call PassThru() with the valid Identify Command and Event, the return status should be EFI\_INVALID\_PARAMETER and the corresponding notification function should be signaled if the NON\_BLOCKIO is supported. |
|  |  |  |  |

### GetNextNamespace()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.2.1 | 0xd516e8e4, 0x2d06, 0x40b4, 0xb5, 0x36, 0x65, 0xf0, 0x1c, 0x59, 0x28, 0xf9 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL.GetNextNamespace() - GetNextNamespace()returns EFI\_INVALID\_PARAMETER with invalid NameSpaceId. | 1. Call GetNextNamespace() with invalid NameSpaceId, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.2.2 | 0x6f1c4115, 0x1ef7, 0x4ae9, 0x8e, 0x9, 0x85, 0xce, 0xe5, 0x4a, 0xd9, 0xb6 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNextNamespace() - GetNextNamespace()returns EFI\_NOT\_FOUND when no more namespaces are defined on this controller. | 1. Call GetNextNamespace()when no more namespaces are defined on this controller, the return status should be EFI\_NOT\_FOUND. |
|  |  |  |  |

### BuildDevicePath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.3.1 | 0x6f45fc1, 0xa9cd, 0x4889, 0x88, 0x1d, 0x5e, 0x34, 0xb8, 0x12, 0xfa, 0x3d | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_INVALID\_PARAMETER with NULL DevicePath. | 1. Call BuildDevicePath() with NULL DevicePath, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.3.2 | 0x2b9446e8, 0xea00, 0x49ee, 0x97, 0x2d, 0xcf, 0x2a, 0xa4, 0x9e, 0xa, 0xd3 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_NOT\_FOUND with invalid NameSpaceId. | 1. Call BuildDevicePath() with invalid NameSpaceId, the return status should be EFI\_NOT\_FOUND. |
| 5.7.12.3.3 | 0xa11dede9, 0xe13d, 0x4096, 0x90, 0xc8, 0xa6, 0x2e, 0x16, 0xc5, 0x76, 0xaf | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_SUCCESS with valid NameSpaceId. | 1. Call GetNextNamespace() with valid NameSpaceId, the return status should be EFI\_SUCCESS. The member NameSpaceId in the DevicePath should be same as the NameSpaceId. |
|  |  |  |  |

### GetNamespace()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.4.1 | 0xbefdcd7a, 0xf32d, 0x4423, 0x87, 0x7e, 0xf8, 0xc4, 0x56, 0x38, 0xd6, 0xd8 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_INVALID\_PARAMETER with NULL NamespaceId. | 1. Call GetNamespace() with NULL NamespaceId, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.4.2 | 0x38ae6f88, 0x2cf9, 0x497b, 0x94, 0x59, 0x7c, 0xaa, 0x34, 0xb7, 0xed, 0x7f | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_INVALID\_PARAMETER with NULL DevicePath. | 1. Call GetNamespace() with NULL DevicePath, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.4.3 | 0x365f8fba, 0x3314, 0x4502, 0x89, 0x3e, 0x8e, 0x63, 0xc1, 0xda, 0xfe, 0xbc | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() -GetNamespace()returns EFI\_UNSUPPORTED with unsupported device path node. | 1. Call GetNamespace() with unsupported device path node, the return status should be EFI\_UNSUPPORTED. |
| 5.7.12.4.4 | 0xe864012d, 0x12b0, 0x4467, 0xa9, 0x7b, 0x5f, 0x72, 0xb4, 0xa9, 0x50, 0x27 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_NOT\_FOUND with NVME device path node, but the translation from DevicePath to namespace ID failed. | 1. Call GetNamespace() with NVME device path node, but translation from DevicePath to namespace ID failed, the return status should be EFI\_NOT\_FOUND. |
| 5.7.12.4.5 | 0xc72a5f58, 0x742a, 0x4c7f, 0xbc, 0xc1, 0x35, 0xf9, 0xd0, 0x31, 0x32, 0xd | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_SUCCESS with valid parameters. | 1. Call GetNamespace() with valid parameters, the return status should be EFI\_SUCCESS. |
|  |  |  |  |

## EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL Section.

### PassThru()

|  |  |  |  |
| --- | --- | --- | --- |
| **Number** | **GUID** | **Assertion** | **Test Description** |
| 5.7.12.1.1 | 0x85ee4a17, 0xd2a1, 0x4857, 0x9d, 0xa1, 0xc, 0xa8, 0x2d, 0x45, 0x70, 0x19 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_INVALID\_PARAMETER when TransferBuffer does not meet the alignment requirement specified by the IoAlign field of the EFI\_NVM\_EXPRESS\_PASS\_THRU\_MODE. | 1. Call PassThru() when TransferBuffer does not meet the alignment requirement specified by the IoAlign field of the EFI\_NVM\_EXPRESS\_PASS\_THRU\_MODE, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.2 | 0xd6366b2c, 0x437c, 0x48c5, 0x9b, 0xcd, 0x9f, 0x17, 0x6d, 0xf8, 0x61, 0x93 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_INVALID\_PARAMETER when QueueType is not 0 (Admin Submission Queue) or 1 (I/O Submission Queue). | 1. Call PassThru() when QueueType is not 0 (Admin Submission Queue) or 1 (I/O Submission Queue), the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.3 | 0xeed32c13, 0x9232, 0x48aa, 0xb0, 0x44, 0xc9, 0xdc, 0x18, 0x47, 0x77, 0xc0 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. Mode –Modecheckreturns Failurewith neither EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_LOGICAL nor EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL set is an illegal configuration. | 1. An EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL with neither EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_LOGICAL nor EFI\_NVM\_EXPRESS\_PASS\_THRU\_ATTRIBUTES\_PHYSICAL set in Mode.Attributes is an illegal configuration. |
| 5.7.12.1.4 | 0xe22b3a66, 0xb9c8, 0x479a, 0x9c, 0x80, 0x9, 0xa4, 0x44, 0x9c, 0xaf, 0x2e | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. Mode – Modecheckreturns Failure When Mode.IoAlign is neither the power of 2 nor 0. | 1. Mode.IoAlign is neither the power of 2 nor 0. |
| 5.7.12.1.5 | 0x976d1926, 0x862, 0x4f41, 0x84, 0x42, 0xa5, 0x23, 0xf3, 0xc7, 0x9e, 0x4b | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_SUCCESS with the valid Identify Command and NULL Event. | 1. Call PassThru() with the valid Identify Command and NULL Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.1.6 | 0x9c88d95c, 0x228a, 0x48e0, 0xbd, 0x17, 0xd1, 0x87, 0x31, 0x9, 0xf1, 0xfc | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. PassThru() -PassThru()returns EFI\_SUCCESS with the valid Identify Command and Event. | 1. Call PassThru() with the valid Identify Command and Event, the return status should be EFI\_INVALID\_PARAMETER and the corresponding notification function should be signaled if the NON\_BLOCKIO is supported. |

### GetNextNamespace()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.2.1 | 0xd516e8e4, 0x2d06, 0x40b4, 0xb5, 0x36, 0x65, 0xf0, 0x1c, 0x59, 0x28, 0xf9 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL.GetNextNamespace() - GetNextNamespace()returns EFI\_INVALID\_PARAMETER with invalid NameSpaceId. | 1. Call GetNextNamespace() with invalid NameSpaceId, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.2.2 | 0x6f1c4115, 0x1ef7, 0x4ae9, 0x8e, 0x9, 0x85, 0xce, 0xe5, 0x4a, 0xd9, 0xb6 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNextNamespace() - GetNextNamespace()returns EFI\_NOT\_FOUND when no more namespaces are defined on this controller. | 1. Call GetNextNamespace()when no more namespaces are defined on this controller, the return status should be EFI\_NOT\_FOUND. |
|  |  |  |  |

### BuildDevicePath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.3.1 | 0x6f45fc1, 0xa9cd, 0x4889, 0x88, 0x1d, 0x5e, 0x34, 0xb8, 0x12, 0xfa, 0x3d | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_INVALID\_PARAMETER with NULL DevicePath. | 1. Call BuildDevicePath() with NULL DevicePath, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.3.2 | 0x2b9446e8, 0xea00, 0x49ee, 0x97, 0x2d, 0xcf, 0x2a, 0xa4, 0x9e, 0xa, 0xd3 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_NOT\_FOUND with invalid NameSpaceId. | 1. Call BuildDevicePath() with invalid NameSpaceId, the return status should be EFI\_NOT\_FOUND. |
| 5.7.12.3.3 | 0xa11dede9, 0xe13d, 0x4096, 0x90, 0xc8, 0xa6, 0x2e, 0x16, 0xc5, 0x76, 0xaf | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath()returns EFI\_SUCCESS with valid NameSpaceId. | 1. Call GetNextNamespace() with valid NameSpaceId, the return status should be EFI\_SUCCESS. The member NameSpaceId in the DevicePath should be same as the NameSpaceId. |
|  |  |  |  |

### GetNamespace()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.12.4.1 | 0xbefdcd7a, 0xf32d, 0x4423, 0x87, 0x7e, 0xf8, 0xc4, 0x56, 0x38, 0xd6, 0xd8 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_INVALID\_PARAMETER with NULL NamespaceId. | 1. Call GetNamespace() with NULL NamespaceId, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.4.2 | 0x38ae6f88, 0x2cf9, 0x497b, 0x94, 0x59, 0x7c, 0xaa, 0x34, 0xb7, 0xed, 0x7f | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_INVALID\_PARAMETER with NULL DevicePath. | 1. Call GetNamespace() with NULL DevicePath, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.12.4.3 | 0x365f8fba, 0x3314, 0x4502, 0x89, 0x3e, 0x8e, 0x63, 0xc1, 0xda, 0xfe, 0xbc | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() -GetNamespace()returns EFI\_UNSUPPORTED with unsupported device path node. | 1. Call GetNamespace() with unsupported device path node, the return status should be EFI\_UNSUPPORTED. |
| 5.7.12.4.4 | 0xe864012d, 0x12b0, 0x4467, 0xa9, 0x7b, 0x5f, 0x72, 0xb4, 0xa9, 0x50, 0x27 | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_NOT\_FOUND with NVME device path node, but the translation from DevicePath to namespace ID failed. | 1. Call GetNamespace() with NVME device path node, but translation from DevicePath to namespace ID failed, the return status should be EFI\_NOT\_FOUND. |
| 5.7.12.4.5 | 0xc72a5f58, 0x742a, 0x4c7f, 0xbc, 0xc1, 0x35, 0xf9, 0xd0, 0x31, 0x32, 0xd | EFI\_NVM\_EXPRESS\_PASS\_THRU\_PROTOCOL. GetNamespace() - GetNamespace()returns EFI\_SUCCESS with valid parameters. | 1. Call GetNamespace() with valid parameters, the return status should be EFI\_SUCCESS. |
|  |  |  |  |

## EFI\_ERASE\_BLOCK\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ERASE\_BLOCK\_PROTOCOL Section.

### EraseBlocks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.13.1.1 | 0xf62e99e3, 0xcda2, 0x4e44, 0x89, 0xa2, 0x47, 0x3b, 0xd8, 0x61, 0x90, 0xf8 | FI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks(). This optional protocol should be installed on the same handle as the EFI\_BLOCK\_IO\_PROTOCOL or EFI\_BLOCK\_IO2\_PROTOCOL. | 1. EFI\_ERASE\_BLOCK\_PROTOCOL should be installed on the same handle as the EFI\_BLOCK\_IO\_PROTOCOL or EFI\_BLOCK\_IO2\_PROTOCOL. |
| 5.7.13.1.2 | 0x4cfed8bb, 0xb9b1, 0x4c21, 0xb3, 0xb6, 0xa7, 0x5, 0x38, 0x6c, 0xf1, 0xe5 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when there is no media in the device. | 1. Call EraseBlocks() when there is no media in the device, the return status should be EFI\_NO\_MEDIA. |
| 5.7.13.1.3 | 0x9877f323, 0x8812, 0x40bc, 0xbd, 0x41, 0x71, 0xe, 0x8b, 0xbe, 0xb6, 0x69 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when there is no media in the device, even if LBA is invalid. | 1. Call EraseBlocks() when there is no media in the device, even if LBA is invalid, the return status should be EFI\_NO\_MEDIA. |
| 5.7.13.1.4 | 0x9877cf0d, 0x3d1b, 0x4ac5, 0x8a, 0x3f, 0x8c, 0xba, 0x95, 0x62, 0xb7, 0x53 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when there is no media in the device, even if Size is invalid. | 1. Call EraseBlocks() when there is no media in the device, even if Size is invalid, the return status should be EFI\_NO\_MEDIA. |
| 5.7.13.1.5 | 0x61c0575e, 0x742f, 0x4094, 0xa8, 0x73, 0x2, 0x11, 0x4, 0xdb, 0x45, 0x1d | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_WRITE\_PROTECTED when there is media in the device, but with the read only attribute. | 1. Call EraseBlocks() when there is media in the device, but with the read only attribute, the return status should be EFI\_WRITE\_PROTECTED. |
| 5.7.13.1.6 | 0x2176fd0d, 0xb211, 0x426d, 0xbf, 0xc, 0x84, 0x65, 0x5f, 0x3e, 0x3c, 0xcd | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_MEDIA\_CHANGED when the MediaId is not for the current media. | 1. Call EraseBlocks() when the MediaId is not for the current media, the return status should be EFI\_MEDIA\_CHANGED. |
| 5.7.13.1.7 | 0x5d60ba1c, 0x42da, 0x4a50, 0x82, 0xbc, 0xe5, 0xbe, 0xe2, 0x3f, 0x41, 0x4f | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when the MediaId is not for the current media, even if LBA is invalid. | 1. Call EraseBlocks() when the MediaId is not for the current media, even if LBA is invalid, the return status should be EFI\_NO\_MEDIA. |
| 5.7.13.1.8 | 0x702c5141, 0xc1a8, 0x42ee, 0x8f, 0x9c, 0xe6, 0x8, 0x8e, 0x33, 0x2a, 0xe6 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when the MediaId is not for the current media, even if Size is invalid. | 1. Call EraseBlocks() when the MediaId is not for the current media, even if Size is invalid, the return status should be EFI\_NO\_MEDIA. |
| 5.7.13.1.9 | 0x2864536a, 0x9aa4, 0x44ac, 0xa9, 0x60, 0x3b, 0x6e, 0x4e, 0x93, 0x47, 0xb5 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_INVALID\_PARAMETER when the LBA is invalid. | 1. Call EraseBlocks() when the LBA is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.13.1.10 | 0xb9ec66f1, 0x41ae, 0x44dc, 0xa6, 0xcc, 0x55, 0xde, 0x3b, 0x0, 0x37, 0xca | 5.7.3.14.4 | 0xafd40ec9, 0x5027, 0x42a8, 0xb0, 0x2c, 0x0c, 0xb5, 0x80, 0x86, 0xd7, 0x9c  2. Call EraseBlocks() to erase the same area,the return status should be EFI\_SUCCESS.  3. CallBlockIo->ReadBlocks() to read the same area, the content should be zero.  4. Call BlockIo->WriteBlocks() to restore the original data back. |
| 5.7.13.1.11 | 0x2af1346c, 0xf3d8, 0x48d9, 0x94, 0x61, 0x6e, 0xef, 0xf6, 0xb2, 0x48, 0x3c | status should be EFI\_SUCCESS. | 1. Call BlockIo2->ReadBlocks() to read the data from the specified area.  2. Call EraseBlocks() to erase the same area,the return status should be EFI\_SUCCESS.  3. CallBlockIo2->ReadBlocks() to read the same area, the content should be zero.  4. Call BlockIo2->WriteBlocks() to restore the original data back. |

## EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL Section.

### PassThru()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.14.1.1 | 0x572e13de, 0xcd2e, 0x43ef, 0xa6, 0x41, 0x37, 0x1, 0x28, 0x18, 0xf8, 0xe4 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. PassThru() - PassThru() returns EFI\_INVALID\_PARAMETER when Packet is NULL. | 1. Call PassThru() when Packet is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when there is no media in the device, even if LBA is invalid. | 1. Call EraseBlocks() when there is no media in the device, even if LBA is invalid, the return status should be EFI\_NO\_MEDIA. | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. PassThru() - PassThru() returns EFI\_INVALID\_PARAMETER when the content of Packet is NULL. | 1. Call PassThru() when the content of Packet is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 0x9877cf0d, 0x3d1b, 0x4ac5, 0x8a, 0x3f, 0x8c, 0xba, 0x95, 0x62, 0xb7, 0x53 | EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when there is no media in the device, even if Size is invalid. | 1. Call EraseBlocks() when there is no media in the device, even if Size is invalid, the return status should be EFI\_NO\_MEDIA. | 1. Call PassThru() when Packet defines a data command but both InDataBuffer and OutDataBuffer are NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.1.4 | 0x516deffa, 0x25ef, 0x4cb6, 0x95, 0xdf, 0xe0, 0x71, 0x93, 0xf0, 0xc4, 0xb5 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. PassThru() - PassThru() returns EFI\_INVALID\_PARAMETER when Slot is invalid. | 1. Call PassThru() when Slot is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.1.5 | 0x205e3e70, 0x92b1, 0x4534, 0x80, 0x21, 0xf2, 0x39, 0xcc, 0x21, 0xb5, 0x78 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. PassThru() - PassThru(). The IoAlign should be 0, 1 or the power of 2. | 1. The IoAlign should be 0, 1 or the power of 2. |
| EFI\_ERASE\_BLOCK\_PROTOCOL. EraseBlocks() - EraseBlocks() returns EFI\_NO\_MEDIA when the MediaId is not for the current media, even if LBA is invalid. | 1. Call EraseBlocks() when the MediaId is not for the current media, even if LBA is invalid, the return status should be EFI\_NO\_MEDIA. | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. PassThru() - PassThru() returns EFI\_SUCCESS when the SD Command Packet was sent by the host. | 1. Call PassThru() when the SD Command Packet was sent by the host, the return status should be EFI\_INVALID\_PARAMETER. |

### GetNextSlot()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.14.2.1 | 0xcd9e89de, 0x9765, 0x4930, 0xa1, 0x88, 0xbc, 0x30, 0xd4, 0x9, 0xa0, 0x92 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL.  GetNextSlot() - GetNextSlot() returns EFI\_INVALID\_PARAMETER when Slot is not 0xFF and Slot was not returned on a previous call. | 1. Call GetNextSlot() when Slot is not 0xFF and Slot was not returned on a previous call, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.2.2 | 0x8f6d644f, 0x2d1e, 0x40b3, 0x91, 0x4a, 0xc6, 0xda, 0x21, 0x3, 0x82, 0x44 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. GetNextSlot() - GetNextSlot() returns EFI\_NOT\_FOUND when there are no more slots on this SD controller. | 1. Call GetNextSlot() when there are no more slots on this SD controller, the return status should be EFI\_NOT\_FOUND. |

### BuildDevicePath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.14.3.1 | 0x962accdc, 0x5808, 0x450d, 0xba, 0xea, 0xe3, 0xb7, 0x1a, 0x34, 0x76, 0x22 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath () returns EFI\_INVALID\_PARAMETER when DevicePath is NULL. | 1. Call BuildDevicePath() when DevicePath is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.3.2 | 0x2597450b, 0xab3d, 0x49d6, 0x9c, 0x3f, 0xec, 0xcd, 0x24, 0xcc, 0xb5, 0xf5 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath () returns EFI\_NOT\_FOUND when the SD card specified by Slot does not exist on the SD controller. | 1. Call BuildDevicePath() when the SD card specified by Slot does not exist on the SD controller, the return status should be EFI\_NOT\_FOUND. |
| 5.7.14.3.3 | 0x871efb1e, 0xdfbe, 0x4a0c, 0x83, 0xc4, 0x21, 0x9c, 0x20, 0x91, 0x8e, 0x91 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. BuildDevicePath() - BuildDevicePath () returns EFI\_SUCCESS when the device path node that describes the SD card specified by Slot was allocated and returned in DevicePath. | 1. Call BuildDevicePath() when the device path node that describes the SD card specified by Slot was allocated and returned in DevicePath, the return status should be EFI\_SUCCESS. |

### GetSlotNumber()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.14.4.1 | 0xab2880b3, 0x9ac3, 0x4ca4, 0x94, 0x75, 0x4e, 0xbd, 0xd1, 0xbe, 0xa, 0xd8 | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. GetSlotNumber() - GetSlotNumber() returns EFI\_INVALID\_PARAMETER when DevicePath is NULL. | 1. Call GetSlotNumber() when DevicePath is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.4.2 | 0xff66737b, 0xad5c, 0x4383, 0xbe, 0x96, 0x9a, 0xff, 0xd7, 0xe2, 0xb3, 0x7a | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. GetSlotNumber() - GetSlotNumber() returns EFI\_INVALID\_PARAMETER when Slot is NULL. | 1. Call GetSlotNumber() when Slot is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.4.3 | 0x240951b8, 0xaa03, 0x4517, 0xb0, 0xa7, 0x3a, 0xbc, 0x57, 0x5a, 0xc, 0x3e | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. GetSlotNumber() - GetSlotNumber() returns EFI\_UNSUPPORTED when DevicePath is not a device path node type that the SD PassThru driver supports. | 1. Call GetSlotNumber() when DevicePath is not a device path node type that the SD PassThru driver supports, the return status should be EFI\_UNSUPPORTED. |
| 5.7.14.4.4 | 0xb0631fb9, 0xd1f9, 0x41e6, 0xb1, 0x74, 0x18, 0xea, 0x2, 0x59, 0xd4, 0x7a | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. GetSlotNumber() - GetSlotNumber() returns EFI\_SUCCESS when SD card slot number is returned in Slot. | 1. Call GetSlotNumber() when SD card slot number is returned in Slot, the return status should be EFI\_SUCCESS. |

### ResetDevice()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.14.5.1 | 0x2dbb3a26, 0xb27, 0x4333, 0xa2, 0xec, 0xc3, 0x48, 0xee, 0xf9, 0xc9, 0x3e | EFI\_SD\_MMC\_PASS\_THRU\_PROTOCOL. ResetDevice() - ResetDevice() returns EFI\_INVALID\_PARAMETER when Slot number is invalid or the SD controller does not support a device reset operation. | 1. Call ResetDevice() when Slot number is invalid or the SD controller does not support a device reset operation, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.14.5.2 | 0x70c428ae, 0xf1a6, 0x4d02, 0xa1, 0x26, 0x47, 0x89, 0x14, 0xf5, 0xb5, 0xa2 | EFI\_ERASE\_BLOCK\_PROTOCOL. ResetDevice() - ResetDevice() returns EFI\_SUCCESS when the SD card specified by the Slot is reset. | 1. Call ResetDevice() when the SD card specified by the Slot is reset, the return status should be EFI\_SUCCESS. |

## EFI\_RAM\_DISK\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_RAM\_DISK\_PROTOCOL Section

### Register()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.15.1.1 | 0xf57e3b87, 0x2b93, 0x4645, 0x86, 0x56, 0x9a, 0x59, 0x53, 0x34, 0x58, 0x4b | EFI\_RAM\_DISK\_PROTOCOL.  Register() -  Register() returns EFI\_INVALID\_PARAMETER when  RamDiskSize is 0. | 1. Call Register() when RamDiskSize is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.15.1.2 | 0x309c7941, 0x13be, 0x43f6, 0x83, 0x33, 0x1c, 0x49, 0x5e, 0x7d, 0xf3, 0x56 | EFI\_RAM\_DISK\_PROTOCOL.Register() - Register() returns EFI\_INVALID\_PARAMETER when RamDiskType is NULL. | 1. Call Register() when RamDiskType is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.15.1.3 | 0x35c6688b, 0x7eb9, 0x4446, 0x94, 0x7f, 0x34, 0x39, 0x16, 0xc5, 0xb9, 0x65 | EFI\_RAM\_DISK\_PROTOCOL.Register() - Register() returns EFI\_INVALID\_PARAMETER when DevicePath is NULL. | 1. Call Register() when DevicePath is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.7.15.1.4 | 0xbf0432c4, 0x5b9b, 0x42f9, 0x94, 0x62, 0x49, 0x57, 0xb, 0x86, 0x83, 0xe1 | EFI\_RAM\_DISK\_PROTOCOL.Register() - Register() returns EFI\_ALREADY\_STARTED when the created DevicePath instance is already present in the handle database. | 1. Call Register() to register one RAM disk with specified address, size and type.  2. Call Register() with the same parameters again, the return status should be EFI\_ALREADY\_STARTED. |
| 5.7.15.1.5 | 0xb5b749af, 0x5ad3, 0x4e79, 0x88, 0x68, 0x58, 0x64, 0x65, 0x24, 0x91, 0x5f | EFI\_RAM\_DISK\_PROTOCOL.Register() - Register() returns EFI\_SUCCESS with valid parameters. | 1. Call Register() with valid parameters, the return status should be EFI\_SUCCESS. |

### Unregister()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.7.15.2.1 | 0xf05eae55, 0x1dd7, 0x4a10, 0xba, 0x57, 0x38, 0x8d, 0x38, 0x5, 0x51, 0x10 | EFI\_RAM\_DISK\_PROTOCOL.Unregister() - Unregister() returns EFI\_NOT\_FOUND when DevicePath is not existed. | 1. Call Unregister() when DevicePath is not existed, the return status should be EFI\_NOT\_FOUND. |
| 5.7.15.2.2 | 0x6919f770, 0xf418, 0x4873, 0x81, 0x38, 0xc1, 0x45, 0x36, 0x80, 0x1d, 0x77 | EFI\_RAM\_DISK\_PROTOCOL.Unregister() - Unregister() returns EFI\_INVALID\_PARAMETER when DevicePath is NULL. | 1. Call Unregister() when DevicePath is NULL, the return status should be  EFI\_INVALID\_PARAMETER. |
| 5.7.15.2.3 | 0xbc90d7f7, 0x275d, 0x424f, 0x9c, 0x95, 0x14, 0x6e, 0x24, 0xbd, 0xc3, 0xe6 | EFI\_RAM\_DISK\_PROTOCOL.Unregister() - Unregister() returns EFI\_UNSUPPORTED when DevicePath is not the valid Ramdisk device path. | 1. Call Unregister() when DevicePath is not the valid Ramdisk device path, the return status should be EFI\_UNSUPPORTED. |
| 5.7.15.2.4 | 0xa85e1978, 0x216f, 0x4f52, 0xad, 0x7c, 0x70, 0xc2, 0x65, 0xe6, 0xf7, 0xee | EFI\_RAM\_DISK\_PROTOCOL.Unregister() - Unregister() returns EFI\_SUCCESS with valid parameters. | 1. Call Unregister() with valid parameters, the return status should be EFI\_SUCCESS. |

# Protocols PCI Bus Support Test

## EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_PCI\_ROOT\_BRIDGE\_IO\_ PROTOCOL Section.

Configuration

Some checkpoints in the EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL test are device related. If the user needs to check the protocol on the specified device, the related profile needs to be updated to provide the specified information about this device.

For the format of the profile, please refer to A.2.

### PollMem()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.1.1 | 0xa10d3292, 0x6908, 0x446f, 0x9b, 0xfa, 0x38, 0x67, 0x75, 0xc6, 0x3e, 0x2e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with the correct value written to the destination address before delay time out returns EFI\_SUCCESS | 1. Call Mem.Write() to write specific value to destination address before the PollMem() delay times out.  2. Call PollMem() to poll the specific value on destination address. It should return EFI\_SUCCESS when required value is written to destination address. |
| 5.8.1.1.2 | 0xec6af458, 0x3dc1, 0x4022, 0xae, 0x0a, 0x7a, 0xd5, 0x61, 0x58, 0xdc, 0x5c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() returns EFI\_SUCCESS immediately when required value has been written to destination address. | 1. Call Mem.Write() to write specific value to destination address before call of PollMem().  2. Call PollMem() to poll the specific value on destination address. It should return EFI\_SUCCESS immediately. |
| 5.8.1.1.3 | 0x6f82fa28, 0x8c61, 0x4af9, 0x8b, 0x77, 0xc9, 0xab, 0x26, 0x64, 0x10, 0x30 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with delay as 0 returns EFI\_SUCCESS immediately. | 1. Call PollMem() to poll the specific value on destination address with delay as 0. It should return EFI\_SUCCESS immediately. |
| 5.8.1.1.4 | 0x2f0c1ddc, 0x53f3, 0x4053, 0xa8, 0xce, 0x37, 0x0f, 0xff, 0xac, 0x56, 0x05 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with the invalid value written to the destination address before delay time out returns EFI\_TIME\_OUT | 1. Call Mem.Write() to write specific value to destination address before the PollMem() delay time out.  2. Call PollMem() to poll the different value on destination address. The return code should be EFI\_TIME\_OUT after delay time out. |
| 5.8.1.1.5 | 0x1d028ad2, 0xd563, 0x445e, 0x8c, 0x68, 0x92, 0x6f, 0x66, 0x35, 0x12, 0xa5 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.1.6 | 0x78d809be, 0xa958, 0x4c16, 0xb7, 0xbc, 0xbd, 0xb0, 0x26, 0xa0, 0x10, 0x48 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with Width as **EfiPciWidthFifoUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthFifoUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.1.7 | 0x87dc296a, 0xa156, 0x4601, 0x8c, 0xfb, 0x25, 0xd5, 0xa5, 0xcb, 0x64, 0x11 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with Width as **EfiPciWidthFillUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthFillUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.1.8 | 0x4e02eeec, 0x660d, 0x4782, 0xb2, 0xec, 0x2f, 0x5a, 0x66, 0x6c, 0xf2, 0xb7 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.1.9 | 0x438d7bdd, 0x3e1b, 0x44dc, 0xb3, 0x53, 0x54, 0xf1, 0x9f, 0x02, 0x2d, 0x88 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollMem – PollMem() with Result as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Result as NULL. The return code should be EFI\_INVALID\_PARAMETER |

### PollIo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.2.1 | 0x7f89a139, 0x7bba, 0x41da, 0xaa, 0x92, 0x1c, 0xe3, 0xc4, 0x77, 0x97, 0x68 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with the correct value written to the destination Io address before delay time out returns EFI\_SUCCESS | 1. Call Io.Write() to write specific value to destination Io address before the PollIo() delay time out.  2. Call PollIo() to poll the specific value on destination Io address. It should return EFI\_SUCCESS when required value is written to destination address. |
| 5.8.1.2.2 | 0xf6882063, 0xc841, 0x4822, 0xa9, 0x86, 0x16, 0x7e, 0xce, 0x5b, 0x2c, 0x76 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() returns EFI\_SUCCESS immediately when required value has been written to destination address. | 1. Call Io.Write() to write specific value to destination address before call of PollIo().  2. Call PollIo() to poll the specific value on destination address. It should return EFI\_SUCCESS immediately. |
| 5.8.1.2.3 | 0x2ba92ffe, 0x557b, 0x4e2e, 0xa1, 0x22, 0x7c, 0x12, 0x36, 0x87, 0xdf, 0x6a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with delay as 0 returns EFI\_SUCCESS immediately. | 1. Call PollIo() to poll the specific value on destination address with delay as 0. It should return EFI\_SUCCESS immediately. |
| 5.8.1.2.4 | 0x424cfc17, 0x7335, 0x49d5, 0xb7, 0x9f, 0xa5, 0xfd, 0x90, 0xf2, 0xc5, 0x5e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with the invalid value written to the destination address before delay time out returns EFI\_TIME\_OUT | 1. Call Io.Write() to write specific value to destination address before the PollIo() delay time out.  2. Call PollIo() to poll the different value on destination address. The return code should be EFI\_TIME\_OUT after delay time out. |
| 5.8.1.2.5 | 0xb46d5e49, 0xe908, 0x4874, 0x96, 0x2f, 0xf8, 0x4e, 0x21, 0x6d, 0xcb, 0x54 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.2.6 | 0x90f1257b, 0x115e, 0x4d5d, 0xa1, 0x83, 0x09, 0xed, 0xc9, 0x5c, 0x18, 0x08 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with Width as **EfiPciWidthFifoUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthFifoUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.2.7 | 0xf557d70d, 0x4418, 0x4903, 0x8a, 0xb7, 0x66, 0x6f, 0x11, 0x1a, 0xd3, 0x37 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with Width as **EfiPciWidthFillUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthFillUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.2.8 | 0xd00129f5, 0x35d4, 0x4c01, 0xa7, 0x41, 0x00, 0xc7, 0xd5, 0xa5, 0x19, 0x0f | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.2.9 | 0x7465fa90, 0xa357, 0x442f, 0xa8, 0xec, 0xf8, 0x86, 0x5f, 0xb6, 0xe2, 0xca | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.PollIo – PollIo() with Result as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Result as NULL. The return code should be EFI\_INVALID\_PARAMETER |

### Mem.Read()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.3.1 | 0x122320b0, 0x435d, 0x449b, 0x9c, 0xc0, 0x99, 0xd5, 0x95, 0xc9, 0xd2, 0x3d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Mem.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Mem address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.3.2 | 0xc29f3981, 0x0a68, 0x48f0, 0x99, 0xfe, 0xc2, 0xe4, 0x84, 0xe8, 0xd2, 0x9d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Mem.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Mem address contents to backup buffer.  2. Call Mem.Write() to write backup buffer contents to Mem address.  3. Call Mem.Read() again to read Mem address contents to another buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.3.3 | 0x57e2d8b2, 0xed4c, 0x4856, 0x82, 0xb6, 0xa0, 0xfd, 0x80, 0xd0, 0xb2, 0x55 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthUintX** returns the contents written by Mem.Write(). | 1. Call Mem.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Mem address contents to backup buffer.  2. Call Mem.Write() to write backup buffer contents to Mem address.  3. Call Mem.Read() again to read Mem address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.3.4 | 0x729ba46d, 0x7962, 0x4a2b, 0xb5, 0x20, 0xbf, 0x52, 0xa2, 0x02, 0x3c, 0xbe | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Mem.Read() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to read Mem address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.3.5 | 0x701e90f7, 0xd218, 0x411f, 0xba, 0x7d, 0xb5, 0xab, 0x92, 0x2a, 0xcb, 0x93 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Mem.Write() with **EfiPciWidthUintX** to write Buffer1 to memory address.  2. Call Mem.Read() with data width as **EfiPciWidthFifoUintX** from the same memory address to Buffer2. All units of Buffer2 should be the first unit of Buffer1. |
| 5.8.1.3.6 | 0x383c6e62, 0xf92f, 0x4719, 0x9a, 0x11, 0x70, 0x95, 0x08, 0x31, 0x19, 0xad | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Mem.Read() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to read Mem address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.3.7 | 0x596a5971, 0x11d4, 0x43b0, 0x82, 0x4d, 0xe5, 0xcc, 0x41, 0x81, 0x9e, 0x14 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Mem.Write() with **EfiPciWidthUintX** to write Buffer1 to memory address.  2. Set all units of Buffer2 with the same value.  2. Call Mem.Read() with data width as **EfiPciWidthFillUintX** from the same memory address to Buffer2. The first unit of Buffer2 should be same as the last unit of Buffer1 and other units of Buffer2 should remain unchanged. |
| 5.8.1.3.8 | 0x28ba919b, 0xbc04, 0x464a, 0xbb, 0xa0, 0x87, 0xee, 0xda, 0xc1, 0x0f, 0x33 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.3.9 | 0xbc884213, 0xe80e, 0x41e6, 0x81, 0x69, 0xbc, 0x46, 0x7d, 0x53, 0x40, 0x86 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.3.10 | 0x8cc49d7f, 0x87be, 0x4a2e, 0x82, 0xc0, 0xce, 0xc2, 0xbf, 0xcb, 0xb1, 0x3d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.3.11 | 0xbbf33c06, 0xa3a0, 0x4e13, 0xa3, 0xc7, 0x49, 0x23, 0x37, 0x07, 0xc9, 0x0d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Read – Mem.Read() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### Mem.Write()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.4.1 | 0x9dac86c8, 0xb700, 0x47ec, 0x95, 0x27, 0x9e, 0xf2, 0x39, 0x56, 0xbc, 0xca | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Mem.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer to Mem address. The return code should be EFI\_SUCCESS. |
| 5.8.1.4.2 | 0x1ed536a0, 0x7dbb, 0x4f97, 0xa7, 0xcd, 0xeb, 0xb4, 0xc4, 0x84, 0xab, 0x2b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Read() with **EfiPciWidthUintX** returns the contents written by Mem.Write(). | 1. Call Mem.Read() to read Mem address contents to backup buffer.  2. Call Mem.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write backup buffer contents to Mem address.  3. Call Mem.Read() again to read Mem address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.4.3 | 0xd2f05d14, 0xff03, 0x4b2d, 0x94, 0xbc, 0x11,0xd7, 0x7a, 0x56, 0x20, 0x5e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Mem.Write() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to write buffer contents to Mem address. The return code should be EFI\_SUCCESS. |
| 5.8.1.4.4 | 0x2e0a75e3, 0x04f3, 0x47f4, 0x85, 0x8f, 0x75, 0x1a, 0x29, 0xcf, 0x1c, 0x6a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Mem.Read() with **EfiPciWidthUintX** to read memory address contents to Buffer1.  2. Call Mem.Write() with **EfiPciWidthFifoUintX** to write Buffer1 to memory address.  3. Call Mem.Read() with data width as **EfiPciWidthUintX** from the same memory address to Buffer2. The first unit of Buffer2 should be the same as the last unit of Buffer1, and other units of Buffer2 should be the same as corresponding units of Buffer1. |
| 5.8.1.4.5 | 0xd220d6da, 0xa7b9, 0x477f, 0xa6, 0xfb, 0xc1, 0x52, 0x43, 0xe9, 0x52, 0x5e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Mem.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write buffer contents to Mem address. The return code should be EFI\_SUCCESS. |
| 5.8.1.4.6 | 0x8283aeec, 0x2896, 0x460b, 0x9e, 0xf1, 0xe7, 0xa6, 0x89, 0xa4, 0x8c, 0x86 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Read() after Mem.Write the data using **EfiPciIoWidthFillUintX** return EFI\_SUCCESS. | 1. Call Mem.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write buffer contents to Mem address.  2. Call Mem.Read() with data width as **EfiPciWidthUintX** to read Mem address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.4.7 | 0xcabf0b57, 0x7e2b, 0x40f6, 0x96, 0xa6, 0x3d, 0x4e, 0x92, 0xca, 0x5b, 0x55 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Mem.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write Buffer1 contents to Mem address.  2. Call Mem.Read() with data width as **EfiPciWidthUintX** to read Mem address contents to Buffer2. All the units of Buffer2 should be the same as the first unit of Buffer1. |
| 5.8.1.4.8 | 0xaa2e8dd7, 0x501e, 0x4210, 0x8f, 0x10, 0xd0, 0x30, 0x78, 0x30, 0x75, 0x64 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Mem.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer back to Mem address. The return code should be EFI\_SUCCESS. |
| 5.8.1.4.9 | 0x26aa2144, 0x1c21, 0x4499, 0xb4, 0xdb, 0xda, 0xf4, 0x80, 0x07, 0xfa, 0xd9 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.4.10 | 0x71b8a5d8, 0xf464, 0x416d, 0xb9, 0x73, 0x4e, 0xb0, 0xc1, 0x06, 0x94, 0x07 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.4.11 | 0x2b698420, 0x82b3, 0x43b3, 0xaa, 0x39, 0x53, 0xc2, 0x9d, 0x1d, 0x91, 0x13 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.4.12 | 0xcf2417f3, 0x1491, 0x44ea, 0x93, 0xec, 0xad, 0x0b, 0x5b, 0xc0, 0x2b, 0xc6 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Mem.Write – Mem.Write() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### Io.Read()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.5.1 | 0xf6d5c145, 0x15c9, 0x4bc5, 0xa5, 0x1c, 0xd5, 0xfd, 0xba, 0xf0, 0x73, 0xe9 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Io.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Io address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.5.2 | 0x12a1078a, 0xc78a, 0x446d, 0x90, 0x37, 0x22, 0xd8, 0xd0, 0x88, 0xfb, 0x2d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Io.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Io address contents to backup buffer.  2. Call Io.Write() to write backup buffer contents to Io address.  3. Call Io.Read() again to read Io address contents to another buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.5.3 | 0xcc985605, 0x262d, 0x4954, 0xb4, 0x1c, 0xa9, 0x4c, 0xd0, 0x15, 0x7b, 0x96 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthUintX** returns the contents written by Io.Write(). | 1. Call Io.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Io address contents to backup buffer.  2. Call Io.Write() to write backup buffer contents to Io address.  3. Call Io.Read() again to read Io address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.5.4 | 0x0d6630e0, 0x4a9e, 0x4720, 0xa2, 0xe1, 0x4e, 0xf3, 0xef, 0x81, 0x5f, 0x41 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Io.Read() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to read Io address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.5.5 | 0xddb273f7, 0xd3d7, 0x4ab2, 0xa2, 0x41, 0xcb, 0x78, 0x05, 0x76, 0x79, 0xe0 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Io.Write() with **EfiPciWidthUintX** to write Buffer1 to Io address.  2. Call Io.Read() with data width as **EfiPciWidthFifoUintX** from the same Io address to Buffer2. All units of Buffer2 should be the first unit of Buffer1. |
| 5.8.1.5.6 | 0x349eb44d, 0x2db1, 0x4fa7, 0xa3, 0xf2, 0x1a, 0x08, 0x8d, 0xa9, 0x0e, 0x3c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Io.Read() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to read Io address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.5.7 | 0x3dcc7e09, 0x598c, 0x4fdb, 0xbb, 0x03, 0xda, 0xa6, 0x1a, 0xc9, 0x9f, 0x28 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Io.Write() with **EfiPciWidthUintX** to write Buffer1 to Io address.  2. Set all units of Buffer2 with the same value.  2. Call Io.Read() with data width as **EfiPciWidthFillUintX** from the same Io address to Buffer2. The first unit of Buffer2 should be same as the last unit of Buffer1 and other units of Buffer2 should remain unchanged. |
| 5.8.1.5.8 | 0xb7153211, 0xaf3b, 0x4a10, 0x85, 0x16, 0x5d, 0x5b, 0x13, 0x1d, 0x9e, 0x67 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.5.9 | 0x8578f6de, 0xc396, 0x42f7, 0x92, 0x42, 0x74, 0x37, 0x13, 0xdb, 0xbf, 0x6d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.5.10 | 0x50b7d46a, 0x73b5, 0x4bba, 0xa7, 0x36, 0x8a, 0xae, 0x97, 0x5c, 0x42, 0x6b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.5.11 | 0xb24b8daa, 0x5ea2, 0x47d0, 0x88, 0xc0, 0x32, 0x3b, 0x26, 0x43, 0x2f, 0xbc | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Read – Io.Read() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### Io.Write()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.6.1 | 0xa0954c3a, 0x86d9, 0x43a8, 0xb0, 0xcb, 0x13, 0xcf, 0x13, 0xe2, 0x82, 0x50 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Io.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer to Io address. The return code should be EFI\_SUCCESS. |
| 5.8.1.6.2 | 0xe401d5de, 0x3a4e, 0x4e21, 0xb1, 0x4c, 0x34, 0x90, 0xc6, 0xe8, 0xf3, 0xd8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Read() with **EfiPciWidthUintX** returns the contents written by Io.Write(). | 1. Call Io.Read() to read Io address contents to backup buffer.  2. Call Io.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write backup buffer contents to Io address.  3. Call Io.Read() again to read Io address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.6.3 | 0xef5142b5, 0xe421, 0x43b8, 0xb1, 0xd5, 0x17, 0x60, 0x46, 0x60, 0x72, 0x3a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Io.Write() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to write buffer contents to Io address. The return code should be EFI\_SUCCESS. |
| 5.8.1.6.4 | 0xd2f5dadf, 0x82f7, 0x4d25, 0x9a, 0x96, 0x50, 0xd5, 0xb6, 0xfe, 0x86, 0xbf | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Io.Read() with **EfiPciWidthUintX** to read Io address contents to Buffer1.  2. Call Io.Write() with **EfiPciWidthFifoUintX** to write Buffer1 to Io address.  3. Call Io.Read() with data width as **EfiPciWidthUintX** from the same Io address to Buffer2. The first unit of Buffer2 should be the same as the last unit of Buffer1, and other units of Buffer2 should be the same as corresponding units of Buffer1. |
| 5.8.1.6.5 | 0xf6433206, 0xe359, 0x4a42, 0x82, 0x68, 0xb6, 0xbb, 0x68, 0x90, 0x6a, 0x3a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Io.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write buffer contents to Io address. The return code should be EFI\_SUCCESS. |
| 5.8.1.6.6 | 0x8912391c, 0xf457, 0x4e51, 0x82, 0xb4, 0xe8, 0xaf, 0x1c, 0x5a, 0x18, 0xc2 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Io.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write Buffer1 contents to Io address.  2. Call Io.Read() with data width as **EfiPciWidthUintX** to read Io address contents to Buffer2. All the units of Buffer2 should be the same as the first unit of Buffer1. |
| 5.8.1.6.7 | 0xe347d0ed, 0x8fbd, 0x46c4, 0xbd, 0xfe, 0x27, 0x2f, 0x81, 0x3a, 0x84, 0x85 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Io.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer back to Io address. The return code should be EFI\_SUCCESS. |
| 5.8.1.6.8 | 0x21d34064, 0x9df8, 0x4edf, 0x81, 0xd8, 0xeb, 0x90, 0x9c, 0xe7, 0x53, 0xd5 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.6.9 | 0x9174967b, 0x1639, 0x46b0, 0xab, 0x66, 0x70, 0x59, 0x4e, 0x5a, 0x3f, 0x57 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.6.10 | 0x429ab4d0, 0x8d64, 0x4308, 0xa3, 0x08, 0x3e, 0x48, 0xa5, 0x66, 0x70, 0x4b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.6.11 | 0x3d761cee, 0x9d62, 0x4942, 0x91, 0xde, 0xa9, 0xca, 0x93, 0xe4, 0xd5, 0x31 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Io.Write – Io.Write() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### Pci.Read()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.7.1 | 0x0a24c289, 0xe2b2, 0x465e, 0x93, 0x03, 0x20, 0x4e, 0xae, 0x23, 0x88, 0xd5 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Pci.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Pci address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.7.2 | 0x6a0884db, 0x48e2, 0x4330, 0x97, 0xa7, 0xf5, 0x26, 0x92, 0x4a, 0xf5, 0xea | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Pci.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Pci address contents to backup buffer.  2. Call Pci.Write() to write backup buffer contents to Pci address.  3. Call Pci.Read() again to read Pci address contents to another buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.7.3 | 0x34b35b73, 0xdb30, 0x4343, 0x85, 0x9a, 0x13, 0xb9, 0xac, 0x6e, 0x88, 0x9a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthUintX** returns the contents written by Pci.Write(). | 1. Call Pci.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to read Pci address contents to backup buffer.  2. Call Pci.Write() to write backup buffer contents to Pci address.  3. Call Pci.Read() again to read Pci address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.7.4 | 0x0cb1fa0c, 0xfb2d, 0x4eed, 0x8d, 0x72, 0xb1, 0x65, 0x14, 0xcf, 0x95, 0xee | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Pci.Read() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to read Pci address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.7.5 | 0x95094926, 0x51ab, 0x43c1, 0xb6, 0xb3, 0x77, 0xba, 0x39, 0x8b, 0x4a, 0x94 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Pci.Write() with **EfiPciWidthUintX** to write Buffer1 to Pci address.  2. Call Pci.Read() with data width as **EfiPciWidthFifoUintX** from the same Pci address to Buffer2. All units of Buffer2 should be the first unit of Buffer1. |
| 5.8.1.7.6 | 0xfb4b5e93, 0x494b, 0x4865, 0x9e, 0xb0, 0x8c, 0xb5, 0xeb, 0x0d, 0x86, 0x64 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Pci.Read() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to read Pci address contents to buffer. The return code should be EFI\_SUCCESS. |
| 5.8.1.7.7 | 0x711d56d9, 0x90d4, 0x422b, 0xad, 0x2b, 0xfe, 0xe9, 0x01, 0x2c, 0xfd, 0x7a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Pci.Write() with **EfiPciWidthUintX** to write Buffer1 to Pci address.  2. Set all units of Buffer2 with the same value.  2. Call Pci.Read() with data width as **EfiPciWidthFillUintX** from the same Pci address to Buffer2. The first unit of Buffer2 should be same as the last unit of Buffer1 and other units of Buffer2 should remain unchanged. |
| 5.8.1.7.8 | 0xbeed4e4f, 0xf7aa, 0x480e, 0x97, 0xfd, 0x3d, 0xd8, 0x83, 0x5f, 0x47, 0x09 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.7.9 | 0x1698aaaf, 0x8a6e, 0x4a56, 0xb6, 0xd5, 0x4e, 0xa4, 0x1d, 0x12, 0x2c, 0xb3 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.7.10 | 0x201fdef9, 0xdc84, 0x4c9d, 0x85, 0x98, 0x86, 0xf7, 0xca, 0x3f, 0xef, 0x81 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.7.11 | 0xe0a36a5f, 0x3be9, 0x4b11, 0x9e, 0xfb, 0x90, 0x07, 0x1c, 0x73, 0x99, 0xc9 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Read – Pci.Read() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### Pci.Write()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.8.1 | 0x22abcbe1, 0x5a58, 0x47d0, 0xb7, 0x3a, 0x6d, 0x3c, 0x55, 0x7a, 0xe9, 0x7c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Pci.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer to Pci address. The return code should be EFI\_SUCCESS. |
| 5.8.1.8.2 | 0xb4e49e1b, 0xbe09, 0x4cdc, 0xbb, 0x56, 0xaa, 0x44, 0x4b, 0x86, 0xa6, 0x4a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Read() with **EfiPciWidthUintX** returns the contents written by Pci.Write(). | 1. Call Pci.Read() to read Pci address contents to backup buffer.  2. Call Pci.Write() with data width as **EfiPciWidthUintX**(X=8,16,32) to write backup buffer contents to Pci address.  3. Call Pci.Read() again to read Pci address contents to another buffer. The read contents in buffer should be the same as backup buffer. |
| 5.8.1.8.3 | 0xd753202a, 0xbe16, 0x4a58, 0x88, 0x3a, 0xcb, 0x5b, 0x82, 0xdf, 0xb8, 0xe8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthFifoUintX** returns EFI\_SUCCESS. | 1. Call Pci.Write() with data width as **EfiPciWidthFifoUintX**(X=8,16,32) to write buffer contents to Pci address. The return code should be EFI\_SUCCESS. |
| 5.8.1.8.4 | 0x241e4d94, 0xa5a2, 0x4192, 0x93, 0x66, 0x6d, 0x25, 0x8b, 0x20, 0x9b, 0xfc | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthFifoUintX** only increases buffer for each of the count operations performed. | 1. Call Pci.Read() with **EfiPciWidthUintX** to read Pci address contents to Buffer1.  2. Call Pci.Write() with **EfiPciWidthFifoUintX** to write Buffer1 to Pci address.  3. Call Pci.Read() with data width as **EfiPciWidthUintX** from the same Pci address to Buffer2. The first unit of Buffer2 should be the same as the last unit of Buffer1, and other units of Buffer2 should be the same as corresponding units of Buffer1. |
| 5.8.1.8.5 | 0xadff8bd8, 0x7efd, 0x4368, 0x9b, 0x72, 0x0e, 0x9b, 0x10, 0xca, 0x13, 0x39 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthFillUintX** returns EFI\_SUCCESS. | 1. Call Pci.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write buffer contents to Pci address. The return code should be EFI\_SUCCESS. |
| 5.8.1.8.6 | 0xe9a41aa8, 0xd9be, 0x4b34, 0x99, 0xab, 0x40, 0x89, 0x08, 0x76, 0xc4, 0xe0 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthFillUintX** only increases address for each of the count operations performed. | 1. Call Pci.Write() with data width as **EfiPciWidthFillUintX**(X=8,16,32) to write Buffer1 contents to Pci address.  2. Call Pci.Read() with data width as **EfiPciWidthUintX** to read Pci address contents to Buffer2. All the units of Buffer2 should be the same as the first unit of Buffer1. |
| 5.8.1.8.7 | 0x91076895, 0x66a6, 0x4d26, 0x84, 0xca, 0x8d, 0x38, 0xeb, 0x96, 0xd7, 0x5f | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with **EfiPciWidthUintX** returns EFI\_SUCCESS. | 1. Call Pci.Read() with data width as **EfiPciWidthUintX**(X=8,16,32) to write buffer back to Pci address. The return code should be EFI\_SUCCESS. |
| 5.8.1.8.8 | 0x7ff7a44c, 0x8647, 0x46de, 0x94, 0xe9, 0xe4, 0x0d, 0x30, 0xd1, 0x52, 0x41 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Write() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.8.9 | 0x5928ba78, 0x13d0, 0x48bd, 0x8f, 0xf7, 0xa6, 0xee, 0x82, 0x79, 0xef, 0xea | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Write() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.8.10 | 0xb04a41bf, 0xa881, 0x4f93, 0xb6, 0x81, 0x14, 0x5c, 0xea, 0xaf, 0xa6, 0xa8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with buffer as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Write() with buffer as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.8.11 | 0x009e4d36, 0xdc7e, 0x45a6, 0xa7, 0xa5, 0xfa, 0x8b, 0x79, 0x11, 0xfb, 0x0c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Pci.Write – Pci.Write() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call Pci.Write() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER |

### CopyMem()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.9.1 | 0x73a0ec23, 0x176e, 0x4560, 0xb2, 0xa3, 0x77, 0x13, 0xae, 0x8e, 0x42, 0xd2 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() between non-overlapping regions regions returns EFI\_SUCCESS. | 1. Set Buffer1 with specific value. Call Mem.Write() to write Buffer1 to Address1 with count units.  2. Call CopyMem() to copy Mem from Address1 to Address1+ **BufferSize** with count units. The return code should be EFI\_SUCCESS. |
| 5.8.1.9.2 | 0x6fd31187, 0xf3e6, 0x4b1d, 0x90, 0x61, 0xdc, 0xd8, 0x36, 0x98, 0xe6, 0xfc | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – The data in destination address should be the same as the source address after call of CopyMem() between non-overlapping regions. | 1. Set Buffer1 with specific value. Call Mem.Write() to write Buffer1 to **Address1** with count units.  2. Call CopyMem() to copy Mem from Address1 to Address1+ **BufferSize** with count units.  3. Call Mem.Read() to read data of Address1+**BufferSize** to Buffer2. All units of Buffer2 should be the same as Buffer1. |
| 5.8.1.9.3 | 0x4110b651, 0xb45e, 0x4684, 0xae, 0x38, 0x72, 0x8d, 0x01, 0xbb, 0x00, 0x97 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() between overlapping regions with destination address > source address returns EFI\_SUCCESS. | 1. Set **Buffer1** with specific value. Call Mem.Write() to write Buffer1 to Address1 with count units.  2. Call CopyMem() to copy Mem from Address1 to Address1+ **BufferSize**/2 with count units. The return code should be EFI\_SUCCESS. |
| 5.8.1.9.4 | 0x2f84ec07, 0xa38a, 0x4db2, 0xac, 0x0f, 0x66, 0x4f, 0x91, 0x3b, 0xb3, 0xea | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – After call of CopyMem() between overlapping regions, the data in destination address should be the same as the buffer contents written to the source address. | 1. Set Buffer1 with specific value. Call Mem.Write() to write Buffer1 to Address1 with count units.  2. Call CopyMem() to copy Mem from Address1 to Address1+ **BufferSize**/2 with count units.  3. Call Mem.Read() to read data of Address1+**BufferSize**/2 to Buffer2. All units of Buffer2 should be the same as Buffer1. |
| 5.8.1.9.5 | 0x4081f6bf, 0xf332, 0x44de, 0xb8, 0x62, 0x19, 0xe5, 0xaa, 0xdb, 0x43, 0x7e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() between overlapping regions with destination address < source address returns EFI\_SUCCESS. | 1. Set Buffer1 with specific value. Call Mem.Write() to write Buffer1 to Address1+ **BufferSize**/2 with count units.  2. Call CopyMem() to copy Mem from Address1+ **BufferSize**/2 to Address1 with count units. The return code should be EFI\_SUCCESS. |
| 5.8.1.9.6 | 0x8fb4d613, 0x2bde, 0x4f40, 0x9c, 0x70, 0xe1, 0x60, 0x34, 0xdc, 0x3b, 0xbc | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – After call of CopyMem() between overlapping regions, the data in destination address should be the same as the buffer contents written to the source address. | 1. Set Buffer1 with specific value. Call Mem.Write() to write Buffer1 to Address1+ **BufferSize**/2 with count units.  2. Call CopyMem() to copy Mem from Address1+ **BufferSize**/2 to Address1 with count units.  3. Call Mem.Read() to read data of Address1 to Buffer2. All units of Buffer2 should be the same as Buffer1. |
| 5.8.1.9.7 | 0x0bcb82fb, 0x7052, 0x4d0f, 0xad, 0x73, 0xd3, 0xe7, 0x25, 0xae, 0x46, 0xb5 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() with Width as **EfiPciWidthMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthMaximum**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.9.8 | 0x9f7bf606, 0xf898, 0x42f2, 0xb7, 0x7f, 0xc1, 0x39, 0xa5, 0x90, 0x65, 0x6c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() with Width as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.9.9 | 0x5762a830, 0x4fd5, 0x4858, 0x82, 0x1f, 0x76, 0xab, 0x12, 0xe9, 0xa9, 0x80 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() with Width as **EfiPciWidthFifoUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthFifoUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.9.10 | 0x09154449, 0xd6bc, 0x47b3, 0x8a, 0x47, 0x25, 0xd3, 0x08, 0x81, 0xa5, 0x0f | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() with Width as **EfiPciWidthFillUintX** returns EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthFillUintX**. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.9.11 | 0x6ea5136c, 0x0060, 0x4e70, 0xa1, 0x7a, 0xc1, 0xf0, 0xbf, 0x9c, 0x74, 0x89 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.CopyMem – CopyMem() with unsupported Width from profile returns EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with unsupported Width from profile. The return code should be EFI\_INVALID\_PARAMETER. |

### Map()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.10.1 | 0xb5eadff4, 0x6bbc, 0x45a2, 0xb9, 0x05, 0x85, 0x49, 0x78, 0xf3, 0xa6, 0x27 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map with **EfiPciOperationBusMasterRead** returns EFI\_SUCCESS. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead** to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.2 | 0x93950131, 0x0bc3, 0x429d, 0xad, 0x2d, 0x10, 0x47, 0x70, 0x76, 0x6c, 0xce | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map with **EfiPciOperationBusMasterRead** returns non-0 NumberOfBytes. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead** to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.3 | 0x1a041b96, 0x79ea, 0x4732, 0xb9, 0xaa, 0x1c, 0xd4, 0x3b, 0x8c, 0x36, 0xcc | [DELETED] |  |
| 5.8.1.10.4 | 0x11e33211, 0xbc86, 0x4d69, 0xb9, 0xdf, 0x2d, 0x0a, 0xb5, 0xa0, 0x94, 0x46 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterRead**64 returns EFI\_SUCCESS. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead**64 to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.5 | 0x42e6a8c6, 0x0b28, 0x422d, 0xae, 0x3d, 0x86, 0x4d, 0xbf, 0x7b, 0x55, 0xee | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterRead**64 returns non-0 NumberOfBytes. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead**64 to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.6 | 0x84f186ad, 0x3c1e, 0x46c4, 0x95, 0x52, 0xff, 0xd9, 0xdc, 0xbf, 0x80, 0x9d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – After Map() with **EfiPciOperationBusMasterRead**64, the data read from device address is the same as original data. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead**64 to map the address of Buffer to device address. The data read from device address must be the same as original data. |
| 5.8.1.10.7 | 0xe10594a2, 0xfd97, 0x4383, 0x82, 0x5c, 0x62, 0x14, 0x54, 0x62, 0xd9, 0x5e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite** returns EFI\_SUCCESS. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.8 | 0x07e366fc, 0x5d2e, 0x474f, 0xba, 0xd3, 0xf8, 0xe4, 0x0a, 0x50, 0xf1, 0xd9 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite** returns non-0 NumberOfBytes. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.9 | 0xbceb0ddc, 0x1145, 0x4fcd, 0x89, 0x1c, 0x53, 0x2f, 0x71, 0xb1, 0xf4, 0xe7 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite** does not change data in host address. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address. Data in Buffer should not be changed. |
| 5.8.1.10.10 | 0x5288b979, 0x9a17, 0x474a, 0xaf, 0xa0, 0x68, 0x61, 0x88, 0x48, 0xb3, 0xc1 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite**64 returns EFI\_SUCCESS. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite**64 to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.11 | 0x65d95c94, 0xd3b9, 0x4e4b, 0x88, 0x38, 0x49, 0x96, 0x0d, 0xb8, 0xfb, 0x24 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite** returns non-0 NumberOfBytes. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite**64 to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.12 | 0x29fc59bc, 0x9f0d, 0x463d, 0xb4, 0x4a, 0x5a, 0xd2, 0x2d, 0x11, 0xa2, 0x26 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterWrite**64 does not change data in host address. | 1. Allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite**64 to map the address of Buffer to device address. Data in Buffer should not be changed. |
| 5.8.1.10.13 | 0xb674ab5a, 0xc030, 0x4832, 0x9d, 0x69, 0xbb, 0x18, 0x27, 0xb3, 0x39, 0x8e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer** returns EFI\_SUCCESS. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer** to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.14 | 0xebb4be23, 0x25c7, 0x46ce, 0xb8, 0x52, 0xde, 0xc7, 0x18, 0x2a, 0xc2, 0x07 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer** returns non-0 NumberOfBytes. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer** to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.18 | 0x8120df74, 0xae1e, 0x47f9, 0xaa, 0x45, 0x8e, 0x70, 0xa7, 0xe3, 0x31, 0x19 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer**64 returns EFI\_SUCCESS. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of Buffer to device address. The return code should be EFI\_SUCCESS. |
| 5.8.1.10.19 | 0xb93854ce, 0x5237, 0x492f, 0xbd, 0x55, 0x27, 0xd3, 0x82, 0xc1, 0xce, 0x53 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer**64 returns non-0 NumberOfBytes. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of Buffer to device address. The return value of NumberOfBytes should not be 0. |
| 5.8.1.10.20 | 0x3ec7dc5b, 0x3c99, 0x47e1, 0x87, 0xff, 0xb2, 0x4d, 0x08, 0x95, 0x04, 0x96 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – After Map() with **EfiPciOperationBusMasterCommonBuffer**64, the data read from device address is the same as original data. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of Buffer to device address. The data read from device address must be the same as original data. |
| 5.8.1.10.21 | 0xb4df6e6e, 0x4e30, 0x457e, 0xa1, 0xf8, 0x39, 0xf4, 0x52, 0xf6, 0x11, 0x2f | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – After Map() with **EfiPciOperationBusMasterCommonBuffer**64, the data in original host address remains in sync with mapped device address. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of Buffer to device address.  3. Call BS.SetMem() to change contents of mapped device address. Data in host address should change also and be equal to data in device address. |
| 5.8.1.10.22 | 0xc4451e9d, 0x538e, 0x4cda, 0xa7, 0xa6, 0x0c, 0xa1, 0x50, 0x06, 0x03, 0x87 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – After Map() with **EfiPciOperationBusMasterCommonBuffer**64, the data in mapped device address remains in sync with original host address. | 1. Call AllocateBuffer() to allocate memory to Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of Buffer to device address.  3. Call BS.SetMem() to change contents of host address. Data in mapped device address should change also and be equal to data in device address. |
| 5.8.1.10.23 | 0xc79ed36f, 0xe0b3, 0x426c, 0x85, 0xc1, 0x7d, 0xfe, 0xb8, 0xcf, 0xdf, 0x07 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with invalid Operation as **EfiPciOperationMaximum** returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with invalid Operation: **EfiPciOperationMaximum**. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.24 | 0x04b07426, 0x3d17, 0x4f18, 0x8b, 0x1c, 0xbd, 0x59, 0xae, 0x99, 0xe5, 0xf8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with invalid Operation as -1 returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with invalid Operation: -1. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.25 | 0xf8a42643, 0x912a, 0x4731, 0xb9, 0x04, 0x47, 0xbc, 0x87, 0x7f, 0xdd, 0xcf | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with HostAddress as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with HostAddress as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.26 | 0x13513dbf, 0xc4da, 0x4952, 0xa4, 0x37, 0x44, 0x22, 0x28, 0x13, 0xdb, 0xfd | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with NumberOfBytes as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with NumberOfBytes as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.27 | 0x8bfb7a69, 0xd816, 0x4315, 0xbe, 0x27, 0xe2, 0xa9, 0x03, 0x44, 0x69, 0x8e | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with DeviceAddress as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with DeviceAddress as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.28 | 0x6fe65b18, 0x7638, 0x4584, 0xb9, 0x5f, 0x90, 0x2c, 0x0f, 0x80, 0xf6, 0x9b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with Mapping as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call Map() with Mapping as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.10.29 | 0xd6b631c7, 0xd459, 0x40cd, 0xa1, 0xca, 0x6d, 0x28, 0x7b, 0x61, 0xaa, 0xd9 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer** and HostAddress + NumberofBytes > 4GB returns EFI\_UNSUPPORTED. | 1. Call Map() with HostAddress + NumberofBytes > 4GB. The return code should be EFI\_UNSUPPORTED. |
| 5.8.1.10.30 | 0x04030971, 0xedb2, 0x498b, 0x84, 0x94, 0xf0, 0x19, 0x24, 0x28, 0xd4, 0x14 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Map – Map() with **EfiPciOperationBusMasterCommonBuffer**64 and HostAddress + NumberofBytes > 4GB returns EFI\_UNSUPPORTED. | 1. Call Map() with HostAddress + NumberofBytes > 4GB. The return code should be EFI\_UNSUPPORTED. |

### Unmap()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.11.1 | 0xb4a084d7, 0x48de, 0x48de, 0x97, 0xa0, 0x27, 0x10, 0x07, 0x9f, 0xcc, 0x04 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterRead** returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterRead** to map the address of Buffer to device address..  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.2 | 0xa4ef56f6, 0x597b, 0x47a4, 0xa3, 0xed, 0x00, 0xba, 0x87, 0xcd, 0x47, 0xd8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterRead** does not change contents in host address. | 1. Set specific value to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead** to map the address of Buffer to device address.  3. Call Unmap with mapping value gotten from Map(). The data in Buffer should remain unchanged. |
| 5.8.1.11.3 | 0xd211369e, 0x2b2d, 0x4d95, 0xa7, 0x30, 0x7c, 0x7c, 0xf5, 0xd6, 0xfc, 0x13 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterRead**64 returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterRead**64 to map the address of Buffer to device address..  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.4 | 0xa32ec004, 0x1e89, 0x4553, 0xac, 0x80, 0x9d, 0x3b, 0x14, 0xe6, 0x09, 0x49 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterRead**64 does not change contents in host address. | 1. Set specific value to Buffer.  2. Call Map() with **EfiPciOperationBusMasterRead**64 to map the address of Buffer to device address.  3. Call Unmap with mapping value gotten from Map(). The data in Buffer should remain unchanged. |
| 5.8.1.11.5 | 0x8a2ffff4, 0x186b, 0x4624, 0xa5, 0x4a, 0x1a, 0x8f, 0xaf, 0xe4, 0x06, 0x2a | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterWrite** returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address.  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.6 | 0x8874b727, 0x7a35, 0x4e6e, 0x96, 0x19, 0x7e, 0x5b, 0x22, 0xcb, 0x3f, 0xf8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterWrite** does not change contents in host address. | 1. Set specific value to Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address.  3. Call Unmap with mapping value gotten from Map(). The data in Buffer should remain unchanged. |
| 5.8.1.11.7 | 0xffd39873, 0xa3da, 0x49fd, 0xae, 0x87, 0x5c, 0x09, 0xb5, 0xa1, 0x01, 0x73 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterWrite** returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of Buffer to device address.  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.8 | 0xd8eedc25, 0xea92, 0x4d1b, 0x8f, 0xe7, 0x7c, 0xb1, 0x87, 0xb2, 0xc0, 0xa6 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterWrite**, does not change contents in host address. | 1. Set specific value to the Buffer.  2. Call Map() with **EfiPciOperationBusMasterWrite** to map the address of the Buffer to the device address.  3. Call Unmap() with mapping value gotten from Map(). The data in the Buffer should remain unchanged. |
| 5.8.1.11.9 | 0xe543e036, 0x3948, 0x4773, 0xa8, 0x0e, 0x89, 0x2c, 0xd3, 0xcc, 0xf0, 0xdf | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterCommonBuffer** returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterCommonBuffer** to map the address of the Buffer to the device address.  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.10 | 0xd2368593, 0x122a, 0x41e7, 0x83, 0x34, 0x65, 0x7e, 0x78, 0xed, 0x12, 0xbc | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterCommonBuffer** does not change contents in host address. | 1. Call AllocateBuffer() to allocate memory to the Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer** to map the address of the Buffer to the device address.  3. Call Unmap() with mapping value gotten from Map(). The data in the Buffer should remain unchanged. |
| 5.8.1.11.11 | 0x9356285b, 0x21b2, 0x40a3, 0x95, 0xed, 0xd6, 0xfe, 0x27, 0x5a, 0x2b, 0xba | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterCommonBuffer**64 returns EFI\_SUCCESS. | 1. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of the Buffer to the device address.  2. Call Unmap() to release resources of mapping. The return code should be EFI\_SUCCESS. |
| 5.8.1.11.12 | 0x0c44017c, 0x078d, 0x475c, 0x90, 0x0c, 0x4a, 0x36, 0xe6, 0x8b, 0x72, 0x04 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Unmap – Unmap() with mapping value gotten from Map() of **EfiPciOperationBusMasterCommonBuffer**64 does not change contents in host address | 1. Call AllocateBuffer() to allocate memory to the Buffer.  2. Call Map() with **EfiPciOperationBusMasterCommonBuffer**64 to map the address of the Buffer to the device address.  3. Call Unmap with mapping value gotten from Map(). The data in the Buffer should remain unchanged. |

### AllocateBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.12.1 | 0x58a99166, 0xfdbe, 0x4963, 0xb9, 0x56, 0x00, 0x4f, 0x97, 0xcc, 0xe5, 0x20 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.AllocateBuffer – AllocateBuffer() with valid parameter returns EFI\_SUCCESS. | 1. Call AllocateBuffer() with valid parameter. The return code should be EFI\_SUCCESS. |
| 5.8.1.12.2 | 0x193efb14, 0x0c2a, 0x494d, 0xa2, 0xfc, 0xe1, 0x28, 0xb0, 0xe7, 0xb6, 0x5c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.AllocateBuffer – AllocateBuffer() with invalid memory types -1 returns EFI\_INVALID\_PARAMETER. | 1. Call AllocateBuffer() with invalid memory types -1. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.12.3 | 0x08d81bb3, 0x1db0, 0x4ce3, 0x8e, 0xe0, 0xa6, 0x7c, 0x46, 0xf1, 0xa8, 0x9b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.AllocateBuffer – AllocateBuffer() with invalid memory types returns EFI\_INVALID\_PARAMETER. | 1. Call AllocateBuffer() with invalid memory types. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.12.4 | 0x66bd765c, 0x6b86, 0x4a29, 0xbe, 0x88, 0x10, 0xab, 0xfe, 0x5a, 0xef, 0xbd | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.AllocateBuffer – AllocateBuffer() with HostAddress as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call AllocateBuffer() with HostAddress as NULL. The return code should be EFI\_INVALID\_PARAMETER |
| 5.8.1.12.5 | 0xf2e8d30e, 0x40d8, 0x4823, 0x97, 0xb2, 0x08, 0x32, 0x11, 0x9f, 0x78, 0xd3 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.AllocateBuffer – AllocateBuffer() with unsupported Attributes returns EFI\_UNSUPPORTED. | 1. Call AllocateBuffer() with unsupported Attributes. The return code should be EFI\_UNSUPPORTED. |

### FreeBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.13.1 | 0xf2ec6740, 0x6416, 0x4890, 0xaf, 0xe6, 0xad, 0x67, 0x91, 0xf0, 0x22, 0xaf | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.FreeBuffer – FreeBuffer() with valid parameter returns EFI\_SUCCESS. | 1. Call AllocateBuffer() to allocate memory to buffer.  2. Call FreeBuffer() to free buffer memory. The return code should be EFI\_SUCCESS. |

### Flush()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.14.1 | 0x8ce74cd6, 0x0409,  0x4513,  0x98, 0xdd,  0x3d, 0x0f,  0x96, 0x97,  0x4f, 0xe8 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Flush – Flush() with valid parameter returns EFI\_SUCCESS. | 1. Call Flush() with valid parameter. The return code should be EFI\_SUCCESS. |

### 

### GetAttributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.15.1 | 0x8e661c40, 0xf56f, 0x4ce8, 0x8e, 0x7e, 0xf4, 0x07, 0x28, 0x57, 0xf9, 0x5b | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – GetAttributes() to get current attributes and supported attributes returns EFI\_SUCCESS. | 1. Call GetAttributes() to get current attributes and supported attributes. The return code should be EFI\_SUCCESS. |
| 5.8.1.15.2 | 0x54d94c0e, 0x70d7, 0x4a7a, 0x9e, 0x81, 0xf5, 0xb1, 0x63, 0x05, 0x93, 0xbe | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – Current attributes must within Supported attributes. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Current attributes must within Supported attributes. |
| 5.8.1.15.3 | 0x727cabec, 0x1a1b, 0x4e9d, 0xb1, 0xde, 0x3b, 0x3e, 0xda, 0x55, 0x84, 0x44 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – GetAttributes() to only get current attributes returns EFI\_SUCCESS. | 1. Call GetAttributes() to only get current attributes. The return code should be EFI\_SUCCESS. |
| 5.8.1.15.4 | 0x66fb3230, 0xa799, 0x4efe, 0x89, 0xfa, 0xbf, 0x86, 0xdf, 0x23, 0xb0, 0xf7 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – The second call of GetAttributes() returns the same current attributes as the first time. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Call GetAttributes() for the second time to only get current attributes. It should return the same current attribute as the first time. |
| 5.8.1.15.5 | 0x2176073a, 0x7dfa, 0x463a, 0xa2, 0xf1, 0xab, 0xba, 0x92, 0x42, 0xe0, 0xea | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes - GetAttributes() to only get supported attributes returns EFI\_SUCCESS. | 1. Call GetAttributes() to only get supported attributes. The return code should be EFI\_SUCCESS. |
| 5.8.1.15.6 | 0x5a5c6253, 0x1202, 0x4abd, 0x95, 0x6f, 0x23, 0x0a, 0x1b, 0x2f, 0x45, 0xc0 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – The second call of GetAttributes() returns the same supported attributes as the first time. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Call GetAttributes() for the second time to only get supported attributes. It should return the same supported attribute as the first time. |
| 5.8.1.15.7 | 0x8f25b1c3, 0x4571, 0x4101, 0x95, 0xf1, 0x36, 0xc1, 0xe5, 0x83, 0xc0, 0x23 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.GetAttributes – GetAttributes() with both Attributes and Supports as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call GetAttributes() with both Attributes and Supports as NULL. The return code should be EFI\_INVALID\_PARAMETER |

### SetAttributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.16.1 | 0xb9ee4bd9, 0x5a92, 0x4521, 0xbf, 0xaa, 0x80, 0x7f, 0x8b, 0x20, 0xac, 0xaa | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() to set supported attributes returns EFI\_SUCCESS. | 1. Call GetAttributes() to get supported attributes.  2. Call SetAttributes() to set supported attributes. The return code should be EFI\_SUCCESS. |
| 5.8.1.16.2 | 0x1dbb0bee, 0x7ebf, 0x4a3f, 0xa8, 0xaf, 0xb8, 0x24, 0x76, 0x29, 0xd6, 0x7c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() to set supported attributes changes current attributes as expected. | 1. Call GetAttributes() to get supported attributes.  2. Call SetAttributes() to set supported attributes.  3. Call GetAttributes() to get current attributes. The supported attributes bits should be set. |
| 5.8.1.16.3 | 0x697e0d03, 0xca02, 0x4a21, 0x87, 0xf6, 0xd5, 0xd5, 0xeb, 0xb3, 0xab, 0xdb | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() to set supported attributes that require a resource returns EFI\_SUCCESS. | 1. Call GetAttributes() to get supported attributes.  2. Call SetAttributes() to set MEMORY\_WRITE\_COMBINE, MEMORY\_CACHED or MEMORY\_DISABLE if they are supported. The return code should be EFI\_SUCCESS. |
| 5.8.1.16.4 | 0x1f27d46e, 0x53b4, 0x4687, 0xaa, 0x9a, 0x5d, 0x46, 0xfb, 0x05, 0xa3, 0x65 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() to set supported attributes changes current attributes as expected. | 1. Call GetAttributes() to get supported attributes.  2. Call SetAttributes() to set MEMORY\_WRITE\_COMBINE, MEMORY\_CACHED or MEMORY\_DISABLE if they are supported.  3. Call GetAttributes() to get current attributes. The supported attribute bits specified by SetAttributes() should be set. |
| 5.8.1.16.5 | 0x405511dd, 0x38b4, 0x4aed, 0x9a, 0x7e, 0x18, 0xaa, 0xd1, 0x21, 0x67, 0x68 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with unsupported attributes that do not need resources returns EFI\_UNSUPPORTED. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Call SetAttributes() with unsupported attributes that do not need resources. The return code should be EFI\_UNSUPPORTED. |
| 5.8.1.16.6 | 0x0150f584, 0x775b, 0x422d, 0xb3, 0xd7, 0xb8, 0x0d, 0x34, 0x56, 0x26, 0x47 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with unsupported attributes that need resources returns EFI\_UNSUPPORTED. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Call SetAttributes() with unsupported attributes that need resources. The return code should be EFI\_UNSUPPORTED. |
| 5.8.1.16.7 | 0xdbf3baef, 0x35e9, 0x4d10, 0x8a, 0xbb, 0xcc, 0xca, 0x70, 0x5e, 0x99, 0x86 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with unsupported attributes does not change current attributes. | 1. Call GetAttributes() to get current attributes and supported attributes.  2. Call SetAttributes() with unsupported attributes that not resource.  3. Call GetAttributes() to get current attributes. It should remain unchanged. |
| 5.8.1.16.8 | 0x186fee52, 0x7b8d, 0x4589, 0x8d, 0x87, 0x8e, 0x4f, 0x6b, 0x67, 0x9c, 0x6c | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE and ResourceBase as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE and ResourceBase as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.16.9 | 0x5a06217c, 0xcbf1, 0x4faa, 0x94, 0x04, 0x3b, 0xaf, 0x39, 0x6d, 0x04, 0x1d | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE and ResourceLength as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE and ResourceLength as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.16.10 | 0x7d1e8194, 0x0732, 0x4ca0, 0xac, 0x50, 0xdb, 0x62, 0x18, 0xe0, 0x69, 0xdd | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED and ResourceBase as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED and ResourceBase as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.16.11 | 0x037c66ae, 0x79a4, 0x4909, 0x93, 0xa4, 0xa6, 0xb7, 0xb8, 0xee, 0x58, 0xd6 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED and ResourceLength as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED and ResourceLength as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.16.12 | 0x117de9ad, 0xbc79, 0x49c2, 0xa7, 0x0f, 0x80, 0xc8, 0x80, 0x48, 0x6c, 0x91 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_DISABLE and ResourceBase as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_DISABLE and ResourceBase as NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.8.1.16.13 | 0x363d5f12, 0x4c82, 0x4117, 0xa7, 0x6c, 0xc3, 0xd3, 0x70, 0x8f, 0xdb, 0xda | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.SetAttributes – SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_DISABLE and ResourceLength as NULL returns EFI\_INVALID\_PARAMETER. | 1. Call SetAttributes() with EFI\_PCI\_ATTRIBUTE\_MEMORY\_DISABLE and ResourceLength as NULL. The return code should be EFI\_INVALID\_PARAMETER. |

### Configuration()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.1.17.1 | 0xe65742bb, 0x7693, 0x4de1, 0xb0, 0x7b, 0x74, 0xfd, 0x64, 0x43, 0x6b, 0xf5 | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Configuration – Configuration() to get the resource list returns EFI\_SUCCESS. | 1. Call Configuration() to get the resource list. The return code should be EFI\_SUCCESS. |
| 5.8.1.17.2 | 0xa5982933, 0x6b43, 0x4947, 0xb0, 0x29, 0xa8, 0xd5, 0x66, 0x72, 0xaa, 0xce | EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL.Configuration – Resource returned by Configuration points to a valid ACPI 2.0 QWord descriptor. | 1. Call Configuration() to get the Resource list. The return Resource should be a valid ACPI 2.0 QWord descriptor. |

## EFI\_PCI\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_PCI\_ IO\_ PROTOCOL Section.

Configuration

Some checkpoints in the EFI\_PCI\_IO\_PROTOCOL test are device related. If the user needs to check the protocol on the specified device, the related profile needs to be updated to provide the specified information about this device.

For the format of the profile, please refer to

��EFI\_PCI\_IO\_PROTOCOL Test Profile.

### PollMem()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.1.1 | 0xaef16eb4, 0x40ad, 0x4dcf, 0x8c, 0x57, 0x20, 0x92, 0xa7, 0x43, 0xa9, 0x78 | EFI\_PCI\_IO\_PROTOCOL.PollMem - PollMem() with valid value returns EFI\_SUCCESS. | 1. Call Mem.Write() to set the Alternate Value on the address.  2. Start a 3 second timer event. The event handler writes the Target Value to the address.  3. Call PollMem() for the Target Value with Delay as 5 seconds on the address -- PollMem() must return EFI\_SUCCESS with Result as the Target Value. |
| 5.8.2.1.2 | 0x6e8a67fe, 0x4ad1, 0x4317, 0xa6, 0xfe, 0x76, 0x88, 0x02, 0x49, 0x0f, 0xbc | EFI\_PCI\_IO\_PROTOCOL.PollMem - PollMem() with valid value again returns EFI\_SUCCESS. | 1. Call Mem.Write() to set the Alternate Value on the address.  2. Start a 3 second timer event. The event handler writes the Target Value to the address.  3. Call PollMem() for the Target Value with Delay as 5 seconds on the address -- PollMem() must return EFI\_SUCCESS with Result as the Target Value.  4. Call PollMem() for the Target Value again on the address. -- PollMem() must return EFI\_SUCCESS with Result as the expected value. |
| 5.8.2.1.3 | 0x3b2cfc3e, 0xf167, 0x4c1f, 0x99, 0x8e, 0x2b, 0xca, 0x0b, 0x17, 0x6d, 0x39 | EFI\_PCI\_IO\_PROTOCOL.PollMem - PollMem() with delay equals 0 and invalid destination address, returns EFI\_SUCCESS. | 1. Call Mem.Write() to set the Alternate Value on the address.  2. PollMem() for the Target Value on the address with Delay as 0. -- PollMem() must return EFI\_SUCCESS, with Result as the Alternate Value. |
| 5.8.2.1.4 | 0x600c99fb, 0x31d0, 0x4a94, 0x8e, 0xa3, 0xbd, 0x59, 0x54, 0xd0, 0xa5, 0x2b | EFI\_PCI\_IO\_PROTOCOL.PollMem - PollMem() with 5 seconds delay and invalid destination address, returns EFI\_TIMEOUT. | 1. Call Mem.Write() to set the Alternate Value on the address.  2. PollMem() for the Target on the address with Delay as 5 seconds. – PollMem() must return EFI\_TIMEOUT, with Result as the Alternate Value. |
| 5.8.2.1.5 | 0x5a9e8b1e, 0xdc0d, 0x461f, 0x9f, 0xd5, 0xf4, 0x4c, 0xb9, 0x6e, 0xff, 0xfa | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Width as **EfiPciWidthMaximum**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.1.6 | 0x3c29ad4d, 0x8bad, 0x4862, 0xab, 0x3a, 0x9b, 0xde, 0xee, 0xd6, 0x2e, 0x19 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Width as **EfiPciWidthFifoUintX**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthFifoUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.1.7 | 0xb9b9ebdc, 0x09e9, 0x4cc6, 0xaf, 0x45, 0xf1, 0xae, 0x28, 0x06, 0x17, 0x70 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Width as **EfiPciWidthFillUintX**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Width as **EfiPciWidthFillUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.1.8 | 0x9007c300, 0x0782, 0x4f3e, 0xae, 0x40, 0xd5, 0x9d, 0x95, 0xce, 0x55, 0xf6 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Width as -1, the return status is EFI\_INVALID\_PARAMETER | 1. Call PollMem() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.1.9 | 0xdb14a663, 0x3a39, 0x4cf1, 0x90, 0xe6, 0x7a, 0xfe, 0x00, 0x6c, 0x66, 0xe2 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Result as NULL, the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with Result as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.1.10 | 0x47e2f242, 0xf876, 0x46ed, 0x9c, 0x91, 0x82, 0xd6, 0xd6, 0xb6, 0x7d, 0xb5 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Offset beyond the range of BAR, the return status is EFI\_UNSUPPORTED. | 1. Call PollMem() with Offset beyond the range of BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.1.11 | 0x02b6ac92, 0x4984, 0x42d8, 0xab, 0xda, 0xb1, 0x87, 0x8e, 0xa0, 0xd6, 0xc8 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With invalid BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call PollMem() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.1.12 | 0x668ccc4e, 0xb0b2, 0x4980, 0xab, 0x43, 0xff, 0xfd, 0x11, 0x83, 0x91, 0x75 | EFI\_PCI\_IO\_PROTOCOL.PollMem - With Io BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call PollMem() with Io BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.1.13 | 0x47a63a3d, 0xa134, 0x4a04, 0xb0, 0xd2, 0x10, 0xf1, 0x64, 0x88, 0xb0, 0xfb | EFI\_PCI\_IO\_PROTOCOL.PollMem - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollMem() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### PollIo()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.2.1 | 0x6dfeb4fd, 0xdd98, 0x40db, 0x8e, 0x42, 0x67, 0x8a, 0xfb, 0x92, 0x6a, 0xe9 | EFI\_PCI\_IO\_PROTOCOL.PollIo - PollIo() with valid value returns EFI\_SUCCESS. | 1. Call Mem.Write() to set the Alternate Value on the address.  2. Start a 3 second timer event. The event handler writes the Target Value to the address.  3. Call PollMem() for the Target Value with Delay as 5 seconds on the address -- PollMem() must return EFI\_SUCCESS with Result as the Target Value. |
| 5.8.2.2.2 | 0x427eb5db, 0x6e41, 0x4b01, 0xad, 0xb0, 0x31, 0xff, 0xd9, 0x99, 0x6a, 0x5b | EFI\_PCI\_IO\_PROTOCOL.PollIo - PollIo() with valid value again returns EFI\_SUCCESS. | 1. Call Io.Write() to set the Alternate Value on the address.  2. Start a 3 second timer event. The event handler writes the Target Value to the address.  3. Call PollIo() for the Target Value with Delay as 5 seconds on the address -- PollIo() must return EFI\_SUCCESS with Result as the Target Value.  4. Call PollIo() for the Target Value again on the address. -- PollIo() must return EFI\_SUCCESS with Result as the expected value |
| 5.8.2.2.3 | 0xdff400ef, 0x9e72, 0x448f, 0xad, 0x6b, 0xb1, 0x34, 0x25, 0x45, 0xc7, 0x02 | EFI\_PCI\_IO\_PROTOCOL.PollIo - PollIo() with delay equal 0 and invalid destination address returns EFI\_SUCCESS. | 1. Call Io.Write() to set the Alternate Value on the address.  2. PollIo() for the Target Value on the address with Delay as 0. -- PollIo() must return EFI\_SUCCESS, with Result as the Alternate Value. |
| 5.8.2.2.4 | 0x6071974c, 0x35c0, 0x4599, 0xa6, 0x53, 0xe4, 0xbe, 0xc7, 0x34, 0xf7, 0x2c | EFI\_PCI\_IO\_PROTOCOL.PollIo - PollIo() with 5 seconds delay and invalid destination address returns EFI\_TIMEOUT. | 1. Call Io.Write() to set the Alternate Value on the address.  2. PollIo() for the Target on the address with Delay as 5 seconds. – PollIo() must return EFI\_TIMEOUT, with Result as the Alternate Value. |
| 5.8.2.2.5 | 0xc113fe3f, 0x0fae, 0x4266, 0xbf, 0xb4, 0xfd, 0x41, 0xed, 0x41, 0xea, 0x39 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Width as **EfiPciWidthMaximum** the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.2.6 | 0x11466e1f, 0xd7e6, 0x4622, 0x84, 0x73, 0xfd, 0x57, 0xbf, 0x2f, 0x8f, 0x8e | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Width as **EfiPciWidthFifoUintX** the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthFifoUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.2.7 | 0x251113eb, 0x968c, 0x4c70, 0xbf, 0xa0, 0x0d, 0xf6, 0x74, 0x7f, 0xfa, 0x9a | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Width as **EfiPciWidthFillUintX** the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as **EfiPciWidthFillUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.2.8 | 0xc6e532e8, 0xacc8, 0x4d48, 0x84, 0x69, 0xfd, 0xb0, 0xc1, 0xe0, 0xe5, 0x34 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Width as -1 the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.2.9 | 0xdd0e653a, 0x9da8, 0x4f32, 0x9d, 0x0a, 0xe3, 0x29, 0xe1, 0x17, 0x19, 0x0e | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Result as NULL the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with Result as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.2.10 | 0xda044ef5, 0xe73b, 0x415c, 0xaf, 0x03, 0xaf, 0x3c, 0xb0, 0x00, 0x3f, 0x45 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Offset beyond the range of BAR the return status is EFI\_UNSUPPORTED. | 1. Call PollIo() with Offset beyond the range of BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.2.11 | 0x0929e753, 0x7659, 0x4b6b, 0x80, 0x1a, 0x8b, 0xd6, 0xb6, 0x37, 0x4d, 0xf6 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With invalid BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call PollIo() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.2.12 | 0x64e878f6, 0xa53d, 0x4b4f, 0xa3, 0xca, 0x18, 0x9e, 0x37, 0x23, 0x4a, 0x99 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With Mem BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call PollIo() with Mem BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.2.13 | 0xf2e6563e, 0x0881, 0x4efc, 0xae, 0x69, 0x6d, 0x08, 0xdf, 0x1c, 0xb2, 0x80 | EFI\_PCI\_IO\_PROTOCOL.PollIo - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call PollIo() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Mem.Read()

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| Number | GUID | Assertion | Test Description |
| 5.8.2.3.1 | 0xa52d8d69, 0x77cb, 0x4012, 0x9d, 0x3f, 0xfa, 0x19, 0xe3, 0x2f, 0x17, 0x6c | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - Mem.Read() reads data out and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units  The return status should be EFI\_SUCCESS. |
| 5.8.2.3.2 | 0x44e5c09e, 0xce91, 0x419d, 0xbe, 0xaf, 0xd6, 0x60, 0x73, 0xdf, 0x4e, 0xe3 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - Mem.Read() read out the data from the address space and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data in destination address range.  The return status should be EFI\_SUCCESS. |
| 5.8.2.3.3 | 0x8ac05fc7, 0x0378, 0x4b5e, 0xba, 0x48, 0xb8, 0x53, 0x3d, 0x9e, 0xf2, 0x4c | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - The data read out is the same as that written in. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.3.4 | 0xca3a1290, 0x652f, 0x490c, 0x8a, 0x3f, 0xea, 0x94, 0x45, 0xa4, 0xd3, 0x81 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - Mem.Read() reads out the data with **EfiPciIoWidthFifoX** returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.3.5 | 0x99bb7423, 0xa29c, 0x442e, 0x9a, 0x29, 0x7b, 0xf8, 0xf1, 0x88, 0xa8, 0x7e | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With **EfiPciIoWidthFifoX**, the data read out is the same as the first data unit. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare the each data unit in the buffer with the data at the Starting Address of the address range. |
| 5.8.2.3.6 | 0x4b9fef07, 0x3a4f, 0x40a0, 0xad, 0x43, 0xd1, 0x6a, 0x59, 0x8c, 0x22, 0x04 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - Mem.Read() reads out the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a bufferthat matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.3.7 | 0xd0bb89cc, 0x3838, 0x48bd, 0xb9, 0xd8, 0x1b, 0x8e, 0x3d, 0xef, 0x77, 0xd5 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With **EfiPciIoWidthFillX**, the data read out from the first unit in buffer equals the last unit in the address space. | 1. Allocate a bufferthat matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare the first data unit in the output buffer with the last data unit in the address range. Compare other data units in the output buffer with the original data. |
| 5.8.2.3.8 | 0xd282dcc9, 0x004f, 0x4733, 0xb2, 0xa6, 0xb5, 0x56, 0x6b, 0x4c, 0xaf, 0x91 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With Width as **EfiPciIoWidthMaximum** the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.3.9 | 0x927ad37d, 0x5ee5, 0x4d7a, 0x9f, 0x2e, 0x49, 0x9d, 0x7a, 0x49, 0x87, 0xb9 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With invalid Width type -1 the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.3.10 | 0x99d41dcf, 0x75ee, 0x48bf, 0xac, 0x3d, 0x86, 0xce, 0xe6, 0x67, 0x11, 0x1c | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With Buffer as NULL the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.3.11 | 0xa6d04a84, 0x2808, 0x48c7, 0xa0, 0x0b, 0xc2, 0xd6, 0xab, 0xad, 0xd5, 0x91 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Read() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.3.12 | 0xe8417927, 0xe158, 0x4094, 0x90, 0xf6, 0x03, 0x15, 0xf7, 0x2f, 0x61, 0xdc | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Read() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.3.13 | 0x80720d1b, 0xa3dd, 0x465f, 0x8d, 0xe8, 0x9b, 0x6b, 0xb9, 0x64, 0x76, 0xda | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With invalid BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Read() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.3.14 | 0x3b9e11c1, 0x6fea, 0x4742, 0x81, 0xfd, 0xf2, 0xfb, 0xd6, 0x9c, 0xb6, 0xba | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With Io **Type** BAR the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Read() with Io **Type** BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.3.15 | 0xa043ffdf, 0x568b, 0x4128, 0x80, 0xf8, 0x61, 0x29, 0x0c, 0xd8, 0x8d, 0x57 | EFI\_PCI\_IO\_PROTOCOL.Mem.Read - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Read() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Mem.Write()

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| Number | GUID | Assertion | Test Description |
| 5.8.2.4.1 | 0x5847e586, 0x1f02, 0x466c, 0xa8, 0x33, 0x27, 0x23, 0x0d, 0x8d, 0xd9, 0xfd | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - Mem.Write() writes data to the memory address space and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range  The return status should be EFI\_SUCCESS. |
| 5.8.2.4.2 | 0x6790de90, 0x56b2, 0x456e, 0x8e, 0x7a, 0xd1, 0x65, 0x77, 0xb9, 0xce, 0x39 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - The data read out is the same as that written in. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.4.3 | 0x148a380b, 0xdbe0, 0x496b, 0xbd, 0x51, 0x56, 0xe6, 0xde, 0xcc, 0xf7, 0xca | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - Mem.Write() writes the data with **EfiPciIoWidthFifoX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.4.4 | 0xf641e745, 0x9f3c, 0x42bf, 0x94, 0x23, 0x04, 0x20, 0x56, 0x46, 0x4b, 0x6b | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With **EfiPciIoWidthFifoX**, the first data unit is the same as the last data unit. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units  3. Call Mem.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare the data in the starting address with the last data unit. Compare other data units with original data. |
| 5.8.2.4.5 | 0xbb3f0bad, 0x6680, 0x4aaa, 0xbe, 0x39, 0x70, 0xe4, 0x13, 0x02, 0xf8, 0x5d | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - Mem.Write() writes the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write to address range using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.4.6 | 0x787dfda9, 0xcbfd, 0x4aae, 0x82, 0x98, 0xb1, 0xd4, 0x74, 0x15, 0x89, 0xb2 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With **EfiPciIoWidthFillX**, all the data units read out are the same as the first data unit in the address space. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write to address range using **EfiPciIoWidthFillUintX**.  4. Call Mem.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare all the data units with the first data unit. |
| 5.8.2.4.7 | 0x2d6920fd, 0x05a9, 0x480b, 0x8c, 0x74, 0x2a, 0xfc, 0x0f, 0xa7, 0x83, 0x3a | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - Mem.Write() writes back the Data and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Mem.Read() to fill in the buffer with the predefined data units.  3. Call Mem.Write() to write the buffer into the address range.  4. Call Mem.Read() to read out the data in destination address range.  5. Call Mem.Write() to write the data back.  The return status should be EFI\_SUCCESS. |
| 5.8.2.4.8 | 0x4fe0f156, 0x0cb2, 0x464a, 0xb1, 0xbd, 0x23, 0x14, 0x9e, 0x3e, 0x09, 0x60 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With Width as **EfiPciIoWidthMaximum** the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.4.9 | 0xb868ce7a, 0xfff0, 0x4c3c, 0x98, 0x00, 0xf5, 0xc7, 0xc2, 0x13, 0xaa, 0x09 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With invalid Width type -1 the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.4.10 | 0x2fe9804a, 0xa418, 0x40b7, 0xa6, 0x8c, 0xaa, 0x40, 0xc3, 0xe6, 0x2f, 0x84 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With Buffer as NULL the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.4.11 | 0xdac9a8dc, 0x172e, 0x4c6d, 0xb2, 0xe7, 0xf1, 0x65, 0x94, 0xfe, 0x89, 0x39 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Write() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.4.12 | 0x99fca122, 0xd9dc, 0x4d3b, 0xbb, 0xb0, 0x2a, 0xf5, 0x3d, 0xd1, 0x39, 0x0e | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Write() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.4.13 | 0xd5c1f492, 0x5dbf, 0x4b4d, 0x9e, 0x09, 0xd5, 0x1a, 0x23, 0x47, 0x37, 0xcc | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With invalid BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Write() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.4.14 | 0x1af1b78c, 0x8ca2, 0x4146, 0x97, 0x69, 0x94, 0x29, 0xac, 0x48, 0x11, 0x65 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With Io **Type** BAR the return status is EFI\_UNSUPPORTED. | 1. Call Mem.Write() with Io **Type** BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.4.15 | 0xa154d373, 0xc12b, 0x4939, 0xa3, 0xb2, 0xc0, 0x14, 0xc1, 0x09, 0xd3, 0x68 | EFI\_PCI\_IO\_PROTOCOL.Mem.Write - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call Mem.Write() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Io.Read()

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| Number | GUID | Assertion | Test Description |
| 5.8.2.5.1 | 0x36e0b044, 0x2b2b, 0x484b, 0xb4, 0x80, 0x85, 0x99, 0xa9, 0x99, 0xa9, 0x35 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - Io.Read() reads data out and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  The return status should be EFI\_SUCCESS. |
| 5.8.2.5.2 | 0xe65f66cb, 0xb1cb, 0x4a7a, 0x8c, 0x68, 0xb2, 0x0c, 0x69, 0x58, 0xdd, 0x6a | EFI\_PCI\_IO\_PROTOCOL.Io.Read - Io.Read() reads out the data from Io address space and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data in destination address range.  The return status should be EFI\_SUCCESS. |
| 5.8.2.5.3 | 0xec27b5c5, 0x59fb, 0x4954, 0x9c, 0x51, 0xad, 0xf4, 0x46, 0x7e, 0xe7, 0xe6 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - The data read out is the same as that written in. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.5.4 | 0x271e3b70, 0x6617, 0x4f5f, 0xb5, 0x12, 0x46, 0xb1, 0xe3, 0x1d, 0xe3, 0x79 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - Io.Read() reads out the data with **EfiPciIoWidthFifoUnintX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.5.5 | 0xccf3806e, 0x25fa, 0x4697, 0xb7, 0x08, 0x8d, 0xc1, 0x5b, 0x47, 0xba, 0x8d | EFI\_PCI\_IO\_PROTOCOL.Io.Read – All the data read out with **EfiPciIoWidthFifoX** is equal with the first data unit. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare each data unit in the buffer with the data at the Starting Address of the address range. |
| 5.8.2.5.6 | 0x080ea87f, 0xc265, 0x4a33, 0xab, 0x09, 0x78, 0xf8, 0x94, 0x58, 0x03, 0x2b | EFI\_PCI\_IO\_PROTOCOL.Io.Read - Io.Read() reads out the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.5.7 | 0x543fda6a, 0x651a, 0x4560, 0xaf, 0xfd, 0x6a, 0x95, 0x76, 0x54, 0x07, 0x30 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - Reads out the data with **EfiPciIoWidthFillX**. The first data unit eqauls the last data unit in destination address. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare the first data unit in the output buffer with the last data unit in the address range. Compare other data units in the output buffer with the original data. |
| 5.8.2.5.8 | 0x65b3c515, 0x1fe1, 0x4021, 0xb2, 0x02, 0xdd, 0xc9, 0x7a, 0x0d, 0xb2, 0x11 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With Width as **EfiPciIoWidthMaximum**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.5.9 | 0x8ef36cf9, 0x84b7, 0x4961, 0xaa, 0xcc, 0xf7, 0x41, 0x21, 0x96, 0xc0, 0xdc | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With invalid Width type -1, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.5.10 | 0x4cac979d, 0x6b8c, 0x458c, 0xb3, 0xca, 0x75, 0x30, 0x6f, 0x59, 0xa9, 0xb7 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With Buffer as NULL, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.5.11 | 0xaf51e635, 0x89c8, 0x49db, 0xa7, 0x11, 0xb6, 0xc6, 0xb8, 0x96, 0xf9, 0x79 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With address out of BAR range, the return status is EFI\_UNSUPPORTED. | 1. Call Io.Read() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.5.12 | 0x8d878934, 0x8270, 0x48a7, 0xad, 0x51, 0x65, 0xa8, 0x8d, 0xac, 0x36, 0x93 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With address out of BAR range, the return status is EFI\_UNSUPPORTED. | 1. Call Io.Read() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.5.13 | 0x53cc0e1e, 0xf3aa, 0x4f15, 0xaf, 0xec, 0xc3, 0x04, 0x8f, 0x0f, 0xa5, 0xb8 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With invalid BAR Index, the return status is EFI\_UNSUPPORTED. | 1. Call Io.Read() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.5.14 | 0x2fb4dc13, 0xb3f5, 0x4e19, 0xba, 0xe2, 0x76, 0x47, 0x10, 0x4d, 0xf7, 0x79 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With Mem **Type** BAR, the return status is EFI\_UNSUPPORTED. | 1. Call Io.Read() with Mem **Type** BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.5.15 | 0x44b6de4e, 0xc968, 0x4d97, 0xbe, 0x01, 0x3f, 0xf3, 0xdd, 0xfc, 0x53, 0xe0 | EFI\_PCI\_IO\_PROTOCOL.Io.Read - With invalid Width, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Read() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Io.Write()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.6.1 | 0x7b1ed2c6, 0xa84e, 0x4858, 0xa7, 0x8b, 0xa6, 0xd9, 0x32, 0x03, 0x22, 0xbe | EFI\_PCI\_IO\_PROTOCOL.Io.Write - Io.Write() writes data to Io address space, returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  The return status should be EFI\_SUCCESS. |
| 5.8.2.6.2 | 0xd1704c13, 0xd0df, 0x4f7c, 0xb8, 0xb6, 0xd9, 0x5b, 0xe6, 0xdc, 0xea, 0x87 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - The data read equals the data written in. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.6.3 | 0xafb5070c, 0x1d07, 0x4df3, 0x9a, 0xd5, 0x6f, 0x91, 0x7e, 0x48, 0xc5, 0xed | EFI\_PCI\_IO\_PROTOCOL.Io.Write - Io.Write() writes the data with **EfiPciIoWidthFifoX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.6.4 | 0xee8d1797, 0x1474, 0x4d80, 0x85, 0x82, 0x35, 0x78, 0x61, 0x2b, 0x26, 0x01 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With **EfiPciIoWidthFifoUintX**, the first data unit is the last data unit. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare the data in the starting address with the last data unit. Compare other data units with original data. |
| 5.8.2.6.5 | 0x4a6378ee, 0x5058, 0x42b2, 0x8a, 0x03, 0x1f, 0x1c, 0xff, 0x05, 0x15, 0xcc | EFI\_PCI\_IO\_PROTOCOL.Io.Write - Io.Write() writes the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write to address range using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.6.6 | 0x15b81460, 0xbc5e, 0x4be3, 0x9c, 0xc5, 0xb6, 0x59, 0x06, 0x83, 0x28, 0x5e | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With **EfiPciIoWidthFillUintX**, all the data units read out are the same as the first data units in the address space. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write to address range using **EfiPciIoWidthFillUintX**.  4. Call Io.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare all the data units with the first data unit. |
| 5.8.2.6.7 | 0x8e854d61, 0x2048, 0x446f, 0xb6, 0x47, 0x3c, 0x37, 0x17, 0x14, 0xac, 0xf6 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - Io.Write() writes back the data and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Io.Read() to fill in the buffer with the predefined data units.  3. Call Io.Write() to write the buffer into the address range.  4. Call Io.Read() to read out the data in destination address range.  5. Call Io.Write() to write the data back.  The return status should be EFI\_SUCCESS. |
| 5.8.2.6.8 | 0xb96af4e4, 0x988f, 0x4362, 0x8c, 0x63, 0x1f, 0x08, 0xeb, 0xfd, 0xa3, 0x5f | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With Width as **EfiPciIoWidthMaximum**, return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.6.9 | 0x8cb298d4, 0x5831, 0x48ce, 0x87, 0x8d, 0xf3, 0xf8, 0x20, 0x62, 0xea, 0xf3 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With invalid Width type -1, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with Width as ‑1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.6.10 | 0x175943ee, 0x4d2d, 0x480f, 0xa3, 0xf1, 0x88, 0xc9, 0x7c, 0x6b, 0x04, 0x77 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With Buffer as NULL, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.6.11 | 0x4617468a, 0xd228, 0x4a84, 0x88, 0x56, 0x21, 0x8c, 0x3f, 0x39, 0x46, 0xd1 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Io.Write() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.6.12 | 0x03dd4807, 0xe461, 0x4e97, 0x9d, 0xf9, 0xea, 0x73, 0x38, 0x15, 0xd5, 0x62 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With address out of BAR range the return status is EFI\_UNSUPPORTED. | 1. Call Io.Write() with address out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.6.13 | 0xd6b9d51d, 0x2676, 0x4449, 0xa4, 0xd6, 0x3d, 0xa0, 0x17, 0x36, 0x2e, 0xa6 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With invalid BAR Index the return status is EFI\_UNSUPPORTED. | 1. Call Io.Write() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.6.14 | 0x648a859d, 0x3b72, 0x41a6, 0x86, 0xad, 0x3f, 0xff, 0x66, 0xd8, 0x61, 0x2f | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With Mem **Type** BAR the return status is EFI\_UNSUPPORTED. | 1. Call Io.Write() with Mem **Type** BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.6.15 | 0xfdc9b3f3, 0x2b80, 0x4a99, 0xa9, 0xba, 0xa5, 0x5e, 0xf9, 0xf8, 0x26, 0x19 | EFI\_PCI\_IO\_PROTOCOL.Io.Write - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call Io.Write() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Pci.Read()

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| Number | GUID | Assertion | Test Description |
| 5.8.2.7.1 | 0xea2a44d0, 0xc8d1, 0x465b, 0xb5, 0x50, 0x58, 0xd6, 0xef, 0x4e, 0x38, 0xd4 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Pci.Read() reads data out into backup buffer and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  The return status should be EFI\_SUCCESS. |
| 5.8.2.7.2 | 0xe30bb837, 0x1d06, 0x4ee2, 0x80, 0x85, 0x18, 0xd4, 0x6b, 0x1c, 0x99, 0x66 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Pci.Read() reads out the data from PCI configuration space and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data in destination address range.  The return status should be EFI\_SUCCESS. |
| 5.8.2.7.3 | 0x2f9274d9, 0x7a14, 0x492f, 0x87, 0xc0, 0x40, 0x81, 0x4f, 0x66, 0x1b, 0xb4 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read – The data read out from the PCI configuration space with **PciIoWidthUintX** equals the data written in. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.7.4 | 0x59ba5b67, 0x9e17, 0x4b60, 0xb5, 0x79, 0x5f, 0xd3, 0x26, 0x16, 0xe6, 0x6a | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Pci.Read() reads out the data with **EfiPciIoWidthFifoX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.7.5 | 0xd3b49ee4, 0x131a, 0x4fa3, 0xab, 0x81, 0x9f, 0x86, 0x33, 0xdf, 0x2d, 0xc7 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Reads out the data with **EfiPciIoWidthFifoX**. The data read out is the same as the first data unit. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare the each data unit in the buffer with the data at the Starting Address of the address range. |
| 5.8.2.7.6 | 0x6e5881b2, 0x262d, 0x41ec, 0xa8, 0xd4, 0xcf, 0x28, 0x71, 0x1e, 0x5c, 0x15 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Pci.Read() reads out the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.7.7 | 0x4595bbca, 0xbad7, 0x417f, 0xaf, 0x8d, 0x37, 0xec, 0x32, 0xf8, 0x03, 0x80 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - Reads out the data with **EfiPciIoWidthFillX**. The first data unit equals the last data unit in Destination address range. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare the first data unit in the output buffer with the last data unit in the address range. Compare other data units in the output buffer with the original data. |
| 5.8.2.7.8 | 0x94d0a3d8, 0x7b61, 0x4147, 0xad, 0x9a, 0xea, 0xbb, 0x5f, 0x30, 0x59, 0xc2 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With Width as **EfiPciIoWidthMaximum**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.7.9 | 0x18cf01fe, 0xa703, 0x4639, 0xb8, 0xe0, 0x8e, 0xd7, 0x3c, 0xbe, 0xa0, 0xb6 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With invalid Width type -1, the return status is EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.7.10 | 0xa7710b95, 0x114d, 0x4096, 0xa8, 0x3c, 0xf6, 0x5f, 0x63, 0x00, 0xbd, 0xab | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With Buffer as NULL the return status is EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.7.11 | 0x147279d7, 0xf685, 0x4658, 0xb8, 0x09, 0xdf, 0xd1, 0xd7, 0x75, 0xe0, 0xb5 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With Offset + Count \* Width > 255, the return status is EFI\_UNSUPPORTED. | 1. Call Pci.Read() with Offset + Count \* Width > 255. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.7.12 | 0xf070aeda, 0x2e6b, 0x4911, 0xae, 0x80, 0x1b, 0x21, 0xcc, 0xef, 0x30, 0x50 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With Offset + Count \* Width > 255 the return status is EFI\_UNSUPPORTED. | 1. Call Pci.Read() with Offset + Count \* Width > 255. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.7.13 | 0x85111b07, 0x5d78, 0x4e62, 0x90, 0x48, 0x69, 0xca, 0x37, 0x4a, 0xdc, 0xb3 | EFI\_PCI\_IO\_PROTOCOL.Pci.Read - With invalid Width the return status is EFI\_INVALID\_PARAMETER. | 1. Call Pci.Read() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Pci.Write()

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| Number | GUID | Assertion | Test Description |
| 5.8.2.8.1 | 0x1c65f03c, 0x6d87, 0x435e, 0x94, 0x2e, 0x41, 0x4f, 0xfa, 0x1d, 0x69, 0xb8 | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - Pci.Write() writes data to the PCI configuration space and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write the buffer into the address range  The return status should be EFI\_SUCCESS. |
| 5.8.2.8.2 | 0xb175434f, 0xf038, 0x43a2, 0xa1, 0xa8, 0xef, 0xab, 0x71, 0x57, 0x7f, 0xac | EFI\_PCI\_IO\_PROTOCOL.Pci.Write – Data read out from PCI configuration space with **PciIoWidthUintX** equals the data written in. | 1. Allocate a buffer that matches the size of the address range  2. Call Pci.Read() to fill in the buffer with the predefined data units  3. Call Pci.Write() to write the buffer into the address range  4. Call Pci.Read() to read out the data in destination address range.  5. Compare the data read out with data written in. |
| 5.8.2.8.3 | 0xfbc65a77, 0xd113, 0x4584, 0xa6, 0xe0, 0x40, 0x6d, 0xc7, 0xd9, 0x24, 0x1f | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - Pci.Write() writes the data with **EfiPciIoWidthFifoX** and returns EFI\_SUCCESS | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.8.4 | 0x1dd97ca1, 0x6920, 0x41db, 0xa2, 0x0c, 0xcf, 0x62, 0x78, 0xbd, 0x07, 0x47 | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With **PciIoWidthFifoUintX**, the first data unit is equal to the last data unit, and the other data units are unchanged. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write to the starting address of address range using **EfiPciIoWidthFifoUintX**.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFifoUintX**.  5. Compare the data in the starting address with the last data unit. Compare other data units with original data. |
| 5.8.2.8.5 | 0x3ea04425, 0xbf3d, 0x465a, 0xbd, 0x5b, 0xf7, 0x77, 0xc5, 0x41, 0x21, 0x6a | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - Pci.Write() writes the data with **EfiPciIoWidthFillX** and returns EFI\_SUCCESS. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write to address range using **EfiPciIoWidthFillUintX**.  The return status should be EFI\_SUCCESS. |
| 5.8.2.8.6 | 0x74ff6a17, 0xdf28, 0x434a, 0x8a, 0xd7, 0xbf, 0xa3, 0xe9, 0xc5, 0x1f, 0x12 | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With **PciIoWidthFillX**, all the data units read out are equal to the first data unit in the address space. | 1. Allocate a buffer that matches the size of the address range.  2. Call Pci.Read() to fill in the buffer with the predefined data units.  3. Call Pci.Write() to write to address range using **EfiPciIoWidthFillUintX**.  4. Call Pci.Read() to read out the data using **EfiPciIoWidthFillUintX**.  5. Compare all the data units with the first data unit. |
| 5.8.2.8.7 | 0xc355e57b, 0x93ef, 0x4ca6, 0x91, 0x2f, 0x65, 0x6e, 0x4f, 0x2e, 0x2a, 0x13 | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - Pci.Write() writes data back with **EfiPciIoWidthX** and returns EFI\_SUCCESS | 1. Allocate a buffer that matches the size of the address range  2. Call Pci.Read() to fill in the buffer with the predefined data units  3. Call Pci.Write() to write the buffer into the address range  4. Call Pci.Read() to read out the data in destination address range.  5. Call Pci.Write() to write the data back.  The return status should be EFI\_SUCCESS |
| 5.8.2.8.8 | 0x8a26f93b, 0xc0a3, 0x4e08, 0x9f, 0xf1, 0xd6, 0xf1, 0xac, 0x2e, 0x63, 0x9a | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With Width as **EfiPciIoWidthMaximum** the return status is EFI\_INVALID\_PARAMETER | 1. Call Pci.Write() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.8.9 | 0xfeab0187, 0x541b, 0x45da, 0x92, 0x1f, 0x49, 0x01, 0x00, 0xb7, 0xdd, 0x7a | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With invalid Width type -1 the return status is EFI\_INVALID\_PARAMETER | 1. Call Pci.Write() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.8.10 | 0x686732db, 0xa12b, 0x4ed7, 0x90, 0xfb, 0x66, 0x92, 0xbb, 0xd7, 0xe8, 0x4c | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With Buffer as NULL the return status is EFI\_INVALID\_PARAMETER | 1. Call Pci.Write() with Buffer as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.8.11 | 0x11cf0b51, 0x6f50, 0x4bba, 0xa9, 0xd7, 0x3e, 0x53, 0x28, 0xb3, 0x1f, 0x30 | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With Offset + Count \* Width > 255 the return status is EFI\_UNSUPPORTED | 1. Call Pci.Write() with Offset + Count \* Width > 255. The return status must be EFI\_UNSUPPORTED |
| 5.8.2.8.12 | 0x4e4617a2, 0x4e8a, 0x46c8, 0xb2, 0x4b, 0xa4, 0x91, 0x55, 0xf2, 0x3a, 0x0d | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With Offset + Count \* Width > 255 the return status is EFI\_UNSUPPORTED | 1. Call Pci.Write() with Offset + Count \* Width > 255. The return status must be EFI\_UNSUPPORTED |
| 5.8.2.8.13 | 0xc6dbb28e, 0xbf42, 0x40e3, 0xbc, 0x93, 0x5f, 0x9b, 0x11, 0xa2, 0x46, 0x5f | EFI\_PCI\_IO\_PROTOCOL.Pci.Write - With invalid Width the return status is EFI\_INVALID\_PARAMETER | 1. Call Pci.Write() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER |

### CopyMem()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.9.1 | 0x8d728b05, 0xc64e, 0x4ef0, 0x80, 0x68, 0x51, 0xbc, 0xe3, 0x9f, 0xc5, 0x0c | EFI\_PCI\_IO\_PROTOCOL.CopyMem - CopyMem() copying Data between non-overlapping regions returns EFI\_SUCCESS. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between non-overlapping regions.  The return status should be EFI\_SUCCESS. |
| 5.8.2.9.2 | 0x73f80e2c, 0xe2d9, 0x4c6b, 0xbe, 0xc0, 0x85, 0xd7, 0xa4, 0x27, 0x07, 0xd0 | EFI\_PCI\_IO\_PROTOCOL.CopyMem – Data copied between non‑overlapping regions is equal. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between non-overlapping regions.  4. Call Mem.Read() to read out the data.  5. Compare the data read out with the data written in. |
| 5.8.2.9.3 | 0x459bcee9, 0x16f7, 0x41ae, 0x81, 0x55, 0x7e, 0x49, 0xec, 0x98, 0x56, 0x7d | EFI\_PCI\_IO\_PROTOCOL.CopyMem - CopyMem() copying Data between overlapping regions (destination address > source address) returns EFI\_SUCCESS. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between overlapping regions (destination address > source address).  The return status should be EFI\_SUCCESS. |
| 5.8.2.9.4 | 0x9ca6f1d4, 0xfb7c, 0x416c, 0xa6, 0x09, 0x06, 0xa4, 0xcb, 0x0f, 0x44, 0x59 | EFI\_PCI\_IO\_PROTOCOL.CopyMem – When copying Data between overlapping regions (destination > source), the data is copied. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between overlapping regions (destination address > source address).  4. Call Mem.Read() to read out the data  5. Compare the data read out with the data written in. |
| 5.8.2.9.5 | 0xb8eb3987, 0x9915, 0x40d2, 0x93, 0xc6, 0xe1, 0x83, 0x7e, 0x49, 0x4e, 0x1a | EFI\_PCI\_IO\_PROTOCOL.CopyMem - CopyMem() copying Data between overlapping regions (destination address < source address) returns EFI\_SUCCESS. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between overlapping regions (destination address < source address).  The return status should be EFI\_SUCCESS. |
| 5.8.2.9.6 | 0x3294319c, 0xc3f0, 0x46f2, 0x81, 0xfd, 0x14, 0xc0, 0xd0, 0x61, 0xc4, 0x42 | EFI\_PCI\_IO\_PROTOCOL.CopyMem – When copying Data between overlapping regions (destination < source) the data is copied. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width */ 2 \** Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between overlapping regions (destination address < source address).  4. Call Mem.Read() to read out the data.  5. Compare the data read out with the data written in. |
| 5.8.2.9.7 | 0xd0b52eb3, 0x3d19, 0x4b72, 0xb5, 0xba, 0xe3, 0xa3, 0x7c, 0xd0, 0xcb, 0x93 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - CopyMem() copying Data between different BARs returns EFI\_SUCCESS. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width/ 2 \*Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between different BARs.  The return status should be EFI\_SUCCESS. |
| 5.8.2.9.8 | 0xe0863095, 0x4854, 0x4099, 0x89, 0xf0, 0x01, 0xbf, 0xda, 0x41, 0xa4, 0xe3 | EFI\_PCI\_IO\_PROTOCOL.CopyMem – When copying Data between different BARs the data is copied. | 1. Allocate a buffer, the size of which is: **BufferSize** = Address Range Size / Width/ 2 \*Width.  2. Call Mem.Write() to write the buffer into the beginning address.  3. Call CopyMem() to copy Data between different BARs.  4. Call Mem.Read() to read out the data.  5. Compare the data read out with the data written in. |
| 5.8.2.9.9 | 0x45056bf8, 0xe6e4, 0x4397, 0xb7, 0xe1, 0x89, 0x0b, 0x42, 0x4d, 0xe3, 0x54 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Width as **EfiPciIoWidthMaximum** the return status is EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.9.10 | 0xf780b74f, 0x6b93, 0x4e64, 0x8a, 0xb5, 0x05, 0x77, 0xdd, 0x99, 0xc1, 0xfa | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With invalid Width type ‑1 the return status is EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.9.11 | 0xebf7fa5c, 0xb4c9, 0x406c, 0x8d, 0x12, 0x90, 0x3a, 0x81, 0x85, 0x26, 0x17 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Width as **EfiPciWidthFifoUintX** the return status is EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthFifoUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.9.12 | 0xc07ea144, 0x18b5, 0x40e5, 0xa0, 0xa0, 0xd4, 0xca, 0x6c, 0x82, 0xc2, 0x9d | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Width as **EfiPciWidthFillUintX**, the return status is EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with Width as **EfiPciWidthFillUintX**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.9.13 | 0x299293a3, 0xe8db, 0x43a4, 0x9b, 0x3f, 0x5e, 0x23, 0xb2, 0x9e, 0x37, 0x31 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Source Address area out of BAR range, the return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with **Source** Address area out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.14 | 0x33c447ae, 0x5caf, 0x4904, 0xaf, 0x90, 0x66, 0x78, 0x17, 0x45, 0x0e, 0x12 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Destination Address area out of BAR range, the return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with Destination Address area out of BAR range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.15 | 0xe2dd0321, 0xac26, 0x4aac, 0xa6, 0x28, 0xc2, 0x59, 0xbc, 0x8a, 0xd5, 0x2c | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With invalid Source BAR Index, return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with invalid Source BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.16 | 0x110a96a1, 0x7a2e, 0x4eab, 0xbc, 0x11, 0xf3, 0xda, 0x30, 0xd0, 0xa2, 0xff | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With invalid Destination, BAR Index return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with invalid Destination BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.17 | 0x7d1c3de1, 0xa7b8, 0x4923, 0x94, 0x13, 0x76, 0x49, 0x05, 0x01, 0xf6, 0x9f | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Source BAR Index as an IO type BAR, the return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with Source BAR Index as an IO type BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.18 | 0xaacfb1ec, 0xd6fb, 0x4c3a, 0xa4, 0x8c, 0x4a, 0xc2, 0x77, 0xfb, 0xc8, 0xe3 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With Destination BAR Index as an IO type BAR, the return status is EFI\_UNSUPPORTED. | 1. Call CopyMem() with Destination BAR Index as an IO type BAR. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.9.19 | 0x83b30e84, 0x528f, 0x420d, 0x87, 0x48, 0x7d, 0x96, 0x36, 0x8e, 0x33, 0x58 | EFI\_PCI\_IO\_PROTOCOL.CopyMem - With invalid Width, the return status is EFI\_INVALID\_PARAMETER. | 1. Call CopyMem() with invalid Width. The return status must be EFI\_INVALID\_PARAMETER. |

### Map()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.10.1 | 0x720e6fdc, 0x91c8, 0x4fd5, 0xb5, 0xde, 0xb1, 0xcc, 0x3b, 0x0c, 0x0c, 0xba | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Read returns EFI\_SUCCESS. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterRead** to map this range to a new DMA capable location. The return status should be EFI\_SUCCESS. |
| 5.8.2.10.2 | 0xbf7f859c, 0x20e5, 0x4418, 0x8e, 0x21, 0x87, 0x60, 0x60, 0x58, 0x73, 0xa2 | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Read, mapped bytes are > 0. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterRead** to map this range to a new DMA capable location.  4. Check if the number of bytes mapped great than 0. |
| 5.8.2.10.3 | 0xd56b3a96, 0x7c58, 0x4209, 0x85, 0xe9, 0x90, 0xb2, 0x07, 0x90, 0x6d, 0x55 | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Read, the mapped area equals original area. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterRead** to map this range to a new DMA capable location.  4. Check if data of mapped area ishe same as the data of original area. |
| 5.8.2.10.4 | 0x5539608f, 0xed60, 0x4172, 0x94, 0x4e, 0xe9, 0x4a, 0x0f, 0x61, 0xf7, 0xe8 | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Write returns EFI\_SUCCESS. | 1. Allocate a buffer (4K + 1 Bytes) .  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterWrite** to map this range to a new DMA capable location  The return status should be EFI\_SUCCESS. |
| 5.8.2.10.5 | 0xb4019165, 0x7b45, 0x4ec4, 0xa7, 0xeb, 0xc5, 0x67, 0x71, 0x07, 0xd9, 0x4c | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Write, mapped bytes are > 0. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterWrite** to map this range to a new DMA capable location.  4. Check if the number of bytes mapped great than 0. |
| 5.8.2.10.6 | 0x6b4e9c1e, 0xa1e7, 0x4cf5, 0x8d, 0x0f, 0xdd, 0x68, 0x80, 0xcd, 0x8f, 0x43 | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Write, original data remains unchanged immediatelyafter mapping. | 1. Allocate a buffer (4K + 1 Bytes) .  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterWrite** to map this range to a new DMA capable location.  4. Check if the data of the original area is unchanged. |
| 5.8.2.10.7 | 0x9a37eb62, 0x4bab, 0x4fce, 0x81, 0x9d, 0x0d, 0x80, 0x42, 0xea, 0x46, 0x7e | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Common, the Buffer returns EFI\_SUCCESS. | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location  The return status should be EFI\_SUCCESS. |
| 5.8.2.10.8 | 0x4d562d9c, 0xb028, 0x43ff, 0xb7, 0xfc, 0x92, 0xdb, 0x62, 0x40, 0xd5, 0x9a | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Common, the Buffer mapped bytes are > 0. | 1. Allocate a buffer (4K + 1 Bytes) .  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location.  4. Check if the number of bytes mapped are greater than 0. |
| 5.8.2.10.9 | 0x8bd3ecc4, 0x43ea, 0x4f9e, 0x84, 0x79, 0x8c, 0x36, 0xde, 0x51, 0x13, 0x2f | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Common, the Buffer mapped area equalsthe original area after mapping. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location.  4. Check if the data of mapped areais is the same as the data of the original area. |
| 5.8.2.10.10 | 0x673d01f2, 0xdabf, 0x49bb, 0xbe, 0xc5, 0xe7, 0xa0, 0x3a, 0xd7, 0x71, 0xbc | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Common, the Buffer data of the original area is sync’d with the mapped area. | 1. Allocate a buffer (4K + 1 Bytes).  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location.  4. Call SetMem() to fill in mapped address with some fixed data.  5. Check if the data of the original area is synchronized with the mapped area. |
| 5.8.2.10.11 | 0xbd5fcf21, 0xdb42, 0x4f4f, 0xb0, 0xfb, 0x56, 0x62, 0xd5, 0x1a, 0xba, 0x68 | EFI\_PCI\_IO\_PROTOCOL.Map - Map() with Bus Master Common, the Buffer data of the mapped area syncs with original area. | 1. Allocate a buffer (4K + 1 Bytes) .  2. Fill in the buffer with some data.  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location.  4. Call SetMem() to fill in original address with some fixed data.  5. Check if the data of mapped area is synchronized with the original area. |
| 5.8.2.10.12 | 0xe2fa9ae5, 0xea93, 0x48b2, 0xba, 0x85, 0xa3, 0x74, 0xe2, 0xdb, 0xe2, 0xaf | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with Operation as **EfiPciIoOperationMaximum** returns a status of EFI\_INVALID\_PARAMETER. | 1. Call Map() with Operation as **EfiPciIoOperationMaximum**. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.13 | 0x3b337461, 0x98da, 0x4117, 0xab, 0xef, 0x57, 0x60, 0x34, 0xfd, 0xc6, 0x22 | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with Operation as **EfiPciIoOperationMaximum** + 1 returns a status of EFI\_INVALID\_PARAMETER. | 1. Call Map() with Operation as **EfiPciIoOperationMaximum** + 1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.14 | 0xdce36bfb, 0xde48, 0x4f84, 0x9d, 0xc1, 0xde, 0x92, 0xa4, 0x40, 0x50, 0xbb | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with Operation as -1 returns a status of EFI\_INVALID\_PARAMETER. | 1. Call Map() with Operation as -1. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.15 | 0x8aa3c1cb, 0x5c8d, 0x4a74, 0x83, 0x81, 0x4b, 0x15, 0x3a, 0xf8, 0xff, 0x17 | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with HostAddress as NULL returns a status of EFI\_INVALID\_PARAMETER | 1. Call Map() with HostAddress as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.16 | 0x495cff3e, 0x5f7a, 0x4888, 0x85, 0x9f, 0xb7, 0x26, 0x0b, 0xb4, 0x18, 0xaf | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with NumberOfBytes as NULL returns a status of EFI\_INVALID\_PARAMETER | 1. Call Map() with NumberOfBytes as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.17 | 0x7e34b406, 0x0821, 0x4b95, 0xa4, 0x18, 0xc2, 0x0e, 0xfc, 0xfc, 0x00, 0xef | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with DeviceAddress as NULL returns a status of EFI\_INVALID\_PARAMETER | 1. Call Map() with DeviceAddress as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.18 | 0x6b450eae, 0x225c, 0x4ff1, 0x93, 0xd1, 0x55, 0xf9, 0xae, 0x35, 0x3e, 0xf8 | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with Mapping as NULL returns a status of EFI\_INVALID\_PARAMETER. | 1. Call Map() with Mapping as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.10.19 | 0x07a924a7, 0xe637, 0x4f46, 0x9b, 0x3c, 0x04, 0x63, 0x86, 0xfb, 0xf6, 0xf0 | EFI\_PCI\_IO\_PROTOCOL.Map - Mapping with HostAddress + NumberOfByte > 4G returns a status of EFI\_UNSUPPORTED. | 1. Call Map() with HostAddress + NumberOfByte > 4G. The return status must be EFI\_UNSUPPORTED. |

### Unmap()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.11.1 | 0xd9f80cd4, 0x8f0b, 0x4a27, 0x99, 0x16, 0x1a, 0x47, 0xfd, 0x8f, 0x07, 0x25 | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap() area mapped wih **BusMasterRead** returns EFI\_SUCCESS | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterRead** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  The return status should be EFI\_SUCCESS |
| 5.8.2.11.2 | 0x8f86dbbf, 0xcc86, 0x40d0, 0x89, 0xb3, 0x97, 0xd6, 0xf1, 0xe8, 0xd7, 0x80 | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap()leaves data in the original area mapped wih **BusMasterRead** unchangedafter Unmap | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterRead** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  5. Check if the data in original area remains unchanged |
| 5.8.2.11.3 | 0xab8555aa, 0x8c45, 0x4bec, 0x90, 0x9a, 0xad, 0xc7, 0xfe, 0xe9, 0xaf, 0xf4 | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap() area mapped wih **BusMasterWrite** returns EFI\_SUCCESS | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterWrite** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  The return status should be EFI\_SUCCESS |
| 5.8.2.11.4 | 0xa6537c2a, 0x34bc, 0x4604, 0x81, 0x48, 0xb1, 0x41, 0x70, 0x46, 0x86, 0xe4 | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap() leaves data in the original area mapped wih **BusMasterWrite** equal with the data written in mapped area | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterWrite** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  5. Check if the data in the original area is equal with the data in mapped area |
| 5.8.2.11.5 | 0x79009fa0, 0x5b72, 0x4e82, 0x84, 0x84, 0x3a, 0x21, 0xe0, 0x57, 0x93, 0xb9 | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap() area mapped wih Bus Master Common Read returns EFI\_SUCCESS | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  The return status should be EFI\_SUCCESS |
| 5.8.2.11.6 | 0xda153716, 0xcd62, 0x4612, 0xae, 0x11, 0x71, 0x5e, 0x97, 0xeb, 0x6a, 0x9a | EFI\_PCI\_IO\_PROTOCOL.Unmap - Unmap() leaves data in the original area mapped wih Bus Master Common Read unchanged after Unmap | 1. Allocate a buffer (4K + 1 Bytes)  2. Fill in the buffer with some data  3. Call Map() with Operation as **EfiPciIoOperationBusMasterCommon** to map this range to a new DMA capable location  4. Call Unmap() to release the mapped resources  5. Check if the data in the original area remains unchanged |

### AllocateBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.12.1 | 0x841e89ab, 0x9c60, 0x48e5, 0xae, 0x7d, 0x51, 0x21, 0xf5, 0x08, 0xe1, 0x0c | EFI\_PCI\_IO\_PROTOCOL.AllocateBuffer - AllocateBuffer() with correct Parameter status returns EFI\_SUCCESS | 1. Call AllocateBuffer() with the following parameters having multiple enumerated values:  **MemoryType** – **EfiBootServicesData** and **EfiRuntimeServicesData**  **Attributes** – 0, EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED, and EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE | EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED  The return status should be EFI\_SUCCESS |
| 5.8.2.12.2 | 0x576894ad, 0x9229, 0x4078, 0xa9, 0x69, 0x70, 0x0e, 0x6e, 0x04, 0x4b, 0xb3 | EFI\_PCI\_IO\_PROTOCOL.AllocateBuffer - With invalid memory type the status is EFI\_INVALID\_PARAMETER | 1. Call AllocateBuffer() with invalid memory type. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.12.3 | 0xa0c5c95e, 0xf251, 0x4c00, 0x9f, 0xdf, 0x9c, 0x88, 0xa2, 0xaa, 0x45, 0x6b | EFI\_PCI\_IO\_PROTOCOL.AllocateBuffer - With HostAddress as NULL the status is EFI\_INVALID\_PARAMETER | 1. Call AllocateBuffer() with HostAddress as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.12.4 | 0xfacb1e1b, 0x0327, 0x4341, 0xa9, 0x42, 0x4d, 0xb9, 0x9f, 0x1d, 0xe5, 0x68 | EFI\_PCI\_IO\_PROTOCOL.AllocateBuffer - With invalid Attributes the status is EFI\_UNSUPPORTED | 1. Call AllocateBuffer() with invalid Attributes. The return status must be EFI\_UNSUPPORTED |

### 

### FreeBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.13.1 | 0x00312f50, 0x721c, 0x4085, 0x82, 0x63, 0x04, 0xd1, 0x1f, 0x37, 0x2c, 0x6c | EFI\_PCI\_IO\_PROTOCOL.FreeBuffer - FreeBuffer() return status is EFI\_SUCCESS | 1. Call AllocateBuffer() with the following parameters having multiple enumerated values:  **MemoryType** – **EfiBootServicesData** and **EfiRuntimeServicesData**  **Attributes** – 0, EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED, and EFI\_PCI\_ATTRIBUTE\_MEMORY\_WRITE\_COMBINE | EFI\_PCI\_ATTRIBUTE\_MEMORY\_CACHED  2. Call FreeBuffer()  The return status should be EFI\_SUCCESS |

### Flush()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.14.1 | 0x2c9f36a3, 0x4cab, 0x4434, 0xa8, 0xc1, 0x7b, 0xf6, 0x3c, 0x46, 0x8f, 0x05 | EFI\_PCI\_IO\_PROTOCOL.Flush - Flush() return status is EFI\_SUCCESS | 1. Call Flush()  The return status should be EFI\_SUCCESS |

### GetLocation()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.15.1 | 0xfb478a8e, 0x58e2, 0x41b9, 0x89, 0x35, 0x71, 0x7b, 0x5a, 0x90, 0xa1, 0x84 | EFI\_PCI\_IO\_PROTOCOL.GetLocation - GetLocation() return status is EFI\_SUCCESS | 1. Call GetLocation()  The return status should be EFI\_SUCCESS |
| 5.8.2.15.2 | 0x07b74ac9, 0x96f4, 0x4d00, 0x94, 0xbd, 0x09, 0x60, 0xd4, 0xe9, 0xa6, 0xe7 | EFI\_PCI\_IO\_PROTOCOL.GetLocation - GetLocation()returns a BusNumber < 256 | 1. Call GetLocation()  2. Check if the returned BusNumber is less than 256 |
| 5.8.2.15.3 | 0xaf7155de, 0x45f4, 0x4b97, 0xb4, 0xac, 0x07, 0x1a, 0x53, 0x43, 0x32, 0x48 | EFI\_PCI\_IO\_PROTOCOL.GetLocation - GetLocation()returns a DeviceNumber < 32 | 1. Call GetLocation()  2. Check if the returned DeviceNumber is less than 32 |
| 5.8.2.15.4 | 0x838f7bf6, 0xfa36, 0x4149, 0x92, 0x29, 0xce, 0x60, 0x8a, 0x66, 0x35, 0x61 | EFI\_PCI\_IO\_PROTOCOL.GetLocation - GetLocation()returns a FunctionNumber < 8 | 1. Call GetLocation()  2. Check if the returned FunctionNumber is less than 8 |
| 5.8.2.15.5 | 0xa5510fe8, 0x2178, 0x47e6, 0x9e, 0xcc, 0xe9, 0x0b, 0x92, 0xcf, 0x1b, 0xbb | EFI\_PCI\_IO\_PROTOCOL.GetLocation - With SegmentNumber as NULL, the status is EFI\_INVALID\_PARAMETER | 1. Call GetLocation() with SegmentNumber as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.15.6 | 0x2a1ff8b2, 0xc540, 0x4f12, 0x9c, 0x06, 0x36, 0x8d, 0x45, 0x7c, 0x02, 0x7c | EFI\_PCI\_IO\_PROTOCOL.GetLocation - With BusNumber as NULL, the status is EFI\_INVALID\_PARAMETER | 1. Call GetLocation() with BusNumber as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.15.7 | 0x5e74e7e0, 0x36b0, 0x4c5d, 0x88, 0xb8, 0xb7, 0x52, 0xad, 0x2c, 0xbf, 0x61 | EFI\_PCI\_IO\_PROTOCOL.GetLocation - With DeviceNumber as NULL, the status is EFI\_INVALID\_PARAMETER | 1. Call GetLocation() with DeviceNumber as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.15.8 | 0xb37cb86c, 0xdd05, 0x4082, 0xa6, 0xf1, 0x8c, 0xf9, 0xc3, 0x46, 0x77, 0x7a | EFI\_PCI\_IO\_PROTOCOL.GetLocation - With FunctionNumber as NULL, the status is EFI\_INVALID\_PARAMETER | 1. Call GetLocation() with FunctionNumber as NULL. The return status must be EFI\_INVALID\_PARAMETER |

### Attributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.16.1 | 0x33ca89a5, 0xefa8, 0x4f52, 0x84, 0xf6, 0x2e, 0x95, 0x26, 0x23, 0xb0, 0xe1 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() get current attribute status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationGet** to get the current attributes of the PCI controller  The return status should be EFI\_SUCCESS |
| 5.8.2.16.2 | 0xa11652df, 0x8818, 0x4a05, 0xbe, 0xd9, 0x27, 0xf9, 0xe5, 0xad, 0x78, 0x3c | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() get supported attribute status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationSupported** to get the supported attributes of the PCI controller  The return status should be EFI\_SUCCESS |
| 5.8.2.16.3 | 0x69ce5213, 0x7180, 0x4beb, 0x9f, 0x39, 0x1d, 0x1f, 0x17, 0x00, 0x59, 0x9a | EFI\_PCI\_IO\_PROTOCOL.Attributes - Current attributes should in supported attributes | 1. Call Attributes() with **EfiPciIoAttributeOperationGet** to get the current attributes of the PCI controller  2. Call Attributes() with **EfiPciIoAttributeOperationSupported** to get the supported attributes of the PCI controller  3. Check if the current attributes is a subset of Supported attributes |
| 5.8.2.16.4 | 0xfac8ddb3, 0xbfae, 0x40ff, 0xb7, 0x31, 0x26, 0x8e, 0x58, 0x29, 0x25, 0xb0 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() set Attributes as Supported attributes return status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with a supported attribute of the PCI controller.  The return status should be EFI\_SUCCESS |
| 5.8.2.16.5 | 0xf8e48da6, 0x72e2, 0x4905, 0xa7, 0x19, 0xe3, 0xa5, 0x77, 0xca, 0xa2, 0xa8 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Set Attributes as supported attributes the attributes should really be cleared | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with a supported attribute of the PCI controller.  2. Call Attributes() with EfiPciIoAttributeOperationGet to get the attributes of the PCI controller  3. Check if the gotten attributes is the same as the set ones. |
| 5.8.2.16.6 | 0x02cab1a9, 0x4be9, 0x4c47, 0xb2, 0x75, 0xca, 0xed, 0x59, 0x62, 0x1f, 0x41 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() set Attributes as 0 return status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with an **attribute** value of 0 to clear all attributes. The return status should be EFI\_SUCCESS |
| 5.8.2.16.7 | 0x88791167, 0xb9f3, 0x42ae, 0x84, 0xd1, 0xa1, 0xb6, 0xd3, 0xeb, 0xb8, 0x2f | EFI\_PCI\_IO\_PROTOCOL.Attributes - Set Attributes as 0 the attributes should really be cleared | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with an Attributes value of 0 to clear all attributes.  2. Call Attributes() with EfiPciIoAttributeOperationGet to get the attributes of the PCI controller  3. Check if the gotten attributes is the same as that of set |
| 5.8.2.16.8 | 0x04479c23, 0xc700, 0x439f, 0xb7, 0x42, 0x91, 0x9a, 0x6b, 0x2e, 0x71, 0x5a | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() enable Attributes as original attributes return status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationEnable** with supported attributes  The return status should be EFI\_SUCCESS |
| 5.8.2.16.9 | 0x1d011f3e, 0xaa23, 0x4b0b, 0xb1, 0x65, 0x8f, 0x6f, 0x21, 0xf3, 0x85, 0x6d | EFI\_PCI\_IO\_PROTOCOL.Attributes - enable Attributes as original attributes the attributes should really be **Enabled** | 1. Call Attributes() with **EfiPciIoAttributeOperationEnable** with supported attributes  2. Call Attributes() with **EfiPciIoAttributeOperationGet** to get the attributes  3. Check if the attributes value is the same as original attributes |
| 5.8.2.16.10 | 0x35e690e9, 0xd037, 0x41a1, 0x93, 0x44, 0x86, 0x78, 0x02, 0xe2, 0x37, 0xfc | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() disable original attributes return status must be EFI\_SUCCESS | 1. Call Attributes() with EfiPciIoAttributeOperationDisable with supported attributes  The return status should be EFI\_SUCCESS |
| 5.8.2.16.11 | 0xb7376265, 0xfb7f, 0x410c, 0x99, 0xb5, 0x5b, 0x17, 0x37, 0x41, 0xf7, 0x03 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Disable original attributes the attributes should really be disabled | 1. Call Attributes() with EfiPciIoAttributeOperationDisable with supported attributes  2. Call Attributes() with **EfiPciIoAttributeOperationGet** to get the attributes  3. Check if the attributes is 0 |
| 5.8.2.16.12 | 0x00c4352a, 0x0747, 0x4175, 0x8d, 0xa6, 0xd1, 0xad, 0xc7, 0x30, 0x31, 0xf4 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Call Attributes() set original attributes return status must be EFI\_SUCCESS | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with original attributes  The return status should be EFI\_SUCCESS |
| 5.8.2.16.13 | 0x7ba1d37a, 0xa654, 0x4738, 0x96, 0x98, 0x11, 0x1b, 0x4b, 0x43, 0xad, 0x6c | EFI\_PCI\_IO\_PROTOCOL.Attributes - Set original attributes the attributes should really be set | 1. Call Attributes() with **EfiPciIoAttributeOperationSet** with original attributes  2. Call Attributes() with **EfiPciIoAttributeOperationGet** to get the attributes  3. Check if the attributes is the same as original attributes |
| 5.8.2.16.14 | 0xca3478fa, 0x7a9a, 0x4452, 0x93, 0x23, 0x98, 0xda, 0xe1, 0xf9, 0x17, 0xde | EFI\_PCI\_IO\_PROTOCOL.Attributes - With Operation as **EfiPciIoAttributeOperationMaximum** status must be EFI\_INVALID\_PARAMETER | 1. Call Attributes() with Operation as **EfiPciIoAttributeOperationMaximum**. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.16.15 | 0xf09e9c22, 0xd061, 0x4a52, 0xa6, 0xea, 0xa9, 0x4a, 0x90, 0x2e, 0x15, 0x0e | EFI\_PCI\_IO\_PROTOCOL.Attributes - With Operation as **EfiPciIoAttributeOperationMaximum** + 1 status must be EFI\_INVALID\_PARAMETER | 1. Call Attributes() with Operation as **EfiPciIoAttributeOperationMaximum** + 1. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.16.16 | 0x1a5371a2, 0x9f8f, 0x4a0a, 0x90, 0x3c, 0x61, 0xca, 0xf0, 0x47, 0xc4, 0x30 | EFI\_PCI\_IO\_PROTOCOL.Attributes - With Operation as -1 the status must be EFI\_INVALID\_PARAMETER | 1. Call Attributes() with Operation as -1. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.16.17 | 0x63c39f67, 0xb02f, 0x4f78, 0x88, 0x49, 0x63, 0x3a, 0xa9, 0x0b, 0xfd, 0xd8 | EFI\_PCI\_IO\_PROTOCOL.Attributes - With Operation as EfiPciIoAttributeOperationGet and Result as NULL then the status must be EFI\_INVALID\_PARAMETER | 1. Call Attributes() with Operation as **EfiPciIoAttributeOperationGet** and Result as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.16.18 | 0xacfb1410, 0x3824, 0x42f0, 0x89, 0xfe, 0x93, 0x0c, 0xda, 0xb7, 0xe0, 0x3a | EFI\_PCI\_IO\_PROTOCOL.Attributes - With Operation as **EfiPciIoAttributeOperationSupported** and Result as NULL, status is EFI\_INVALID\_PARAMETER | 1. Call Attributes() with Operation as **EfiPciIoAttributeOperationSupported** and Result as NULL. The return status must be EFI\_INVALID\_PARAMETER |
| 5.8.2.16.19 | 0xabcd2d94, 0x9389, 0x49a5, 0x91, 0xd7, 0x91, 0x83, 0x0b, 0x80, 0xfe, 0xc2 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Setting unsupported Attributes returns a status of EFI\_UNSUPPORTED | 1. Find unsupported attributes by this device  2. Call Attributes() with Operation as **EfiPciIoAttributeOperationSet** and unsupported Attributes. The return status must be EFI\_UNSUPPORTED |
| 5.8.2.16.20 | 0xdbe5ef54, 0x5b5e, 0x45e8, 0x9f, 0x8b, 0x9d, 0xa5, 0x72, 0xdb, 0xcd, 0xb7 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Enabling unsupported Attributes returns a status of EFI\_UNSUPPORTED | 1. Find unsupported attributes by this device  2. Call Attributes() with Operation as **EfiPciIoAttributeOperationEnable** and unsupported Attributes. The return status must be EFI\_UNSUPPORTED |
| 5.8.2.16.21 | 0x781416ce, 0xc545, 0x4542, 0xb5, 0xd8, 0xbc, 0xc0, 0xc4, 0xe0, 0x2a, 0x52 | EFI\_PCI\_IO\_PROTOCOL.Attributes - Disabling unsupported Attributes returns a status of EFI\_UNSUPPORTED | 1. Find unsupported attributes by this device  2. Call Attributes() with Operation as **EfiPciIoAttributeOperationDisable** and unsupported Attributes. The return status must be EFI\_UNSUPPORTED |

### GetBarAttributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.17.1 | 0xbc76b1a7, 0x767b, 0x4f5c, 0x94, 0x03, 0x34, 0x40, 0xfb, 0xd9, 0x40, 0x95 | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - Calling GetBarAttributes() returns a status of EFI\_SUCCESS. | 1. Call GetBarAttributes() with a valid BAR Index and a valid Resources pointer.  The return status should be EFI\_SUCCESS. |
| 5.8.2.17.2 | 0x8414d9a1,0x0339,  0x4d7c,  0xa2,0xa4,  0x45,0x3d,  0xd6,0x8d,  0x6b,0x5f | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - Calling GetBarAttributes() with only Supports is NULL returns status of EFI\_SUCCESS. | 1. Call GetBarAttributes() with a valid BAR Index and NULL Supports.  The return status should be EFI\_SUCCESS. |
| 5.8.2.17.3 | 0x211c1b15, 0xc4ce, 0x452d, 0x96, 0x93, 0xec, 0xf4, 0xc2, 0x3d, 0x20, 0xfe | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - Calling GetBarAttributes() with only Resource is NULL returns a status of EFI\_SUCCESS. | 1. Call GetBarAttributes() with a valid BAR Index and NULL Resources pointer.  The return status should be EFI\_SUCCESS. |
| 5.8.2.17.4 | 0xcb909d56, 0x1d18, 0x44b5, 0xb0, 0x30, 0xa2, 0x58, 0x30, 0x9e, 0xd6, 0x6c | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - The Resource Descriptor List is valid. | 1. Call GetBarAttributes() with a valid BAR Index and a valid Resources pointer.  2. Check that the returned resource descriptor is valid. |
| 5.8.2.17.5 | 0xc0d61a6d, 0x5d07, 0x4748, 0x9f, 0x14, 0x78, 0x00, 0xb6, 0xcf, 0x4b, 0x47 | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - The attributes are in Device Supported Attributes. | 1. Call GetBarAttributes() with a valid BAR Index and a valid Resources pointer.  2. Call Attributes() with **EfiPciIoAttributeOperationSupported** to get the supported attributes of the PCI controller.  3. Check that the current attributes are a subset of Supported attributes. |
| 5.8.2.17.6 | 0x50f8ec56, 0xc28c, 0x417c, 0x8f, 0x43, 0x43, 0xfd, 0xfc, 0xbd, 0x4e, 0xdf | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - With invalid BAR Index the status is EFI\_UNSUPPORTED. | 1. Call GetBarAttributes() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.17.7 | 0xf52eed93, 0x6c9d, 0x4008, 0xad, 0x9d, 0xe9, 0xab, 0xc8, 0xa4, 0x88, 0x01 | EFI\_PCI\_IO\_PROTOCOL.GetBarAttributes - With both Supports and Resources as NULL status is EFI\_INVALID\_PARAMETER. | 1. Call GetBarAttributes() with both Supports and Resources as NULL. The return status must be EFI\_INVALID\_PARAMETER. |

### SetBarAttributes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.8.2.18.1 | 0x51ec0763, 0x0edb, 0x4ad3, 0xb1, 0x0c, 0x2d, 0x3f, 0x88, 0x34, 0x78, 0x44 | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - Calling SetBarAttributes() returns a status of EFI\_SUCCESS. | 1. Call GetBarAttributes() with a valid BAR Index to get the BAR supported attributes resource.  2. Call SetBarAttributes() with BAR Supported attributes and resource information.  The return status should be EFI\_SUCCESS. |
| 5.8.2.18.2 | 0x9cbd1e01, 0x86a4, 0x4b9f, 0xbb, 0x00, 0x3e, 0xff, 0xfb, 0x35, 0xf3, 0xbd | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - With invalid BAR Index, the status is EFI\_UNSUPPORTED. | 1. Call SetBarAttributes() with invalid BAR Index. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.18.3 | 0x445e37a9, 0xc8e7, 0x402b, 0xb7, 0xf8, 0x93, 0x96, 0xa0, 0xbd, 0x5e, 0xc5 | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - With Offset as NULL, the status is EFI\_INVALID\_PARAMETER. | 1. Call SetBarAttributes() with Offset as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.18.4 | 0x32edd10b, 0x4a81, 0x4a98, 0x8b, 0x7a, 0xef, 0x1b, 0x9a, 0xe8, 0x25, 0x69 | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - With Length as NULL the status is EFI\_INVALID\_PARAMETER. | 1. Call SetBarAttributes() with Length as NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.8.2.18.5 | 0xfbb0d8fc, 0xffcf, 0x4562, 0xba, 0x86, 0x1f, 0x9b, 0x41, 0x45, 0x1f, 0x9c | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - With Offset + Length out of the BAR resource range, the status is EFI\_UNSUPPORTED. | 1. Call SetBarAttributes() with Offset + Length out of the BAR resourcde range. The return status must be EFI\_UNSUPPORTED. |
| 5.8.2.18.6 | 0x48602f8b, 0xbb69, 0x4421, 0xb0, 0x21, 0x5a, 0x10, 0x78, 0x5b, 0xba, 0xf9 | EFI\_PCI\_IO\_PROTOCOL.SetBarAttributes - With unsupported Attributes the status is EFI\_UNSUPPORTED. | 1. Find unsupported attributes by this device  2. Call SetBarAttributes() with unsupported Attributes. The return status must be EFI\_UNSUPPORTED. |

# Protocols USB Support Test

## EFI\_USB2\_HC\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_USB2\_HC\_PROTOCOL Section.

Most of functionalities rely on the real USB devices. They are not covered in below checkpoints.

### GetCapability()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.1.1 | 0xbe0fffbd, 0xc5cb, 0x4ab7, 0xa0, 0x8a, 0x79, 0xd1, 0x02, 0xb3, 0x5f, 0xf8 | EFI\_USB2\_HC\_PROTOCOL. GetCapability - GetCapability() returns EFI\_INVALID\_PARAMETER with aMaxSpeed value of NULL. | 1. Call GetCapability() with a MaxSpeedvalue of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.1.2 | 0x6dd53bd5, 0x463b, 0x46a7, 0xb0, 0x98, 0x06, 0xa6, 0xf6, 0xa5, 0x62, 0xdd | EFI\_USB2\_HC\_PROTOCOL. GetCapability - GetCapability () returns EFI\_INVALID\_PARAMETER with a PortNumber value of NULL. | 1. Call GetCapability () with a PortNumber value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.1.3 | 0x0ffa5751, 0x96dd, 0x4a70, 0xa1, 0x01, 0x63, 0x66, 0x7b, 0x15, 0xcc, 0xf5 | EFI\_USB2\_HC\_PROTOCOL. GetCapability - GetCapability () returns EFI\_INVALID\_PARAMETER with an Is64BitCapablevalue of NULL. | 1. Call GetCapability () with an Is64BitCapable value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.2.1 | 0xf8dd84cb, 0x72a2, 0x4cab, 0xac, 0x2e, 0x11, 0x6f, 0x3c, 0x0d, 0x5d, 0xb5 | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL. | 1. Call Reset() with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of the USB host controller. The controller should be in halt state. |
| 5.21.1.2.2 | 0x3bdb0674, 0x621b, 0x4319, 0xb2, 0x4f, 0xc6, 0x1a, 0xd4, 0x09, 0x73, 0xd0 | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with Attributes values of EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER. | 1. Call Reset() with Attributes values of EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of the USB host controller. The controller should be in halt state. |
| 5.21.1.2.3 | 0xd243c0fd, 0x7654, 0x4400, 0xb3, 0x4a, 0xe3, 0x09, 0x8f, 0x9e, 0x5e, 0xd4 | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL | EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER. | 1. Call Reset() with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL | EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of the USB host controller. The controller should be in halt state. |
| 5.21.1.2.4 | 0xa4f18be1, 0x15f2, 0x424f, 0xa6, 0xdb, 0x58, 0x6e, 0x0d, 0x54, 0x80, 0x25 | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL\_DEBUG. | 1. Call Reset() with Attributes values of EFI\_USB\_HC\_RESET\_GLOBAL\_DEBUG. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of the USB host controller. The controller should be in halt state. |
| 5.21.1.2.5 | 0xe2df74c7, 0x7aea, 0x488c, 0xb9, 0xa2, 0x71, 0x94, 0xb2, 0x5f, 0xf3, 0x8b | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with Attributes values of EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER\_DEBUG. | 1. Call Reset() with an Attributes value of EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER\_DEBUG. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of the USB host controller. The controller should be in halt state. |
| 5.21.1.2.6 | 0xda7ef15c, 0x01a4, 0x4004, 0x8c, 0x7a, 0x33, 0xc7, 0x89, 0x47, 0xd9, 0xfc | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_SUCCESS with an Attributes value of EFI\_USB\_HC\_RESET\_GLOBAL\_DEBUG | EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER\_DEBUG. | 1. Call Reset() with an Attributes value of EFI\_USB\_HC\_RESET\_GLOBAL\_DEBUG | EFI\_USB\_HC\_RESET\_HOST\_CONTROLLER\_DEBUG. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of this USB host controller. This controller should be in halt state. |
| 5.21.1.2.7 | 0xd2e6a8f0, 0x6c97, 0x4134, 0x81, 0x2e, 0x25, 0xf1, 0x75, 0x18, 0x6a, 0xe4 | EFI\_USB2\_HC\_PROTOCOL.Reset - Reset**()** returns EFI\_INVALID\_PARAMETER with an invalid Attributes. | 1. Call Reset() with an invalid Attributes value of 0. The return status should be EFI\_INVALID\_PARAMETER. |

### GetState()

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| --- | --- | --- | --- |
| 5.21.1.3.1 | 0x19be62be, 0xf20c, 0x4fa2, 0x89, 0xcc, 0x3a, 0x89, 0x39, 0x48, 0x4d, 0x86 | EFI\_USB2\_HC\_PROTOCOL.GetState - GetState() returns EFI\_SUCCESS while the host controller is in halt state. | 1. Call SetState() with a State value of EfiUsbHcStateHalt. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of this USB host controller. This controller should be in halt state. |
| 5.21.1.3.2 | 0xc2b1cb6a, 0x66b4, 0x4c6d, 0xb9, 0x0a, 0xc9, 0x5d, 0x27, 0xd6, 0xa5, 0xd1 | EFI\_USB2\_HC\_PROTOCOL.GetState - GetState() returns EFI\_SUCCESS while the host controller is in an operational state. | 1. Call SetState() with a State value of EfiUsbHcStateOperational. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of this USB host controller. This controller should be in an Operational state. |
| 5.21.1.3.3 | 0x95e913a0, 0x5ca9, 0x4edb, 0x92, 0x4f, 0xaa, 0x2f, 0x18, 0x9b, 0x57, 0x6a | EFI\_USB2\_HC\_PROTOCOL.GetState - GetState() returns EFI\_SUCCESS while the host controller is in suspend state. | 1. Call SetState() with a State value of EfiUsbHcStateSuspend. The return status should be EFI\_SUCCESS.  2. Call GetState() to get the state of this USB host controller. This controller should be in Suspend state. |
| 5.21.1.3.4 | 0xbc1b8f2e, 0xf1aa, 0x446f, 0x81, 0x78, 0x6e, 0x4e, 0xd5, 0x53, 0x02, 0x08 | EFI\_USB2\_HC\_PROTOCOL.GetState - GetState() returns EFI\_INVALID\_PARAMETER with a **State** value of NULL. | 1. Call GetState() with a State value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### SetState()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.4.1 | 0x5d2282fe, 0xc37c, 0x4901, 0xbb, 0xf7, 0xf1, 0xb6, 0xf0, 0xae, 0x82, 0x91 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from halt to halt. | 1. Call SetState() with a State value of EfiUsbHcStateHalt. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateHalt again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in halt state. |
| 5.21.1.4.2 | 0x6f6e6713, 0x07dc, 0x4413, 0x85, 0x05, 0xee, 0x69, 0x9e, 0x32, 0x69, 0x27 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from halt state to operational state. | 1. Call SetState() with a State value of EfiUsbHcStateHalt. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateOperational again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in an Operational state. |
| 5.21.1.4.3 | 0x49ca37bc, 0x208d, 0x4feb, 0xa6, 0xd9, 0x68, 0xa3, 0x69, 0xca, 0xb3, 0xf1 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from halt state to suspend state. | 1. Call SetState() with a State value of EfiUsbHcStateHalt. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateSuspend again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in Suspend state. |
| 5.21.1.4.4 | 0xa4663706, 0xd0c0, 0x45d7, 0x9a, 0x9d, 0x5e, 0x0e, 0xf8, 0xba, 0x2c, 0x26 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from operational state to operational state. | 1. Call SetState() with a State value of EfiUsbHcStateOperational. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateOperational again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in an Operational state. |
| 5.21.1.4.5 | 0xa9b73b45, 0xb3ca, 0x4579, 0x87, 0x38, 0xb3, 0xcc, 0xc4, 0x50, 0x09, 0x97 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from operational state to halt state. | 1. Call SetState() with a State value of EfiUsbHcStateOperational. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateHalt again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in halt state. |
| 5.21.1.4.6 | 0x54936ebc, 0x9732, 0x4d9f, 0x83, 0x5c, 0x95, 0x77, 0xf5, 0xdb, 0x0e, 0xb1 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from operational state to suspend state. | 1. Call SetState() with a State value of EfiUsbHcStateOperational. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateSuspend again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in Suspend state. |
| 5.21.1.4.7 | 0x9da57b17, 0x7841, 0x423a, 0xb1, 0xf8, 0x6d, 0x61, 0xf0, 0xd3, 0x17, 0xf0 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from suspend state to suspend state. | 1. Call SetState() with a State value of EfiUsbHcStateSuspend. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateSuspend again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in Suspend state. |
| 5.21.1.4.8 | 0x5b4bf27e, 0xad64, 0x41a4, 0xa9, 0x8b, 0xd2, 0xb0, 0x7d, 0x32, 0xbb, 0xa3 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from suspend state to halt state. | 1. Call SetState() with a State value of EfiUsbHcStateSuspend. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateHalt again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in halt state. |
| 5.21.1.4.9 | 0xc12e9ca0, 0x0e9c, 0x4204, 0xaa, 0xc3, 0x6d, 0x12, 0x33, 0x1b, 0x28, 0x9b | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_SUCCESS when changing the state from suspend state to operational state. | 1. Call SetState() with a State value of EfiUsbHcStateSuspend. The return status should be EFI\_SUCCESS.  2. Call SetState() with a State value of EfiUsbHcStateOperational again. The return status should be EFI\_SUCCESS.  3. Call GetState() to get the state of this USB host controller. This controller should be in an Operational state. |
| 5.21.1.4.10 | 0x5168c4ef, 0x91f4, 0x48c5, 0x88, 0x1f, 0xf8, 0x01, 0x80, 0xd2, 0x98, 0x07 | EFI\_USB2\_HC\_PROTOCOL.SetState - SetState() returns EFI\_INVALID\_PARAMETER with an invalid **State**. | 1. Call SetState() with an invalid State value of -1. The return status should be EFI\_INVALID\_PARAMETER.  2. Call SetState() with an invalid State value of EfiUsbHcStateMaximum. The return status should be EFI\_INVALID\_PARAMETER. |

### ControlTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.5.1 | 0x36308487, 0x3a2c, 0x48fa, 0x91, 0xed, 0xec, 0xc3, 0x59, 0xd0, 0x78, 0x46 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid TransferDirection. | 1. Call ControlTransfer() with an invalid TransferDirection value  (-**1**). The return status should be EFI\_INVALID\_PARAMETER.  2. Call ControlTransfer() with an invalid TransferDirection value (**0x7FFFFFFF***)*. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.2 | 0x26532efd, 0x62ab, 0x4d60, 0x9c, 0xd8, 0x14, 0xb7, 0x9d, 0x48, 0x8e, 0xa1 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with a invalid Dataand DataLength values. | 1. Call ControlTransfer() with an invalid **Data** (value of*)* and TransferDirection is either EfiUsbDataIn or EfiUsbDataOut. The return status should be EFI\_INVALID\_PARAMETER.  2. Call ControlTransfer() with an invalid DataLength (value of **0***)* and TransferDirection is either EfiUsbDataIn or EfiUsbDataOut. The return status should be EFI\_INVALID\_PARAMETER.  3. Call ControlTransfer() with an invalid Data **(**not value of NULL*)* and TransferDirection value of EfiUsbNoData.The return status should be EFI\_INVALID\_PARAMETER.  4. Call ControlTransfer() with an invalid DataLength**(** value of 1*)*and TransferDirection value of EfiUsbNoData.The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.3 | 0x28f002fd, 0x3797, 0x46cb, 0xaf, 0x66, 0xd5, 0xb4, 0x27, 0x23, 0x1b, 0x7a | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an Request value of NULL. | 1. Call ControlTransfer() with an invalid Request value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.4 | 0xddf99154, 0x12ea, 0x4c99, 0x9a, 0x49, 0x6a, 0x1c, 0x51, 0xc2, 0x7a, 0x77 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call ControlTransfer() with an invalid MaximumPacketLength ( value is not 8) when DeviceSpeed is EFI\_USB\_SPEED\_LOW. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.5 | 0xc258056b, 0x13ae, 0x4839, 0xbb, 0xda, 0xa0, 0x1f, 0x5c, 0x14, 0x0a, 0x51 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call ControlTransfer() with an invalid MaximumPacketLength (value of 128 not 8/16/32/64) when DeviceSpeed is EFI\_USB\_SPEED\_FULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.6 | 0x5f6973f9, 0x9d75, 0x4e26, 0x8a, 0x30, 0xb5, 0xc2, 0x0e, 0x47, 0xf0, 0xb3 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call ControlTransfer() with an invalid MaximumPacketLength (value of 128 not 8/16/32/64) when DeviceSpeed is EFI\_USB\_SPEED\_HIGH. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.7 | 0x66a39c82, 0xfb44, 0x4057, 0xbb, 0xd7, 0x4b, 0x24, 0x30, 0xff, 0x19, 0xa9 | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call ControlTransfer() with an invalid MaximumPacketLength*(*value of 256 not 512*)* when DeviceSpeed is EFI\_USB\_SPEED\_SUPER. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.5.8 | 0xf63896ea, 0x5143, 0x4b7a, 0x93, 0x51, 0x63, 0xb5, 0xb5, 0x95, 0x81, 0x5c | EFI\_USB2\_HC\_PROTOCOL. ControlTransfer - ControlTransfer () returns EFI\_INVALID\_PARAMETER with a TransferResult value of NULL. | 1. Call ControlTransfer() with an invalid TransferResult (value of NULL). The return status should be EFI\_INVALID\_PARAMETER. |

### BulkTransfer()

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| Number | GUID | Assertion | Test Description |
| 5.21.1.6.1 | 0x0498c13e, 0xc21b, 0x4c4e, 0x95, 0xd2, 0x11, 0x9a, 0x10, 0x07, 0x51, 0x02 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with a Data value of NULL. | 1. Call BulkTransfer() with an invalid Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.6.2 | 0x2a1df585, 0xf82a, 0x42ab, 0x97, 0x4f, 0xfe, 0xfb, 0xf7, 0x89, 0xe6, 0xf5 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with a DataLength value of 0. | 1. Call BulkTransfer() with an invalid DataLength value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.6.3 | 0x26ad2292, 0x449b, 0x4545, 0x80, 0xaa, 0x13, 0x39, 0x13, 0x15, 0x04, 0xf6 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceSpeed value of EFI\_USB\_SPEED\_LOW. | 1. Call BulkTransfer() with an invalid DeviceSpeed value of EFI\_USB\_SPEED\_LOW. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.6.4 | 0x1d89742e, 0xd026, 0x47d7, 0xa4, 0xcb, 0xe0, 0xb6, 0xd9, 0xc3, 0xd9, 0x54 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call BulkTransfer() with an invalid MaximumPacketLength (value of 65) when DeviceSpeed is EFI\_USB\_SPEED\_FULL. The return status should be EFI\_INVALID\_PARAMETER.  2. Call BulkTransfer() with an invalid MaximumPacketLength (value of 513) when DeviceSpeed is EFI\_USB\_SPEED\_HIGH. The return status should be EFI\_INVALID\_PARAMETER.  3. Call BulkTransfer() with an  invalid MaximumPacketLength (value of 1025) when DeviceSpeed is EFI\_USB\_SPEED\_SUPER. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.6.5 | 0xbc90875e, 0x0a8b, 0x4e3c, 0xbb, 0xf2, 0x5a, 0x43, 0x40, 0x3a, 0x6b, 0x05 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with a DataToggle value other than 0 and 1. | 1. Call BulkTransfer() with an invalid DataToggle(value of 2*)*. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.6.6 | 0x0dfea5a1, 0xf82a, 0x41a5, 0xbf, 0x67, 0xea, 0x89, 0xed, 0x74, 0x61, 0x21 | EFI\_USB2\_HC\_PROTOCOL. BulkTransfer - BulkTransfer () returns EFI\_INVALID\_PARAMETER with a TransferResult value of NULL. | 1. Call BulkTransfer() with an invalid TransferResult ( value of NULL). The return status should be EFI\_INVALID\_PARAMETER. |

### AsyncInterruptTransfer()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.7.1 | 0xec3427c4, 0xe4df, 0x4646, 0x8b, 0x63, 0xdc, 0x0b, 0x7d, 0xc0, 0x0d, 0xdd | EFI\_USB2\_HC\_PROTOCOL. AsyncInterruptTransfer - AsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a EndPointAddress value other than EfiUsbDataIn. | 1. Call AsyncInterruptTransfer () with an *E*ndPointAddress value other than EfiUsbDataIn. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.7.2 | 0xc0cddbce, 0x4853, 0x4d71, 0xad, 0xe1, 0x59, 0x94, 0x90, 0x7c, 0x31, 0xcc | EFI\_USB2\_HC\_PROTOCOL. AsyncInterruptTransfer - AsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a new, invalid transfer. | 1. Call AsyncInterruptTransfer () with the IsNewTransfer value of TRUE and DataLength value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.7.3 | 0xaf26077c, 0x75e5, 0x4fbc, 0xad, 0x5e, 0x99, 0x3b, 0xce, 0x66, 0xb5, 0xc5 | EFI\_USB2\_HC\_PROTOCOL. AsyncInterruptTransfer - AsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a new, invalid transfer. | 1. Call AsyncInterruptTransfer () with the IsNewTransfer value of TRUE and a DataToggle value other than 0 and 1. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.7.4 | 0xccd35e94, 0x51db, 0x4118, 0xa8, 0xd4, 0x40, 0xbd, 0x2e, 0xee, 0x77, 0xd9 | EFI\_USB2\_HC\_PROTOCOL. AsyncInterruptTransfer - AsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with new, invalid transfer. | 1. Call AsyncInterruptTransfer () with the IsNewTransfer value of TRUE and PollingInterval value of 0. The return status should be EFI\_INVALID\_PARAMETER.  2. Call AsyncInterruptTransfer () with the IsNewTransfer value of TRUE and PollingInterval value of 256. The return status should be EFI\_INVALID\_PARAMETER. |

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### SyncInterruptTransfer()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.8.1 | 0x509cb496, 0x1d63, 0x4faf, 0x8d, 0xdf, 0x00, 0xbc, 0x58, 0x05, 0x0d, 0xe6 | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with the EndPointAddress set other than EfiUsbDataIn. | 1. Call SyncInterruptTransfer () with the EndPointAddress set other than EfiUsbDataIn. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.8.2 | 0x3a0ad565, 0xb82c, 0x450f, 0xbc, 0xe6, 0x88, 0xb3, 0xd1, 0x6a, 0xde, 0x35 | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a Data value of NULL. | 1. Call SyncInterruptTransfer () with a Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.8.3 | 0xc139127a, 0x3797, 0x482f, 0xb3, 0x5c, 0xaa, 0xf7, 0x99, 0xbd, 0xf6, 0xc6 | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a DataLength value of 0. | 1. Call SyncInterruptTransfer () with a DataLength value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.8.4 | 0x14cb206c, 0x422b, 0x47ee, 0x8c, 0x4b, 0xf3, 0x16, 0xfe, 0x33, 0xda, 0xfb | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid MaximumPacketLength. | 1. Call SyncInterruptTransfer () with a MaximumPacketLength value of 9 and DeviceSpeed value of EFI\_USB\_SPEED\_LOW. The return status should be EFI\_INVALID\_PARAMETER.  2. Call SyncInterruptTransfer () with a MaximumPacketLength value of 65 and DeviceSpeed value of EFI\_USB\_SPEED\_FULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call SyncInterruptTransfer () with a MaximumPacketLength value of 3073 and DeviceSpeed value of EFI\_USB\_SPEED\_HIGH. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.8.5 | 0xf4353439, 0x47e4, 0x4df3, 0x85, 0xe9, 0x9e, 0xfe, 0x72, 0x3a, 0x1e, 0x4b | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with DataToggle pointing to a value other than 0 and 1. | 1. Call SyncInterruptTransfer () with DataToggle points to a value other than 0 and 1. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.8.6 | 0x81dfdb23, 0x681e, 0x4df7, 0xa7, 0x73, 0x6d, 0x41, 0x58, 0xdb, 0x88, 0x3e | EFI\_USB2\_HC\_PROTOCOL. SyncInterruptTransfer - SyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a TransferResult value of NULL. | 1. Call SyncInterruptTransfer () with a TransferResult value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### IsochronousTransfer()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.9.1 | 0x74e2dcbf, 0xae9f, 0x4499, 0x82, 0x74, 0xcb, 0xbe, 0x86, 0x59, 0x5d, 0xb7 | EFI\_USB2\_HC\_PROTOCOL. IsochronousTransfer - IsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a Datavalue of NULL. | 1. Call IsochronousTransfer () with a Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.9.2 | 0xd93babd4, 0xd7de, 0x4e87, 0x9b, 0x5c, 0x68, 0xd2, 0xa6, 0x77, 0x33, 0xc4 | EFI\_USB2\_HC\_PROTOCOL. IsochronousTransfer - IsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a DataLengthvalue of 0. | 1. Call IsochronousTransfer () with a DataLength value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.9.3 | 0x9b220909, 0x662c, 0x4b5e, 0x9e, 0x42, 0xdc, 0x66, 0x4c, 0xdb, 0xb1, 0x5f | EFI\_USB2\_HC\_PROTOCOL. IsochronousTransfer - IsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a MaxiumPacketLenth set larger than 1023. | 1. Call IsochronousTransfer () with a MaxiumPacketLenth value of 1024. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.9.4 | 0x68898a17, 0x5ae9, 0x456a, 0xb1, 0xe0, 0xa3, 0xc0, 0x42, 0xeb, 0x50, 0x8d | EFI\_USB2\_HC\_PROTOCOL. IsochronousTransfer - IsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a TransferResultvalue of NULL. | 1. Call IsochronousTransfer () with a TransferResultvalue of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.9.5 | 0xfa4f5868, 0xf004, 0x4cbe, 0x88, 0x97, 0xfd, 0x6, 0xb2, 0x72, 0x76, 0x71 | EFI\_USB2\_HC\_PROCOTOL.IsochronousTransferIsochronousTransfer () returnsEFI\_INVALID\_PARAMETER when *DeviceSpeed* is not one of the supported values. | **IsochronousTransfer()** returns **EFI\_INVALID\_PARAMETER** when *DeviceSpeed* is not one of the supported values. |

### AsyncIsochronousTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.10.1 | 0x55a7ea0c, 0x9ffc, 0x47dc, 0xb7, 0x5e, 0x5c, 0xfa, 0x8c, 0xed, 0xe1, 0x53 | EFI\_USB2\_HC\_PROTOCOL. AsyncIsochronousTransfer - AsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a Datavalue of NULL. | 1. Call AsyncIsochronousTransfer () with a Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.10.2 | 0xfa310dd6, 0x4b8a, 0x4799, 0xa5, 0xdc, 0x80, 0xe7, 0xbb, 0xe0, 0x4e, 0xac | EFI\_USB2\_HC\_PROTOCOL. AsyncIsochronousTransfer - AsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a DataLengthvalue of 0. | 1. Call AsyncIsochronousTransfer () with a DataLength value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.10.3 | 0x4083742a, 0x6c43, 0x49b4, 0x8d, 0xe1, 0x7a, 0xf8, 0x0c, 0x8b, 0x02, 0x33 | EFI\_USB2\_HC\_PROTOCOL. AsyncIsochronousTransfer - AsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a MaxiumPacketLenth value of larger than 1023. | 1. Call AsyncIsochronousTransfer () with a MaxiumPacketLenth value of 1024. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.10.4 | 0x474590c4, 0x8410, 0x4871, 0x93, 0xb4, 0x2b, 0xe, 0x9f, 0xb5, 0xe8, 0x30 | USB2\_HC\_PROCOTOL.AsyncIsochronousTransfer –AsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETERwhen *DeviceSpeed* is not one of the supported values. | **AsyncIsochronousTransfer()** returns **EFI\_INVALID\_PARAMETER** when *DeviceSpeed* is not one of the supported values. |

### GetRootHubPortStatus()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.11.1 | 0x089705c5, 0xf134, 0x42b4, 0xbd, 0xeb, 0x7a, 0x74, 0xc7, 0x93, 0xa0, 0xf5 | EFI\_USB2\_HC\_PROTOCOL. GetRootHubPortStatus - GetRootHubPortStatus () returns EFI\_INVALID\_PARAMETER with an invalid PortNumber. | 1. Call GetCapability() to get the number of ports. The return status should be EFI\_SUCCESS.  2. Call GetRootHubPortStatus() with PortNumber greater than the number of ports. The return status should be EFI\_INVALID\_PARAMETER. |

### SetRootHubPortFeature()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.12.1 | 0xf74da277, 0x4ac2, 0x422c, 0x90, 0xda, 0xb4, 0x9f, 0xc7, 0x4f, 0x2a, 0x65 | EFI\_USB2\_HC\_PROTOCOL. SetRootHubPortFeature - SetRootHubPortFeature () returns EFI\_INVALID\_PARAMETER with an invalid PortNumber. | 1. Call GetRootHubPortNumber () to get the number of ports. The return status should be EFI\_SUCCESS.  2. Call SetRootHubPortFeature() with a PortNumber greater than the number of ports. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.12.2 | 0xd7071255, 0x61db, 0x446a, 0xad, 0x65, 0x01, 0xb4, 0x54, 0x72, 0x1f, 0x80 | EFI\_USB2\_HC\_PROTOCOL. SetRootHubPortFeature - SetRootHubPortFeature () returns EFI\_INVALID\_PARAMETER with an invalid PortFeature. | 1. Call GetRootHubPortNumber () to get the number of ports. The return status should be EFI\_SUCCESS.  2. Call SetRootHubPortFeature() with a PortFeature not value of EfiUsbPortEnable, EfiUsbPortSuspend, EfiUsbPortReset nor EfiUsbPortPower. The return status should be EFI\_INVALID\_PARAMETER. |

### ClearRootHubPortFeature()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.1.13.1 | 0x88cda060, 0xbe70, 0x4c49, 0x95, 0xac, 0xae, 0xa0, 0x37, 0xfa, 0x7f, 0x51 | EFI\_USB2\_HC\_PROTOCOL. ClearRootHubPortFeature - ClearRootHubPortFeature () returns EFI\_INVALID\_PARAMETER with an invalid PortNumber. | 1. Call GetRootHubPortNumber () to get the number of ports. The return status should be EFI\_SUCCESS.  2. Call ClearRootHubPortFeature() with a PortNumber greater than the number of ports. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.1.13.2 | 0x59de7e7c, 0x078d, 0x4217, 0xa5, 0xfd, 0xf0, 0x1e, 0x15, 0xeb, 0xa3, 0x67 | EFI\_USB2\_HC\_PROTOCOL. ClearRootHubPortFeature - ClearRootHubPortFeature () returns EFI\_INVALID\_PARAMETER with an invalid PortFeature. | 1. Call GetRootHubPortNumber () to get the number of ports. The return status should be EFI\_SUCCESS.  2. Call ClearRootHubPortFeature() with a PortFeature not value of EfiUsbPortEnable, EfiUsbPortSuspend, EfiUsbPortPower, EfiUsbPortConnectChange, EfiUsbPortResetChange, EfiUsbPortEnableChange, EfiUsbPortSuspendChange, nor EfiUsbPortOverCurrentChange. The return status should be EFI\_INVALID\_PARAMETER. |

## 

## EFI\_USB\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_USB\_IO\_PROTOCOL Section.

Most of functionalities rely on real USB devices. They are not covered in below checkpoints.

### UsbControlTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.1.1 | 0xe687694c, 0xc7ec, 0x444b, 0xac, 0xc5, 0xa3, 0x56, 0xf2, 0xb6, 0x3f, 0x15 | EFI\_USB\_IO\_PROTOCOL. UsbControlTransfer - UsbControlTransfer () returns EFI\_INVALID\_PARAMETER with an invalid TransferDirection. | 1. Call UsbControlTransfer() with an invalid TransferDirection ( value of -1). The return status should be EFI\_INVALID\_PARAMETER.  2. Call UsbControlTransfer() with an invalid TransferDirection ( value of 0x7FFFFFFF). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.1.2 | 0x4aa535ad, 0x7985, 0x49f3, 0x81, 0x53, 0xa3, 0xd7, 0x04, 0x1e, 0x3f, 0xd0 | EFI\_USB\_IO\_PROTOCOL. UsbControlTransfer - UsbControlTransfer () returns EFI\_INVALID\_PARAMETER with a Request value of NULL. | 1. Call UsbControlTransfer() with a Request value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.1.3 | 0xc6bfebde, 0xd2d6, 0x44fa, 0xa6, 0xd9, 0x9b, 0x3c, 0x88, 0x9a, 0x52, 0x81 | EFI\_USB\_IO\_PROTOCOL. UsbControlTransfer - UsbControlTransfer () returns EFI\_INVALID\_PARAMETER with a Status value of NULL. | 1. Call UsbControlTransfer() with a Status value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.1.4 | �0x937f99d5, 0x18ef, 0x424c, 0xb4, 0x4c, 0x54, 0xaf, 0xf6, 0x20, 0xe0, 0xdc | EFI\_USB\_IO\_PROTOCOL.  UsbControlTransfer **-**  UsbControlTransfer () **returns**  EFI\_SUCCESS or EFI\_DEVICE\_ERROR when the parameter Timeout is 0. | 1. Call UsbControlTransfer () �when the parameter Timeout is 0. The return code must be  EFI\_SUCCESS or EFI\_DEVICE\_ERROR.  . |

### UsbBulkTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.2.1 | 0xf7c2276a, 0xfcd0, 0x4aeb, 0x99, 0x79, 0xf8, 0x79, 0x24, 0xd4, 0xc4, 0x83 | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbBulkTransfer() with an invalid DeviceEndpoint value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.2 | 0xa0365348, 0xba4c, 0x43fe, 0xba, 0xde, 0x8e, 0x35, 0x26, 0x39, 0x7e, 0xbd | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbBulkTransfer() with an invalid DeviceEndpoint ( value of 0x10). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.3 | 0xafcf7b82, 0x16ad, 0x4721, 0x92, 0x46, 0x0d, 0x7b, 0xbb, 0xbd, 0xc9, 0x3a | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbBulkTransfer() with an invalid DeviceEndpoint ( value of 0x80 ). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.4 | 0x88c28425, 0xfbc6, 0x4441, 0x91, 0x23, 0x88, 0x83, 0x76, 0x9c, 0xed, 0x1e | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbBulkTransfer() with an invalid DeviceEndpoint ( value of 0x90). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.5 | 0x383c6bd1, 0xb1f3, 0x4987, 0x8c, 0x6f, 0xb5, 0xd5, 0x23, 0xb4, 0x93, 0xc1 | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceEndpoint value of not a BULK endpoint. | 1. Call UsbBulkTransfer() with an invalid DeviceEndpoint which is not a BULK endpoint. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.6 | 0x141aa66b, 0x7628, 0x4275, 0xae, 0xe3, 0x8c, 0xe1, 0x17, 0x65, 0x0d, 0xcc | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with a Data value of NULL. | 1. Call UsbBulkTransfer() with a Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.7 | 0x486552a5, 0x9863, 0x4eed, 0x8b, 0x37, 0x92, 0xb3, 0x8b, 0xc3, 0xe3, 0xeb | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with a DataLength value of NULL. | 1. Call UsbBulkTransfer() with a DataLength value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.8 | 0x582d809f, 0x88ce, 0x4a35, 0x89, 0xc6, 0xb5, 0x79, 0xf3, 0x70, 0x54, 0x66 | EFI\_USB\_IO\_PROTOCOL. UsbBulkTransfer - UsbBulkTransfer () returns EFI\_INVALID\_PARAMETER with a Status value of NULL. | 1. Call UsbBulkTransfer() with a Status value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.2.9 | 0x3d1b8608, 0x8c1e, 0x4b09, 0x81, 0x0f, 0xd9, 0x5c, 0x2a, 0xd7, 0x66, 0xae | EFI\_USB\_IO\_PROTOCOL.  UsbBulkTransfer -  UsbBulkTransfer () returns  EFI\_SUCCESS or EFI\_DEVICE\_ERROR when  the parameter Timeout is 0. | 1. Call UsbBulkTransfer () when the parameter Timeout is 0. The return code must be  EFI\_SUCCESS or  EFI\_DEVICE\_ERROR. |

### UsbAsyncInterruptTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.3.1 | 0x551fbef7, 0xd9e9, 0x4302, 0xa4, 0xcd, 0x2d, 0xb6, 0x83, 0x47, 0xc9, 0x4a | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncInterruptTransfer () with an invalid DeviceEndpoint value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.2 | 0xbb293ec7, 0x3a01, 0x493d, 0xa2, 0x2b, 0x71, 0x97, 0x48, 0x0b, 0x4f, 0x64 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncInterruptTransfer () with an invalid DeviceEndpoint value of 0x10. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.3 | 0xf2436425, 0xee55, 0x41ee, 0x81, 0x3d, 0xa4, 0x64, 0x47, 0x17, 0x18, 0xfa | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncInterruptTransfer () with an invalid DeviceEndpoint**(** value of 0x80**)**. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.4 | 0x7ab9696d, 0x6687, 0x4f7f, 0xac, 0x16, 0x6a, 0x60, 0x23, 0x57, 0x41, 0xa7 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncInterruptTransfer () with an invalid DeviceEndpoint ( value of 0x90). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.5 | 0x17646b64, 0x413f, 0x41cc, 0xbd, 0x8c, 0x91, 0x66, 0xe4, 0xef, 0x3e, 0x4c | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceEndpoint value of not an Interrupt endpoint. | 1. Call UsbAsyncInterruptTransfer () with a DeviceEndpoint value of not an Interrupt endpoint. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.6 | 0x4d89db86, 0x4acc, 0x4ed8, 0xb8, 0xd1, 0xc3, 0xaa, 0x75, 0x08, 0xb3, 0xee | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid PollingInterval. | 1. Call UsbAsyncInterruptTransfer () with an invalid PollingInterval value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.3.7 | 0x808d9c7c, 0x2397, 0x406d, 0x97, 0x69, 0xcd, 0xeb, 0x4f, 0xde, 0x11, 0x16 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncInterruptTransfer - UsbAsyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid PollingInterval. | 1. Call UsbAsyncInterruptTransfer () with an invalid PollingInterval (value of 256. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbSyncInterruptTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.4.1 | 0x59735398, 0x5d31, 0x42e2, 0x8e, 0x65, 0x68, 0xbd, 0x6c, 0x1e, 0xbb, 0xb6 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbSyncInterruptTransfer () with an invalid DeviceEndpoint (value of 0). The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.2 | 0xdd2221a8, 0x7dc1, 0x4d2a, 0x85, 0x99, 0x6b, 0x86, 0x9d, 0x74, 0xf0, 0xa7 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbSyncInterruptTransfer () with an invalid DeviceEndpoint value of 0x10. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.3 | 0x15c6a9c5, 0x9912, 0x4474, 0xac, 0xe5, 0xa3, 0x1d, 0x49, 0xde, 0x63, 0x28 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbSyncInterruptTransfer () with an invalid DeviceEndpoint value of 0x80. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.4 | 0x833ca596, 0xf83d, 0x455f, 0x95, 0x95, 0xe5, 0x77, 0xa6, 0xaf, 0x62, 0xdc | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbSyncInterruptTransfer () with an invalid DeviceEndpoint value of 0x90. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.5 | 0x60a2a3d0, 0xb657, 0x413d, 0x9b, 0x1c, 0xa7, 0x2b, 0x46, 0xaa, 0xa6, 0x77 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceEndpoint value of not an Interrupt endpoint. | 1. Call UsbSyncInterruptTransfer () with a DeviceEndpoint value of not an Interrupt endpoint. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.6 | 0xd4730bf3, 0x8b92, 0x4bcf, 0x99, 0xef, 0xe1, 0xdb, 0x65, 0xe9, 0x86, 0xec | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a Data value of NULL. | 1. Call UsbSyncInterruptTransfer () with a Data value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.7 | 0x0dbc8bd6, 0x4405, 0x49c0, 0xa5, 0xd1, 0xbc, 0x01, 0xca, 0x61, 0x67, 0xb2 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a DataLength value of NULL. | 1. Call UsbSyncInterruptTransfer () with a DataLength value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.4.8 | 0xa5e94a41, 0xc3ef, 0x4172, 0x94, 0xc2, 0xc7, 0xba, 0xa8, 0x72, 0xc3, 0x74 | EFI\_USB\_IO\_PROTOCOL. UsbSyncInterruptTransfer - UsbSyncInterruptTransfer () returns EFI\_INVALID\_PARAMETER with a Status value of NULL. | 1. Call UsbSyncInterruptTransfer () with a Status value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbIsochronousTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.5.1 | 0x006bb343, 0x842a, 0x417a, 0xa8, 0x23, 0x29, 0x75, 0x68, 0x9b, 0x9e, 0x2a | EFI\_USB\_IO\_PROTOCOL. UsbIsochronousTransfer - UsbIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbIsochronousTransfer () with an invalid DeviceEndpoint value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.5.2 | 0xd4f5400e, 0x3ed0, 0x4659, 0xa4, 0x80, 0xff, 0xf5, 0xeb, 0x8b, 0xae, 0x9b | EFI\_USB\_IO\_PROTOCOL. UsbIsochronousTransfer - UsbIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbIsochronousTransfer () with an invalid DeviceEndpoint value of 0x10. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.5.3 | 0xcfbc4d53, 0x07b7, 0x4366, 0x85, 0x98, 0x85, 0xf1, 0x6a, 0x15, 0x82, 0xb3 | EFI\_USB\_IO\_PROTOCOL. UsbIsochronousTransfer - UsbIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbIsochronousTransfer () with an invalid DeviceEndpoint value of 0x80. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.5.4 | 0xc9cc277e, 0x02a3, 0x4392, 0x82, 0x24, 0x87, 0xe5, 0x26, 0x21, 0xfd, 0xd6 | EFI\_USB\_IO\_PROTOCOL. UsbIsochronousTransfer - UsbIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbIsochronousTransfer () with an invalid DeviceEndpoint value of 0x90. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.5.5 | 0x686e7854, 0xe518, 0x41c1, 0xb1, 0x71, 0x60, 0x4e, 0x6f, 0x7e, 0xe2, 0x91 | EFI\_USB\_IO\_PROTOCOL. UsbIsochronousTransfer - UsbIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceEndpoint which is not an Isochronous endpoint. | 1. Call UsbIsochronousTransfer () with a DeviceEndpoint value of not an Isochronous endpoint. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbAsyncIsochronousTransfer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.6.1 | 0x5a8a2a48, 0xd6cc, 0x4993, 0x82, 0x1e, 0xf7, 0x2f, 0x48, 0x40, 0xa7, 0x26 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncIsochronousTransfer - UsbAsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncIsochronousTransfer () with an invalid DeviceEndpoint value of 0. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.6.2 | 0x7df33f6b, 0x7525, 0x4999, 0x83, 0x9c, 0xb2, 0xc7, 0x73, 0xd1, 0xa2, 0xa5 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncIsochronousTransfer - UsbAsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncIsochronousTransfer () with an invalid DeviceEndpoint value of 0x10. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.6.3 | 0x586d899f, 0x34f8, 0x474d, 0x99, 0x5e, 0x9e, 0x3e, 0x98, 0x9f, 0xf0, 0xee | EFI\_USB\_IO\_PROTOCOL. UsbAsyncIsochronousTransfer - UsbAsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncIsochronousTransfer () with an invalid DeviceEndpoint value of 0x80. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.6.4 | 0xfbe98aec, 0xeab8, 0x45a3, 0x85, 0xd3, 0x00, 0x32, 0x0d, 0x1c, 0xaa, 0xe3 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncIsochronousTransfer - UsbAsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with an invalid DeviceEndpoint. | 1. Call UsbAsyncIsochronousTransfer () with an invalid DeviceEndpoint value of 0x90. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.6.5 | 0x7588b124, 0xdaa7, 0x4715, 0xa1, 0x99, 0xa4, 0xdc, 0x32, 0x19, 0x1c, 0xc9 | EFI\_USB\_IO\_PROTOCOL. UsbAsyncIsochronousTransfer - UsbAsyncIsochronousTransfer () returns EFI\_INVALID\_PARAMETER with a DeviceEndpoint value of not an Isochronous endpoint. | 1. Call UsbAsyncIsochronousTransfer () with a DeviceEndpoint value of not an Isochronous endpoint. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbGetDeviceDescriptor()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.7.1 | 0xe789ba3f, 0x2405, 0x4d45, 0xbf, 0xdb, 0x7e, 0xa7, 0xe8, 0x33, 0xc6, 0x8b | EFI\_USB\_IO\_PROTOCOL. UsbGetDeviceDescriptor - UsbGetDeviceDescriptor () returns EFI\_INVALID\_PARAMETER with a DeviceDescriptor value of NULL. | 1. Call UsbGetDeviceDescriptor () with a DeviceDescriptor value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbGetConfigDescriptor()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.8.1 | 0x387570c3, 0x6923, 0x4cbb, 0x82, 0xb2, 0x59, 0xc7, 0x41, 0xab, 0x92, 0x4b | EFI\_USB\_IO\_PROTOCOL. UsbGetConfigDescriptor - UsbGetConfigDescriptor () returns EFI\_INVALID\_PARAMETER with a ConfigurationDescriptor value of NULL. | 1. Call UsbGetConfigDescriptor () with a ConfigurationDescriptor value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbGetInterfaceDescriptor()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.9.1 | 0x47c33713, 0x8fbc, 0x43a4, 0xa2, 0xcd, 0xc1, 0x6b, 0xc7, 0xa5, 0xd4, 0x37 | EFI\_USB\_IO\_PROTOCOL. UsbGetInterfaceDescriptor - UsbGetInterfaceDescriptor () returns EFI\_INVALID\_PARAMETER with a InterfaceDescriptor value of NULL. | 1. Call UsbGetInterfaceDescriptor () with a InterfaceDescriptor value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbGetEndpointDescriptor()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.10.1 | 0x8167f778, 0xa58c, 0x4837, 0xaf, 0xfb, 0x5e, 0x10, 0x69, 0x66, 0xa8, 0x74 | EFI\_USB\_IO\_PROTOCOL. UsbGetEndpointDescriptor - UsbGetEndpointDescriptor () returns EFI\_INVALID\_PARAMETER with an EndpointDescriptor value of NULL. | 1. Call UsbGetEndpointDescriptor () with an EndpointDescriptor value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.10.2 | 0xb0da5669, 0x163d, 0x4d93, 0xae, 0xf0, 0x7b, 0x28, 0x53, 0x5f, 0x47, 0x3e | EFI\_USB\_IO\_PROTOCOL. UsbGetEndpointDescriptor - UsbGetEndpointDescriptor () returns EFI\_INVALID\_PARAMETER with an EndpointIndex value of larger than 15. | 1. Call UsbGetEndpointDescriptor () with an EndpointIndex value of larger than 15. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.21.2.10.3 | 0x692ec6a6, 0x057d, 0x43c3, 0x94, 0x74, 0x5c, 0x29, 0xb2, 0x5e, 0x5c, 0xe5 | EFI\_USB\_IO\_PROTOCOL. UsbGetEndpointDescriptor - UsbGetEndpointDescriptor () returns EFI\_INVALID\_PARAMETER with an EndpointIndex value of equal to the number of endpoints. | 1. Call UsbGetInterfaceDescriptor () to get the number of endpoints. The return status should be EFI\_SUCCESS.  2. Call UsbGetEndpointDescriptor () with an EndpointIndex value of equal to the number of endpoints. The return status should be EFI\_INVALID\_PARAMETER. |

### UsbPortReset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.21.2.11.1 | 0x27431330, 0x54c8, 0x40fe, 0x93, 0x74, 0x9d, 0x39, 0x4d, 0x10, 0x75, 0x3b | EFI\_USB\_IO\_PROTOCOL. UsbPortReset - UsbPortReset () returns EFI\_INVALID\_PARAMETER with a USB hub. | 1. Call UsbPortReset () with a USB hub. The return status should be EFI\_INVALID\_PARAMETER. |

# Protocols SCSI Bus Support Test

## EFI\_SCSI\_IO\_PROTOCOL Function Test

Reference Document:

*UEFI Specification*, EFI\_SCSI\_IO\_PROTOCOL Section..

### GetDeviceType() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.2.1.1 | 0xa9b53582, 0xcbd5, 0x4934, 0x85, 0x95, 0x2e, 0x4d, 0xc6, 0x8a, 0xb1, 0x34 | EFI\_SCSI\_IO\_PROTOCOL.GetDeviceType – GetDeviceType() should return EFI\_SUCCESS with SCSI device correctly installed | Call GetDeviceType().  The return status should be EFI\_SUCCESS. |

### GetDeviceLocation() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.2.2.1 | 0x2d1db8e2, 0xb4d3, 0x4bbf, 0x80, 0xa6, 0x4c, 0x15, 0xef, 0x54, 0x87, 0x31 | EFI\_SCSI\_IO\_PROTOCOL.GetDeviceLocation – GetDeviceLocation() should return EFI\_SUCCESS after setting Target and Lun. | Call GetDeviceLocation() with valid Target and Lun.  The return status should be EFI\_SUCCESS. |

### ResetBus() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.2.3.1 | 0xb11aec12, 0x0ffb, 0x46da, 0x82, 0x37, 0xaa, 0xa0, 0xed, 0x46, 0x29, 0x05 | EFI\_SCSI\_IO\_PROTOCOL.ResetBus - ResetBus() should return EFI\_SUCCESS or EFI\_UNSUPPORTED with SCSI device correctly installed. | Call ResetBus() after SCSI device correctly installed.  The return status should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

### ResetDevice() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.2.4.1 | 0x05720e96, 0xf8ab, 0x46f5, 0xbc, 0xf9, 0xc9, 0x24, 0x51, 0x1c, 0xd5, 0x44 | EFI\_SCSI\_IO\_PROTOCOL.ResetDevice - ResetDevice() should return EFI\_SUCCESS or EFI\_UNSUPPORTED with SCSI device correctly installed. | Call ResetDevice() after SCSI device correctly installed.  The return status should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

### ExecuteScsiCommand () Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.2.5.1 | 0xaf88a458, 0xdeab, 0x4744, 0xae, 0xf5, 0xe4, 0x1c, 0xb1, 0x0e, 0xbb, 0xb3 | EFI\_SCSI\_IO\_PROTOCOL.ExecuteScsiCommand - Invokes ExecuteScsiCommand() with NULL Event will verify interface correctness by returning EFI\_SUCCESS. | Call ExecuteScsiCommand () with NULL Event.  The return status should be EFI\_SUCCESS. |
| 5.9.2.5.2 | 0x96789d65, 0x11e6, 0x4a2d, 0xbb, 0x5b, 0xe3, 0x3d, 0x22, 0x6b, 0x28, 0xf1 | EFI\_SCSI\_IO\_PROTOCOL.ExecuteScsiCommand - Invokes ExecuteScsiCommand () with Event verifies interface correctness. | Call ExecuteScsiCommand () with Event.  The return status should be EFI\_SUCCESS and the event should be invoked. |

## 

## EFI\_SCSI\_IO\_PROTOCOL Conformance Test

Reference Document:

*UEFI Specification*, EFI\_SCSI\_IO\_PROTOCOL Section.

### GetDeviceType() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.3.1.1 | 0x37a8da14, 0x170a, 0x4620, 0xaa, 0xea, 0x26, 0x6f, 0x35, 0x8f, 0x0c, 0x75 | EFI\_SCSI\_IO\_PROTOCOL.GetDeviceType – GetDeviceType() should return EFI\_INVALID\_PARAMETER with DeviceType set NULL. | Call GetDeviceType() with a DeviceType value of NULL.  The return status should be EFI\_INVALID\_PARAMETER. |

### GetDeviceLocation() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.3.2.1 | 0x6937c784, 0xb044, 0x4828, 0xb8, 0x77, 0xff, 0xc7, 0x35, 0x8f, 0xf2, 0xaa | EFI\_SCSI\_IO\_PROTOCOL.GetDeviceLocation – GetDeviceLocation() should return EFI\_INVALID\_PARAMETER with Target set NULL. | Call GetDeviceLocation () with a Target value ofNULL.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.3.2.2 | 0x6a48edf9, 0x8a3b, 0x4e9c, 0xb7, 0x6f, 0x37, 0x45, 0x83, 0xc7, 0xdc, 0x2b | EFI\_SCSI\_IO\_PROTOCOL.GetDeviceLocation – GetDeviceLocation() should return EFI\_INVALID\_PARAMETER with Lun set NULL. | Call GetDeviceLocation () with a Lun value of NULL.  The return status should be EFI\_INVALID\_PARAMETER. |

### ExecuteScsiCommand () Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.3.3.1 | 0x17503bd1, 0x4d36, 0x4183, 0x9f, 0xf1, 0x9d, 0x0f, 0xc2, 0x21, 0x33, 0x26 | EFI\_SCSI\_IO\_PROTOCOL. ExecuteScsiCommand - Calling ExecuteScsiCommand () with an too long InTransferLength value and NULL Event returns EFI\_BAD\_BUFFER\_SIZE. | Call ExecuteScsiCommand () with an InTransferLength value larger than the length which SCSI controller can handle.  The return status should be EFI\_BAD\_BUFFER\_SIZE and InTransferLength will be updated to the length that SCSI controller be able to handle. |
| 5.9.3.3.2 | 0x8c27b8c2, 0x2c40, 0x4f6a, 0xbb, 0x54, 0x26, 0x5d, 0x12, 0x9a, 0x97, 0xce | EFI\_SCSI\_IO\_PROTOCOL. ExecuteScsiCommand - Calling ExecuteScsiCommand () with invalid Packet and NULL Event returns EFI\_INVALID\_PARAMETER. | Call ExecuteScsiCommand () with invalid Packet .  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.3.3.3 | 0xbeb81209, 0x808d, 0x46d1, 0xa2, 0x36, 0x23, 0x7f, 0x17, 0x22, 0x30, 0x37 | EFI\_SCSI\_IO\_PROTOCOL. ExecuteScsiCommand - Calling ExecuteScsiCommand () with an too long InTransferLength value and no NULL Event returns EFI\_BAD\_BUFFER\_SIZE. | Call ExecuteScsiCommand () with an InTransferLength value larger than the length which SCSI controller can handle.  The return status should be EFI\_BAD\_BUFFER\_SIZE and InTransferLength will be updated to the length that SCSI controller be able to handle. |
| 5.9.3.3.4 | 0x994fd5e2, 0x2d39, 0x4fa9, 0xa7, 0x4f, 0x8d, 0x09, 0xe0, 0xb6, 0x84, 0x1c | EFI\_SCSI\_IO\_PROTOCOL. ExecuteScsiCommand - Calling ExecuteScsiCommand () with invalid Packet and no NULL Event returns EFI\_INVALID\_PARAMETER. | Call ExecuteScsiCommand () with invalid Packet .  The return status should be EFI\_INVALID\_PARAMETER. |

## EFI\_EXT\_SCSI\_PASS\_PROTOCOL Function Test

Reference Document:

UEFI Specification, EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL Section.

### GetNextTargetLun() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.1.1 | 0x4f658292, 0xa409, 0x4d67, 0xba, 0x13, 0x04, 0xc2, 0x51, 0x85, 0xf2, 0x80 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetNextTargetLun – GetNextTargetLun() retrieves the list of legal Target IDs and LUNs for SCSI devices on a SCSI channel. | Call GetNextTargetLun () with a Target value of 0xFF’s to get the first SCSI device present on a SCSI channel.  Use the values of Target andLun values that are returned to get the next SCSI device until the end.  Every call of GetNextTargetLun() should return EFI\_SUCCESS except the last one.  The last call should return EFI\_NOT\_FOUND. |

### BuildDevicePath() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.2.1 | 0x130d44b6, 0xce53, 0x42b6, 0x9b, 0xa6, 0x3d, 0x11, 0x5d, 0x49, 0x2b, 0x33 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Invoking BuildDevicePath() will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextTargetLun() to get the first device’s Target and Lun.  Call BuildDevicePath() with a valid parameter. Free the DevicePath.  The return status should be EFI\_SUCCESS. |

### GetTargetLun() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.3.1 | 0x6ea827e4, 0x522c, 0x44b6, 0x99, 0xe4, 0x25, 0x93, 0x19, 0xba, 0xcc, 0x57 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoking GetTargetLun() will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextTargetLun() and BuildDevicePath() to get the valid DevicePath.  Use this DevicePath to call GetTargetLun().  The return value should be EFI\_SUCCESS. |

### ResetChannel() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.4.1 | 0x4e0080d2, 0x4065, 0x4b92, 0xa4, 0x61, 0x52, 0x49, 0xf3, 0x8f, 0xaf, 0x55 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.ResetChannel - Invoking ResetChannel() will verify interface correctness via return code of EFI\_SUCCESS or EFI\_UNSUPPORTED. | Call ResetChannel().  The return value should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

### ResetTargetLun() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.5.1 | 0x9400bc81, 0x9e48, 0x469b, 0xa0, 0x97, 0xd0, 0x08, 0x45, 0xb6, 0x69, 0xe8 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTargetLun - Invoking ResetTargetLun() will verify interface correctness via return code of EFI\_SUCCESS or EFI\_UNSUPPORTED. | Call GetNextTargetLun() to get valid Target and Lun.  Use the Target and Lun values that are returned to call ResetTargetLun().  The return value should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

### GetNextTarget () Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.6.1 | 0xc89631f3, 0xbd59, 0x4959, 0xba, 0x10, 0x3f, 0xa9, 0x94, 0x62, 0x02, 0xdf | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.  �GetNextTarget – GetNextTarget() retrieves the list of legal Target IDs for SCSI devices on a SCSI channel. | Call GetNextTarget () with a Target value of 0xFF’s to get the first SCSI device present on a SCSI channel.  Use the Target value that is returned to get the next SCSI device until the end.  Every call of GetNextTarget () should return EFI\_SUCCESS except the last one.  The last call should return EFI\_NOT\_FOUND. |

### PassThru () Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.4.7.1 | 0xdb7841b9, 0x2a4a, 0x45b1, 0xa9, 0x9f, 0x67, 0x7a, 0xb4, 0xcd, 0x79, 0xa2 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Invoking PassThru() with NULL Event will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() to get valid Target and Lun values.  Call PassThru()with the returned values of Target, Lun , and a NULL Event.  The return status should be EFI\_SUCCESS. |
| 5.9.4.7.2 | 0x4787ed6f, 0xa984, 0x4b15, 0xb2, 0xf3, 0xa0, 0xd1, 0xb8, 0xce, 0x61, 0x89 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Invoking PassThru() with Eventwill verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() to get valid Target and Lun values.  Call PassThru()with the returned value of Target, Lun and a **Event**.  The return status should be EFI\_SUCCESS and the event should be invoked. |

## 

## EFI\_EXT\_SCSI\_PASS\_PROTOCOL Conformance Test

Reference Document:

*UEFI Specification*, EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL Section.

### GetNextTargetLun() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.1.1 | 0xaad50e59, 0x9423, 0x427d, 0xa7, 0x5d, 0x69, 0x1c, 0x90, 0xb7, 0xf9, 0x75 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetNextTargetLun - Call **GetNextTargetLun()** with an invalid Target. | Call GetNextTargetLun() with Target’s all bits are 1 to get the first device.  Call GetNextTargetLun() with an invalid Target.  It should return EFI\_INVALID\_PARAMETER. |
| 5.9.5.1.2 | 0xb3e87aa1, 0x6e9c, 0x478f, 0x9b, 0xd5, 0x39, 0x50, 0x08, 0x01, 0x28, 0x96 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetNextTargetLun - Call **GetNextTargetLun()** with an invalid Lun. | Call GetNextTargetLun() with Target‘s all bits are 1 to get the first device.  Call GetNextTargetLun() with an invalid Lun.  It should return EFI\_INVALID\_PARAMETER. |

### BuildDevicePath() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.2.1 | 0x942a0e01, 0x7b80, 0x46e4, 0xa7, 0x57, 0x86, 0xc4, 0xec, 0x53, 0xf4, 0xe4 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with an invalid Target returns EFI\_NOT\_FOUND. | Call BuildDevicePath() with an invalid Target.  The return status should be EFI\_NOT\_FOUND. |
| 5.9.5.2.2 | 0x222f00c1, 0xf6bf, 0x41ed, 0xae, 0xfd, 0xaa, 0xc4, 0x8f, 0x3f, 0xa9, 0xdb | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with invalid Lun returns EFI\_NOT\_FOUND. | Call BuildDevicePath() with invalid Lun.  The return status should be EFI\_NOT\_FOUND. |
| 5.9.5.2.3 | 0xc72e6a78, 0x5292, 0x4493, 0x90, 0x40, 0xb0, 0x44, 0x5a, 0x9c, 0x17, 0x14 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with NULL DevicePath returns EFI\_INVALID\_PARAMETER. | Call BuildDevicePath() with NULL DevicePath.  The return status should be EFI\_INVALID\_PARAMETER. |

### GetTargetLun() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.3.1 | 0xff2f0849, 0x690b, 0x48ea, 0x8e, 0x35, 0x64, 0x36, 0x3f, 0xaa, 0x8c, 0x5c | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoking GetTargetLun() with NULL DevicePath returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL DevicePath.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.3.2 | 0x6602bd0a, 0x1c05, 0x49e5, 0xa8, 0xd4, 0xc6, 0x03, 0x8c, 0x43, 0x9a, 0xf9 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoking GetTargetLun() with NULL Target returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL Target.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.3.3 | 0x1b64d49a, 0x1f1b, 0x4610, 0xa2, 0x66, 0xde, 0x32, 0xa1, 0x07, 0x2b, 0x32 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoking GetTargetLun() with NULL Lun returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL Lun.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.3.4 | 0xf7830eaf, 0xba30, 0x4224, 0xab, 0xc4, 0x42, 0x42, 0x8b, 0x7a, 0x04, 0x5d | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Calling GetTargetLun() with unsupported DevicePath returns EFI\_UNSUPPORTED. | Call GetTargetLun() with unsupported DevicePath.  The return status should be EFI\_UNSUPPORTED. |

### ResetTargetLun() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.4.1 | 0x106ae2fc, 0x3f34, 0x4afe, 0x82, 0x44, 0x40, 0x27, 0x57, 0x60, 0x98, 0x31 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTargetLun - Calling ResetTargetLun() with an invalid Targetreturns EFI\_INVALID\_PARAMETER. | Call GetResetTargetLun() with an invalid Target.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.4.2 | 0xc9378047, 0x9b4b, 0x4abf, 0xaa, 0x6b, 0xe3, 0xcd, 0xb6, 0xc4, 0x19, 0x39 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTargetLun - Calling ResetTargetLun() with an invalid Lun returns EFI\_INVALID\_PARAMETER. | Call GetResetTargetLun() with an invalid Lun.  The return status should be EFI\_INVALID\_PARAMETER. |

### GetNextTarget () Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.5.1 | 0xb564ad60, 0x32ce, 0x4f5f, 0x86, 0x7a, 0xef, 0x9f, 0xef, 0x5e, 0x94, 0xa2 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetNextTarget - Call **GetNextTarget()** with an invalid Target | Call GetNextTarget() with an invalid Target.  The return status should be EFI\_INVALID\_PARAMETER. |

### PassThru() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.5.6.1 | 0x6d6fcacd, 0x3463, 0x41c8, 0xa5, 0x01, 0xa2, 0x99, 0x40, 0x44, 0x59, 0xb8 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an too long InTransferLength and NULL Event returns EFI\_BAD\_BUFFER\_SIZE. | Call PassThru() with an InTransferLength larger than the SCSI controller can handle.  The return status should be EFI\_BAD\_BUFFER\_SIZE and the InTransferLength will be updated to the length that SCSI controller can handle. |
| 5.9.5.6.2 | 0x645295b5, 0xc36b, 0x4b23, 0xaf, 0xc7, 0xd4, 0xcc, 0xc0, 0x1d, 0xb6, 0x4f | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Target and NULL Event returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid Target.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.6.3 | 0x9f9489a2, 0x23f3, 0x4962, 0x9d, 0x8f, 0xd2, 0xc0, 0xa7, 0xcb, 0x2f, 0xb1 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Lun and NULL Event returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid Lun.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.6.4 | 0xc584b074, 0xa8cd, 0x438c, 0xb5, 0x18, 0xb1, 0xec, 0x59, 0xfa, 0xc8, 0xee | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with invalid Packet content and NULL Event returns EFI\_INVALID\_PARAMETER. | Call PassThru() with invalid Packet content.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.6.5 | 0x3cd806fd, 0x3742, 0x44e9, 0xa6, 0x19, 0xdf, 0x2d, 0x37, 0x47, 0xe7, 0x8f | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an too long InTransferLength and no NULL Event returns EFI\_BAD\_BUFFER\_SIZE. | Call PassThru() with an InTransferLength larger than the SCSI controller can handle.  The return status should be EFI\_BAD\_BUFFER\_SIZE and the InTransferLength will be updated to the length that SCSI controller can handle. |
| 5.9.5.6.6 | 0x9648ab45, 0x898b, 0x4b44, 0xab, 0x9e, 0x24, 0x6b, 0xc6, 0x49, 0xc9, 0xfd | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Target and no NULL Event returns EFI\_INVALID\_PARAMETER | Call PassThru() with an invalid Target.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.6.7 | 0x8662da7d, 0x6f98, 0x4051, 0xb1, 0x87, 0x85, 0xb0, 0xf4, 0xb5, 0x3a, 0xf1 | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Lun and no NULL Event returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid Lun.  The return status should be EFI\_INVALID\_PARAMETER. |
| 5.9.5.6.8 | 0xf9ec9bf2, 0x743f, 0x4eed, 0x82, 0xbc, 0x35, 0xf2, 0xcc, 0x56, 0x45, 0xda | EFI\_EXT\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with invalid Packet content and no NULL Event returns EFI\_INVALID\_PARAMETER. | Call PassThru() with invalid Packet content.  The return status should be EFI\_INVALID\_PARAMETER. |

# Protocols iSCSI Boot Test

EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL Section.

## EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL Function Test

### Get() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.17.1.1.1 | 0xed92f3eb, 0xdda4, 0x4c65, 0xb3, 0x9f, 0x6c, 0x90, 0xfb, 0x2e, 0x77, 0xf9 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Get – Calling Get()returns EFI\_SUCCESS. | Call Get() with a valid BufferSize value.  The return status should be EFI\_SUCCESS. |

### Set() Function

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.17.1.2.1 | 0x56cd69be, 0xcfea, 0x4a43, 0xae, 0x1a, 0x41, 0xe4, 0xde, 0x78, 0x83, 0xc8 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Set – Calling Set()returns EFI\_SUCCESS. | Call Set() with valid BufferSize and Buffer values.  The return status should be EFI\_SUCCESS. |

## EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL Conformance Test

### Get() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.17.2.1.1 | 0x4c893a1c, 0x9c28, 0x4038, 0x9a, 0x34, 0xce, 0xe3, 0x15, 0x70, 0xc4, 0xa6 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Get – Calling Get() should return EFI\_SUCCESS with valid parameters. | Call Get() with valid parameters.  The return status should be EFI\_SUCCESS. |
| 5.17.2.1.2 | 0x5f4d6864, 0xe8ed, 0x452e, 0xb2, 0xbc, 0x9a, 0x0e, 0x06, 0x61, 0x7e, 0x3a | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Get – Calling Get() should return EFI\_INVALID\_PARAMETER with a BufferSize or Buffer value of NULL. | 1. Call Get()with a BufferSize value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  2. Call Get() with a Buffer value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.17.2.1.3 | 0x2502087d, 0xd853, 0x494e, 0xbd, 0xc5, 0x8b, 0x1a, 0xc1, 0x26, 0xd4, 0x61 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Get – Calling Get() should return EFI\_INVALID\_PARAMETER with a BufferSize value that is too small. | Call Get()with a BufferSize that is too small.  The return status should be EFI\_INVALID\_PARAMETER. |

### Set() Conformance

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.17.2.2.1 | 0x5bd1c13e, 0x1b9c, 0x432f, 0xb9, 0x33, 0xd9, 0xcf, 0x6f, 0xac, 0xd4, 0x2d | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Set – Calling Set() should return EFI\_SUCCESS with valid parameters. | Call Set() with valid parameters.  The return status should be EFI\_SUCCESS. |
| 5.17.2.2.2 | 0xacb61cfd, 0xe82b, 0x4250, 0xb0, 0x60, 0xdb, 0x18, 0x55, 0x9e, 0x58, 0xb1 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Set – Calling Set() should return EFI\_INVALID\_PARAMETER with a BufferSize or Buffer value of NULL. | 1. Call Set()with a BufferSize value of NULL. The return should be EFI\_INVALID\_PARAMETER.  2. Call Set() with a Buffer value of NULL. The return should be EFI\_INVALID\_PARAMETER. |
| 5.17.2.2.3 | 0xdc419b8e, 0xb074, 0x4388, 0xbb, 0x85, 0xc8, 0xed, 0xa0, 0x19, 0x95, 0xd3 | EFI\_ISCSI\_INITIATOR\_NAME\_PROTOCOL.Get – Calling Get() should return EFI\_INVALID\_PARAMETER with a BufferSize value that exceeds the maximum. | Call Get()with a BufferSize value that exceeds the maximum.  The return should be EFI\_INVALID\_PARAMETER. |

# Network Protocols SNP, PXE and BISTest

## EFI\_SIMPLE\_NETWORK\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_SIMPLE\_NETWORK\_PROTOCOL Section..

### Start()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.1.1 | 0x200d5d39, 0x8131, 0x434f, 0x95, 0x89, 0xc6, 0xbe, 0x88, 0x69, 0x5d, 0xf4 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Start - returns EFI\_ALREADY\_STARTED when calling Start() while the network interface is already started | Call Start() when the network interface is already started. The return status should be EFI\_ALREADY\_STARTED and the state should be “Started”. |
| 5.11.1.1.2 | 0xf58651fe, 0x0538, 0x4407, 0x88, 0xe0, 0x88, 0xb8, 0xda, 0x18, 0x38, 0x3a | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Start - returns EFI\_SUCCESS when calling Start()to verify the interface state. | Call Start()The return status should be EFI\_SUCCESS and the interface state should be EfiSimpleNetworkStarted. |

### Stop()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.2.1 | 0xda5a5aea, 0x0a26, 0x4b65, 0x90, 0x84, 0x92, 0x15, 0xc5, 0x43, 0x21, 0xa0 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Stop - Invokes Stop() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Stop() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.2.2 | 0xd0ecac27, 0xfa2e, 0x4b7d, 0x89, 0x2c, 0xc0, 0xff, 0x70, 0x54, 0x13, 0x44 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Stop - Invokes Stop() verifies the interface state and returns EFI\_SUCCESS. | Call Stop(). The return status should be EFI\_SUCCESS and the interface state should be EfiSimpleNetworkStopped. |

### Initialize()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.3.1 | 0xbaa11393, 0x2bfc, 0x43ef, 0xbd, 0xb7, 0x0a, 0xc5, 0x0e, 0x8a, 0x3a, 0x21 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Initialize - Invokes Initialize() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Initialize() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.3.2 | 0x9d4eec8d, 0xdf2f, 0x4f5e, 0x9f, 0x95, 0x7e, 0x51, 0x62, 0xc2, 0x51, 0x0d | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Initialize - Invokes Initialize()to verify the interface state and returns EFI\_SUCCESS. | Call Initialize(). The return status should be EFI\_SUCCESS and the interface state should be EfiSimpleNetworkInitialized. |
| 5.11.1.3.3 | 0x7b547661, 0xa0aa, 0x4041, 0x99, 0xf6, 0xe2, 0x07, 0x31, 0xf7, 0x98, 0x3c | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Initialize - Invokes Initialize() with extra Tx/Rx specified to verify the interface state and returns EFI\_SUCCESS. | Call Initialize() with extra Tx/Rx specified. The return status should be EFI\_SUCCESS and the interface state should be EfiSimpleNetworkInitialized. |

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.4.1 | 0xf2fed213, 0xb6ad, 0x4edc, 0x96, 0xd7, 0x4a, 0xdc, 0x2e, 0xbd, 0xbb, 0x1e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Reset - Invokes Reset() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Reset() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.4.2 | 0x30314e89, 0xdb26, 0x4b01, 0x90, 0xf3, 0x04, 0xd3, 0x1b, 0x19, 0xa6, 0x01 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Reset - Invokes Reset() with an ExtendedVerification value of FALSE verifies interface correctness and returns EFI\_SUCCESS. | Call Reset() with an ExtendedVerification value of FALSE. The return status should be EFI\_SUCCESS and the interface mode should be correct. |
| 5.11.1.4.3 | 0xa3135b96, 0xf9c6, 0x45b6, 0xae, 0x87, 0x15, 0xca, 0xae, 0x31, 0x7e, 0xfb | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Reset - Invokes Reset() with an ExtendedVerification value of TRUE verifies interface correctness and returns EFI\_SUCCESS. | Call Reset() with an ExtendedVerification value of TRUE. The return status should be EFI\_SUCCESS and the interface mode should be correct. |

### Shutdown()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.5.1 | 0x09bb5019, 0x1787, 0x4403, 0xb1, 0x2e, 0x91, 0x93, 0x5c, 0xbd, 0x08, 0xe3 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Shutdown - Invokes Shutdown() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Shutdown() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.5.2 | 0x49365eeb, 0xd66c, 0x4109, 0xb0, 0xcf, 0x36, 0xc8, 0x96, 0xc0, 0x07, 0xec | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Shutdown - Invokes Shutdown()verifies the interface state and returns EFI\_SUCCESS. | Call Shutdown(). The return status should be EFI\_SUCCESS and the interface state should be EfiSimpleNetworkStarted. |

### ReceiveFilters()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.6.1 | 0x3f8d8e2a, 0xdbb1, 0x41b8, 0xb9, 0xd9, 0x5f, 0x79, 0x44, 0xf1, 0xd1, 0xf4 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() when the network interface is not started returns EFI\_NOT\_STARTED. | Call ReceiveFilters() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.6.2 | 0x8b4ed1bb, 0xa4a4, 0x45e8, 0xbf, 0x32, 0x0d, 0x0d, 0x6d, 0x0b, 0xd0, 0x2e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call ReceiveFilters() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.6.3 | 0xb6f84e0b, 0x286b, 0x44a6, 0xa0, 0xf8, 0x6d, 0x11, 0x89, 0x7d, 0x56, 0x55 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() with an invalid Enable returns EFI\_INVALID\_PARAMETER. | Call ReceiveFilters() with an invalid Enable. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.6.4 | 0xead4b950, 0xf0d6, 0x4195, 0x94, 0xaa, 0x81, 0x92, 0x56, 0x44, 0xb3, 0x2c | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() with an invalid McastFilterCnt returns EFI\_INVALID\_PARAMETER. | Call ReceiveFilters() with an invalid MCastFilterCnt. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.6.5 | 0x4497e853, 0xc54d, 0x409b, 0x85, 0x01, 0xd5, 0xfb, 0xd2, 0x7a, 0x95, 0xdc | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() with MCastFilterCnt not matching MCastFilter returns EFI\_INVALID\_PARAMETER. | Call ReceiveFilters() with MCastFilterCnt not matching MCastFilter. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.6.6 | 0xd82baa78, 0x2bf8, 0x49db, 0xb5, 0x7f, 0x92, 0x2e, 0xe5, 0x79, 0xc3, 0x7a | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() modifies the multicast receive filter mask (Disable Specified bit), verifies interface correctness, and returns EFI\_SUCCESS. | Call ReceiveFilters() to modify the multicast receive filter mask (Disable Specified bit) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.6.7 | 0x9605c24a, 0x2090, 0x490d, 0x89, 0x4f, 0xfc, 0xb8, 0xc1, 0xb9, 0xd4, 0xf8 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() modifies the multicast receive filter mask (Enable Specified bit), verifies interface correctness, and returns EFI\_SUCCESS. | Call ReceiveFilters() to modify the multicast receive filter mask (Enable Specified bit) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.6.8 | 0xd9893cd3, 0x7269, 0x4931, 0x9e, 0xe8, 0x81, 0x62, 0x7a, 0x67, 0x45, 0xe9 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() modifies the multicast receive filter masks (Enable and Disable Specified bit together), verifies interface correctness, and returns EFI\_SUCCESS. | Call ReceiveFilters() to modify the multicast receive filter masks (Enable and Disable Specified bit together) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.6.9 | 0x056e2680, 0xbcc9, 0x460a, 0x94, 0xb4, 0x9a, 0xe2, 0x99, 0xa7, 0x2c, 0x2c | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() modifies the multicast receive filters list, verifies interface correctness, and returns EFI\_SUCCESS. | Call ReceiveFilters() to modify the multicast receive filters list and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.6.10 | 0x2143092e, 0x03dd, 0x4806, 0x9f, 0xd6, 0x08, 0xd4, 0x2b, 0x9a, 0xbf, 0xc6 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.ReceiveFilters - Invokes ReceiveFilters() resets the multicast receive filters list, verifies interface correctness within test case, and returns EFI\_SUCCESS. | Call ReceiveFilters() to reset the multicast receive filters list and verify interface correctness within test case. The return status should be EFI\_SUCCESS. |

### StationAddress()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.7.1 | 0x4235215c, 0xfad0, 0x4865, 0xa9, 0x7b, 0xde, 0xe4, 0xb7, 0xee, 0xef, 0x98 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.StationAddress - Invokes StationAddress() when the network interface is not started returns EFI\_NOT\_STARTED. | Call StationAddress() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.7.2 | 0x9dfe127c, 0x14b0, 0x476d, 0x9d, 0x68, 0x69, 0x08, 0x15, 0x7e, 0x36, 0xa7 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.StationAddress - Invokes StationAddress() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call StationAddress() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.7.3 | 0x6c6fb7ad, 0xf89c, 0x45d6, 0xb3, 0xa6, 0x15, 0x34, 0xfd, 0x72, 0xfb, 0x9d | EFI\_SIMPLE\_NETWORK\_PROTOCOL.StationAddress - Invokes StationAddress() with an invalid parameter returns EFI\_INVALID\_PARAMETER. | Call StationAddress() to change the MAC address when the address is not allowed to be changed. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.7.4 | 0x29177bfa, 0x3775, 0x4d5a, 0x97, 0x37, 0x19, 0xd8, 0x34, 0xa7, 0xbb, 0x8e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.StationAddress - Invokes StationAddress() resets MAC Address, verifies interface correctness, and returns EFI\_SUCCESS. | Call StationAddress() to reset MAC Address and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.7.5 | 0xbbbde63c, 0xa6f5, 0x4438, 0x8a, 0x82, 0xb4, 0xdf, 0xe8, 0xe8, 0x48, 0xfd | EFI\_SIMPLE\_NETWORK\_PROTOCOL.StationAddress - Invokes StationAddress() modifies MAC Address, verifies interface correctness, and returns EFI\_SUCCESS. | Call StationAddress() to modify MAC Address and verify interface correctness. The return status should be EFI\_SUCCESS. |

### Statistics()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.8.1 | 0x62a700f1, 0x075f, 0x4cc0, 0x85, 0x12, 0xee, 0x48, 0x0d, 0xbc, 0x69, 0x2c | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Statistics - Invokes Statistics() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Statistics() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.8.2 | 0x71173afd, 0x5dc9, 0x42ea, 0xa8, 0xad, 0x6e, 0xc0, 0x97, 0x7a, 0xdc, 0xa6 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Statistics - Invokes Statistics() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call Statistics() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.8.3 | 0x743b75d1, 0xaf66, 0x495c, 0xaf, 0x5a, 0x1d, 0xdf, 0x7f, 0xe4, 0xa6, 0x82 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Statistics - Invokes Statistics() with small buffer returns EFI\_BUFFER\_TOO\_SMALL or EFI\_UNSUPPORTED. | Call Statistics() with small buffer. The return status should be EFI\_BUFFER\_TOO\_SMALL or EFI\_UNSUPPORTED. |
| 5.11.1.8.4 | 0xace9fa20, 0xff34, 0x4fba, 0x8b, 0x95, 0x39, 0xae, 0xca, 0xd9, 0x78, 0x7c | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Statistics - Invokes Statistics() without resetting the statistics and verifying interface correctness returns EFI\_SUCCESSor EFI\_UNSUPPORTED. | Call Statistics() without resetting the statistics and verifying interface correctness. The return status should be EFI\_SUCCESSor EFI\_UNSUPPORTED. |
| 5.11.1.8.5 | 0x3de76704, 0x4bf5, 0x42cd, 0x8c, 0x89, 0x54, 0x7e, 0x4f, 0xad, 0x4f, 0x24 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Statistics - Invokes Statistics(), resetting the statistics, and verifying interface correctness returns EFI\_SUCCESSor EFI\_UNSUPPORTED. | Call Statistics() and reset the statistics and verify interface correctness. The return status should be EFI\_SUCCESSor EFI\_UNSUPPORTED. |

### MCastIPtoMAC()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.9.1 | 0x6880bd92, 0x7004, 0x41b8, 0x9e, 0x43, 0x7b, 0x27, 0x1f, 0xd9, 0xac, 0x2b | EFI\_SIMPLE\_NETWORK\_PROTOCOL.MCastIPtoMAC - Invokes MCastIPtoMAC() when the network interface is not started returns EFI\_NOT\_STARTED. | Call MCastIPtoMAC() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.9.2 | 0x544b08c0, 0x1d26, 0x4462, 0x92, 0x07, 0xdd, 0x7e, 0xb7, 0x54, 0xdc, 0x9e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.MCastIPtoMAC - Invokes MCastIPtoMAC()verifies interface correctness and returns EFI\_SUCCESS. | Call MCastIPtoMAC() and verify interface correctness. The return status should be EFI\_SUCCESS. |

### NvData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.10.1 | 0x1a0250a2, 0xd085, 0x42ac, 0xb7, 0x42, 0x52, 0x35, 0x26, 0xa1, 0xa9, 0x4f | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() when the network interface is not started returns EFI\_NOT\_STARTED. | Call NvData() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.10.2 | 0xd2aaff2b, 0x6632, 0x4d23, 0x98, 0xca, 0x78, 0xd9, 0x0d, 0xea, 0xfb, 0x2f | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() with Offset not a multiple of NvRamAccessSize returns EFI\_INVALID\_PARAMETER. | Call NvData() with Offset not a multiple of NvRamAccessSize. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.10.3 | 0xfd0a8da6, 0xe94b, 0x45f0, 0x93, 0x92, 0xe4, 0x8f, 0x9d, 0x09, 0x92, 0xc7 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() with BufferSize not a multiple of NvRamAccessSize returns EFI\_INVALID\_PARAMETER. | Call NvData() with BufferSize not a multiple of NvRamAccessSize. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.10.4 | 0x75fc17ba, 0x5329, 0x4931, 0x96, 0x93, 0xc7, 0x83, 0xf6, 0xac, 0x59, 0xc4 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() with BufferSize + Offset exceeding NvRamSize returns EFI\_INVALID\_PARAMETER. | Call NvData() with BufferSize + Offset exceeding NvRamSize. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.10.5 | 0xba0b2393, 0x0078, 0x434b, 0x99, 0x13, 0xde, 0xa6, 0x6b, 0xdd, 0x83, 0xb3 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() to read (0, n\*NvRamAccessSize) returns EFI\_SUCCESS. | Call NvData() to read (0, n\*NvRamAccessSize) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.10.6 | 0xf9e2f307, 0x3f73, 0x4c00, 0xbc, 0x31, 0xd5, 0x88, 0xf2, 0x6f, 0x5e, 0xd6 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() to read (NvRamAccessSize, (n‑1)\*NvRamAccessSize) returns EFI\_SUCCESS. | Call NvData() to read (NvRamAccessSize, (n‑1)\*NvRamAccessSize) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.10.7 | 0x8f18c1d9, 0xbcb2, 0x4e15, 0xaa, 0x16, 0x58, 0xe8, 0x3c, 0x31, 0xd5, 0xe4 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() to read ((n‑1)\*NvRamAccessSize, NvRamAccessSize) returns EFI\_SUCCESS. | Call NvData() to read ((n‑1)\*NvRamAccessSize, NvRamAccessSize) and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.10.8 | 0x443b58d6, 0x683c, 0x4018, 0x89, 0xc9, 0x2e, 0x70, 0xe8, 0x53, 0x6b, 0x7d | EFI\_SIMPLE\_NETWORK\_PROTOCOL.NvData - Invokes NvData() writes and verifies interface correctness, returning EFI\_SUCCESS. | Call NvData() to write and verify interface correctness. The return status should be EFI\_SUCCESS. |

### GetStatus()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.11.1 | 0x21837ad9, 0x942b, 0x4b2b, 0x89, 0x6e, 0xc7, 0xb1, 0xe8, 0xa3, 0x6a, 0xaa | EFI\_SIMPLE\_NETWORK\_PROTOCOL.GetStatus - Invokes GetStatus() when the network interface is not started returns EFI\_NOT\_STARTED. | Call GetStatus() when network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.11.2 | 0xce6f3aba, 0x9d91, 0x4ab4, 0xaa, 0x96, 0x01, 0x14, 0x3e, 0xea, 0xf8, 0x29 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.GetStatus - Invokes GetStatus() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call GetStatus() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.11.3 | 0xa1ee7ee5, 0x2b46, 0x4da0, 0xb8, 0x19, 0x0d, 0x10, 0xe1, 0xd0, 0x6f, 0xc0 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.GetStatus - Invokes GetStatus() with an invalid parameter returns EFI\_INVALID\_PARAMETER. | Call GetStatus() when both InterruptStuts and TxBuf are NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.11.4 | 0x8e8f1517, 0x330e, 0x45fd, 0x8d, 0x84, 0x33, 0xff, 0xf1, 0x60, 0x00, 0xf2 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.GetStatus - Invokes GetStatus() verifies interface correctness and returns EFI\_SUCCESS. | Call GetStatus() and verify interface correctness. The return status should be EFI\_SUCCESS. |
| 5.11.1.11.5 | 0xa32b5f48, 0x8215, 0x4024, 0x80, 0x31, 0x33, 0x70, 0x5, 0x20, 0x37, 0x54 | EFI\_SIMPLE\_NETWO RK\_PROTOCOL.GetS tatus - Invokes GetStatus()  to verify the transmitted buffer should be shown up in the recycled transmit buffer. | 1.The transmitted buffer should be shown up in the recycled transmit buffer. |

### Transmit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.12.1 | 0xfe70e127, 0x6ea1, 0x4ff8, 0xa0, 0x41, 0x1f, 0x96, 0xad, 0x0c, 0xe8, 0x9d | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Transmit() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.12.2 | 0xfdcadacb, 0x71cd, 0x416c, 0x9a, 0xa6, 0x8c, 0xf5, 0x3a, 0x85, 0x92, 0x05 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call Transmit() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.12.3 | 0xea3773ea, 0x0e0f, 0x45a3, 0x82, 0xa0, 0x64, 0xd4, 0x85, 0xa1, 0x0b, 0x52 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a HeaderSize value of non‑0 and not equal to MediaHeaderSize returns EFI\_INVALID\_PARAMETER. | Call Transmit() with a HeaderSize value of non‑0 and not equal to MediaHeaderSize. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.4 | 0xde544de1, 0x178e, 0x4b5f, 0x97, 0xd7, 0x19, 0x11, 0x9b, 0x1b, 0x7b, 0x18 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a BufferSize value of less than MediaHeaderSize. | Call Transmit() with a BufferSize value of less than MediaHeaderSize. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.5 | 0x4b33c0b2, 0x4ab8, 0x44a0, 0x8c, 0x0b, 0xd9, 0x8b, 0x70, 0x9d, 0xd1, 0x64 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a Buffer value of NULL returns EFI\_INVALID\_PARAMETER. | Call Transmit() with a Buffer value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.6 | 0xa449842c, 0xf5f8, 0x47e9, 0x98, 0x7b, 0x4b, 0x61, 0x41, 0xae, 0xbd, 0x45 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a HeaderSize value of non‑0 and DestAddr value of NULL returns EFI\_INVALID\_PARAMETER. | Call Transmit() with a HeaderSize value of non‑0 and a DestAddr value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.7 | 0x2e3dd087, 0xdd0c, 0x426e, 0x85, 0xba, 0x65, 0xe5, 0x83, 0x10, 0xb1, 0xde | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a HeaderSize value of non‑0 and a Protocol value of NULL returns EFI\_INVALID\_PARAMETER.. | Call Transmit() with a HeaderSize value of non‑0 and a Protocol value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.8 | 0x10e4090b, 0x284b, 0x4886, 0xba, 0x9b, 0x9f, 0x50, 0xc7, 0xff, 0xc5, 0x74 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Invokes Transmit() with a HeaderSize value of non‑0 and a Protocol value of not in accordance with IfType returning EFI\_INVALID\_PARAMETER. | Call Transmit() with a HeaderSize value of non‑0 and a Protocol value of not in accordance with IfType. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.9 | 0xdaafbb2a, 0x434b, 0x452f, 0xa6, 0x44, 0xa7, 0x39, 0x2c, 0xf3, 0x59, 0x37 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Calling Transmit()sends Over Sized Packets and returns EFI\_INVALID\_PARAMETER. | Call Transmit() to send Over Sized Packets. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.12.10 | 0x8f8ec6d7, 0x41b5, 0x4e06, 0x87, 0x12, 0xdb, 0x77, 0xba, 0xc6, 0x1a, 0x1f | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Transmit - Calling Transmit() sends Under Sized Packets and returns EFI\_INVALID\_PARAMETER. | Call Transmit() to send Under Sized Packets. The return status should be EFI\_INVALID\_PARAMETER. |

### Receive()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.1.13.1 | 0x6c2503ce, 0x7952, 0x4740, 0x88, 0xd2, 0xe1, 0xb3, 0xa2, 0xd9, 0x5d, 0x2e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Receive - Invokes Receive() when the network interface is not started returns EFI\_NOT\_STARTED. | Call Receive() when the network interface is not started. The return status should be EFI\_NOT\_STARTED and the state should be “Stopped”. |
| 5.11.1.13.2 | 0xb0def89e, 0xbb48, 0x4829, 0xb5, 0x8e, 0x12, 0x7a, 0xf3, 0x7a, 0x38, 0x9d | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Receive - Invokes Receive() when the network interface is not initialized returns EFI\_DEVICE\_ERROR. | Call Receive() when the network interface is not initialized. The return status should be EFI\_DEVICE\_ERROR. |
| 5.11.1.13.3 | 0xa6783502, 0xf69b, 0x4091, 0xac, 0x09, 0xf0, 0x10, 0x42, 0xa5, 0x93, 0x5e | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Receive - Invokes Receive() with a Buffer value of NULL returns EFI\_INVALID\_PARAMETER. | Call Receive() with a Buffer value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.13.4 | 0xb61dd219, 0x0b04, 0x49b7, 0x9a, 0xf9, 0x8c, 0x5f, 0x27, 0x0c, 0x44, 0x9b | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Receive - Invokes Receive() when BufferSize is smaller than the received Packets returns EFI\_INVALID\_PARAMETER. | Call Receive() when BufferSize is smaller than the received Packets. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.11.1.13.5 | 0x6a319f34, 0x0e40, 0x41aa, 0xae, 0x50, 0x16, 0x9c, 0x4d, 0xe7, 0xb8, 0xc7 | EFI\_SIMPLE\_NETWORK\_PROTOCOL.Receive - Invokes Receive() when no packet is received returns EFI\_NOT\_READY. | Call Receive() when no packet is received. The return status should be EFI\_NOT\_READY. |

## EFI\_PXE\_BASE\_CODE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_PXE\_BASE\_CODE\_PROTOCOL Section.

### Start()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.1.1 | 0x0a483bd1, 0x80cf, 0x463b, 0x8b, 0xb1, 0x2a, 0x33, 0x32, 0x90, 0xcc, 0x08 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Start - Calling Start() when PXE Protocol is already started returns EFI\_ALREADY\_STARTED. | Call Start() when the EFI\_PXE\_BASE\_CODE\_PROTOCOL is already started. The return code should be EFI\_ALREADY\_STARTED. |
| 5.11.2.1.2 | 0xc1505aee, 0xd73a, 0x416c, 0x9a, 0x3f, 0x9c, 0x00, 0x5d, 0x01, 0xd6, 0xeb | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Start - Calling Start() using IPV6 when PXE Protocol does not support IPV6 returns EFI\_NOT\_SUPPORTED. | Call Start() when EFI\_PXE\_BASE\_CODE\_PROTOCOL does not support IPV6, but require its use. The return code should be EFI\_NOT\_SUPPORTED. |
| 5.11.2.1.3 | 0x13a4a599, 0xb35b, 0x4465, 0xa2, 0xdb, 0xc1, 0xe8, 0xa4, 0xca, 0x9a, 0x93 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Start – Calling Start() without using IPv6 returns EFI\_SUCCESS. | Call Start() without using IPv6. The return status code should be EFI\_SUCCESS.  Call Start() with using IPv6 if **Ipv6Supported** is **FALSE**. The return status code should be EFI\_UNSUPPORTED. |
| 5.11.2.1.4 | 0x33067ad5, 0xb3a5, 0x44f4, 0x9f, 0xf5, 0xf8, 0x63, 0xda, 0x1f, 0xbd, 0xb3 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Start – Calling Start() returns correct mode without using IPv6. | Call Start() without using IPv6. The return mode should be correct, including **Started** is TRUE, **UsingIpv6** is FALSE, **AutoArp** is TRUE, and Route Table is **Empty**. |

### Stop()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.2.1 | 0x8d75ffa1, 0xdfab, 0x4aff, 0x9f, 0xf7, 0xbb, 0x49, 0x49, 0x08, 0xdc, 0xa3 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Stop – Calling Stop() while the PXE protocol is already stopped returns EFI\_NOT\_STARTED. | Call Stop() when the EFI\_PXE\_BASE\_CODE\_PROTOCOL is already stopped. The return code should be EFI\_NOT\_STARTED. |
| 5.11.2.2.2 | 0xf88713ff, 0xf149, 0x4e9f, 0x8c, 0xf5, 0x6d, 0x63, 0x55, 0x8f, 0xf2, 0xbd | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Stop – Calling Stop() to disable PXE protocol when it is enabled returns EFI\_SUCCESS. | Enable PXE protocol, and call Stop() to disable PXE protocol. The return code should be EFI\_SUCCESS. |

### Dhcp()

No automatic test is designed to verify this function.

### Discover()

No automatic test is designed to verify this function.

### Mtftp()

No automatic test is designed to verify this function.

### UdpWrite()

No automatic test is designed to verify this function.

### UdpRead()

No automatic test is designed to verify this function.

### SetIpFilter()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.8.1 | 0x670cf69f, 0x530a, 0x4bec, 0xaa, 0xb8, 0x41, 0xd3, 0x58, 0x9e, 0x91, 0x99 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetIpFilter –Calling SetIpFilter() returns EFI\_SUCCESS. | Enable PXE protocol, and call SetIpFilter(). The returned code should be EFI\_SUCCESS. |
| 5.11.2.8.2 | 0xe9ed28b0, 0x0b88, 0x4e4e, 0xa2, 0xdb, 0xe5, 0xc4, 0xea, 0xd2, 0x00, 0x87 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetIpFilter – Calling SetIpFilter() updates IpFilter Mode setting. | Enable PXE protocol, and call SetIpFilter(). The IpFilter filed at EFI\_PXE\_BASE\_CODE\_MODE is updated to the new setting. |
| 5.11.2.8.3 | 0x13317b8d, 0x5d0d, 0x400f, 0x87, 0x4f, 0xaf, 0xe5, 0x08, 0xf1, 0x35, 0x86 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetIpFilter – Calling SetIpFilter() with PXE protocol not started returns EFI\_NOT\_STARTED. | Disable PXE protocol, and call SetIpFilter(). The return code should be EFI\_NOT\_STARTED. |

### Arp()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.13.1 | 0xdc8b9346, 0xc5c8, 0x4ef5, 0xaf, 0x22, 0xcd, 0xef, 0x81, 0x6d, 0xf6, 0x13 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Arp – Arp() returns EFI\_INVALID\_PARAMETERwhen IpAddr is NULL | 1.Call Arp()with IpAddr = NULL. The return code must be EFI\_INVALID\_PARAMETER |
| 5.11.2.13.2 | 0xe893562b, 0xcb51, 0x409c, 0xa0, 0x93, 0x7c, 0xad, 0xe1, 0x43, 0xd6, 0xc0 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.Arp – Arp()returns EFI\_UNSUPPORTEDwhen UsingIpv6 is TRUE | 1.Call Arp() when UsingIpv6is TRUE. The return code must be EFI\_UNSUPPORTED |

### SetParameters()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.10.1 | 0x3395102a, 0x1b16, 0x4267, 0xb8, 0x5e, 0x88, 0x4b, 0xd6, 0x56, 0xb8, 0x69 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetParameters – Calling SetParameters() with PXE protocol not started returns EFI\_NOT\_STARTED. | Disable PXE protocol, and call SetParameters(). The return code should be EFI\_NOT\_STARTED. |

### SetStationIp()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.11.1 | 0xe20afad4, 0x04e5, 0x4b09, 0xa2, 0x3a, 0xc0, 0xc1, 0xd5, 0x7f, 0x8b, 0x1b | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetStationIp – Calling SetStationIp() and modifying IP address and subnet mask returns EFI\_SUCCESS. | Enable PXE protocol, and call SetStationIp() to modify IP address and subnet mask. The returned status code is EFI\_SUCCESS. |
| 5.11.2.11.2 | 0x47feb998, 0x7d0d, 0x4381, 0xae, 0x31, 0x71, 0xbe, 0xdf, 0xb0, 0x73, 0x23 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetStationIp – Calling SetStationIp() and only modifying IP address returns EFI\_SUCCESS. | Enable PXE protocol, and call SetStationIp() only to modify IP address. The returned status code is EFI\_SUCCESS. |
| 5.11.2.11.3 | 0x78014f26, 0x0196, 0x4d38, 0xb6, 0xbd, 0x0c, 0x7c, 0x41, 0xf8, 0x5e, 0xa1 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetStationIp – Calling SetStationIp() and only modifying subnet mask returns EFI\_SUCCESS. | Enable PXE protocol, and call SetStationIp() only to modify subnet mask of the network device. The returned status code is EFI\_SUCCESS. |
| 5.11.2.11.4 | 0x518491e5, 0xd4ab, 0x42c6, 0x8c, 0x73, 0x90, 0xc1, 0xeb, 0xc2, 0xf1, 0x78 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetStationIp – Calling SetStationIp() with PXE not started returns EFI\_NOT\_STARTED. | Disable PXE protocol, and call SetStationIp(). The return code should be EFI\_NOT\_STARTED. |

### SetPackets()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.11.2.12.1 | 0x66c10d09, 0x2578, 0x48b7, 0x80, 0x5b, 0x75, 0xd7, 0x17, 0xcf, 0x71, 0x49 | EFI\_PXE\_BASE\_CODE\_PROTOCOL.SetPackets – Calling SetPackets() with PXE protocol not started returns EFI\_NOT\_STARTED. | Disable PXE protocol, and call SetPackets(). The return code should be EFI\_NOT\_STARTED. |

## 

## EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL Test

Reference Document:

*UEFI Specification,* EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL Section.

The EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL Test is covered in the test for the EFI PXE Base Code Protocol.

## EFI\_BIS\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_BIS\_PROTOCOL Section.

No automatic test is designed to verify this protocol.

# Protocols Compression Test

## EFI\_DECOMPRESS\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DECOMPRESS\_PROTOCOL Section.

### GetInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.13.1.1.1 | 0xb4929cbe, 0x0d83, 0x481f, 0x89, 0xc7, 0xb8, 0xbd, 0x49, 0x05, 0x7c, 0xae | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() returns EFI\_SUCCESS. | 1. Get the Compressed file name and uncompressed file size from the profile.  2. Read the Compressed file into memory  3. Call GetInfo() to retrieve the decompression info.  The returned status should be EFI\_SUCCESS. |
| 5.13.1.1.2 | 0x1c5d4afb, 0x66b2, 0x4ff3, 0xb9, 0x20, 0x6a, 0x21, 0x32, 0x62, 0x9f, 0xae | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() returns a DestinationSize that is equal to the Uncompressed File Size. | 1. Get the Compressed file name and uncompressed file size from the profile.  2. Read the Compressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  The returned DestinationSize should equal the Uncompressed File Size gotten from the profile. |
| 5.13.1.1.3 | 0x01a92787, 0x0d15, 0x4213, 0x92, 0x06, 0x8a, 0x3a, 0xb4, 0xa3, 0xba, 0x54 | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() the second time returns EFI\_SUCCESS. | 1. Get the Compressed file name and uncompressed file size from the profile.  2. Read the Compressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call GetInfo() again.  The returned status should be EFI\_SUCCESS. |
| 5.13.1.1.4 | 0xb80b38e3, 0x3f4c, 0x43e0, 0xb8, 0x6d, 0x5b, 0x01, 0x38, 0xbd, 0x0f, 0x3e | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() the second time returns a DestinationSize that is equal to the DestinationSize returned after the first call. | 1. Get the Compressed file name and uncompressed file size from the profile.  2. Read the Compressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call GetInfo() again.  The returned DestinationSize should be the same value as the first time. |
| 5.13.1.1.5 | 0x43ee9ff0, 0x4867, 0x4fe6, 0xac, 0x09, 0x72, 0x0a, 0x33, 0x8b, 0x80, 0xd8 | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() the second time returns a ScratchSize that is equal to the ScratchSize returned after the first call. | 1. Get the Compressed file name and uncompressed file size from the profile.  2. Read the Compressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call GetInfo() again.  The returned ScratchSize should be the same value as the first time. |
| 5.13.1.1.6 | 0x66c06d59, 0x77ab, 0x4bc6, 0x98, 0x20, 0xbf, 0x01, 0x60, 0xd6, 0x1e, 0x6a | EFI\_DECOMPRESS\_PROTOCOL.GetInfo - Calling GetInfo() with SourceSize < 8 returns EFI\_INVALID\_PARAMETER. | Call GetInfo() with SourceSize < 8.  The returned status should be EFI\_INVALID\_PARAMETER. |

### Decompress()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.13.1.2.1 | 0x37d2514e, 0x27f0, 0x4182, 0xb7, 0x13, 0x14, 0xf4, 0xbf, 0x53, 0xbb, 0xae | EFI\_DECOMPRESS\_PROTOCOL.Decompress – Calling Decompress() on a 0 length file returns EFI\_SUCCESS. | 1. Get the Compressed file name and uncompressed file name from the profile.  2. Read the Compressed file and uncompressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call Decompress() with the compressed file buffer.  The returned status should be EFI\_SUCCESS. |
| 5.13.1.2.2 | 0xf2665735, 0x8992, 0x47bc, 0xb2, 0x99, 0x8a, 0x00, 0x32, 0xab, 0x59, 0x93 | EFI\_DECOMPRESS\_PROTOCOL.Decompress - Calling Decompress() on a 0 length file does not modify the buffer. | 1. Get the Compressed file name and uncompressed file name from the profile.  2. Read the Compressed file and uncompressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call Decompress() with the compressed file buffer.  If the uncompressed file size is 0, the destination buffer should not be modified. |
| 5.13.1.2.3 | 0x8eceea13, 0x34ce, 0x43af, 0xbf, 0x9c, 0xb8, 0x3d, 0xe6, 0x32, 0x29, 0x69 | EFI\_DECOMPRESS\_PROTOCOL.Decompress - Calling Decompress() on a non‑0 file returns EFI\_SUCCESS. | 1. Get the Compressed file name and uncompressed file name from the profile.  2. Read the Compressed file and uncompressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call Decompress() with the compressed file buffer.  The returned status should be EFI\_SUCCESS. |
| 5.13.1.2.4 | 0xd8aa9038, 0xc3d1, 0x4f9c, 0x9d, 0xbb, 0x3c, 0xc8, 0x6d, 0xee, 0xd1, 0xe6 | EFI\_DECOMPRESS\_PROTOCOL.Decompress – After calling Decompress() on a non‑0 file, the Decompressed data is equal to the Uncompressed data. | 1. Get the Compressed file name and uncompressed file name from the profile.  2. Read the Compressed file and uncompressed file into memory.  3. Call GetInfo() to retrieve the decompression info.  4. Call Decompress() with the compressed file buffer.  If the uncompressed file size is non-0, the Decompressed data should be equal to the Uncompressed file data. |
| 5.13.1.2.5 | 0x9e6e6f21, 0x15f3, 0x4b0c, 0x9a, 0x9a, 0x17, 0xfc, 0xab, 0x5c, 0x54, 0x23 | EFI\_DECOMPRESS\_PROTOCOL.Decompress - After calling Decompress() with an invalid compressed file, the returned status is EFI\_INVALID\_PARAMETER. | 1. Get the invalid compressed format file name from the profile.  2. Call GetInfo() to retrieve the decompression info.  3. Call Decompress() with an invalid compress format buffer.  The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.13.1.2.6 | 0xe145f85e, 0xcc48, 0x42d4, 0xab, 0x48, 0xb5, 0x16, 0x2f, 0xc3, 0xef, 0xae | EFI\_DECOMPRESS\_PROTOCOL.Decompress - Calling Decompress() with an incorrect SourceSize ( SourceSize - 1 ) returns EFI\_INVALID\_PARAMETER. | 1. Read the Compressed file into memory and save the buffer pointer.  2. Call GetInfo() to retrieve the decompression info.  3. Call Decompress() with incorrect SourceSize ( SourceSize - 1 )  The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.13.1.2.7 | 0xfdc75fd3, 0x3a02, 0x48e5, 0x8d, 0x7f, 0x0b, 0x14, 0x75, 0xb5, 0xcf, 0x1c | EFI\_DECOMPRESS\_PROTOCOL.Decompress - Calling Decompress() with SourceSize < 8 returns EFI\_INVALID\_PARAMETER. | 1. Read the Compressed file into memory and save the buffer pointer.  2. Call GetInfo() to retrieve the decompression info.  3. Call Decompress() with SourceSize < 8.  The returned status should be EFI\_INVALID\_PARAMETER. |

# Protocols Debugger Support Test

## EFI\_DEBUG\_SUPPORT\_PROTOCOL Test

Reference Document:

*UEFI Specification,* EFI\_DEBUG\_SUPPORT\_PROTOCOL Section.

### GetMaximumProcessorIndex()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.1.1.1 | 0x2ac7927c, 0xd9df, 0x4c32, 0x87, 0xb4, 0xad, 0x0a, 0xc4, 0xbb, 0xd5, 0x92 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.GetMaximumProcessorIndex - Invokes GetMaximumProcessorIndex() returns EFI\_SUCCESS and the out parameter contains a UINTN value. | Call GetMaximumProcessorIndex(). It should return EFI\_SUCCESS and the out parameter should contain a UINTN value. |

### RegisterPeriodicCallback()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.1.2.1 | 0x1e43071e, 0xa00d, 0x46eb, 0xbd, 0xdd, 0x8f, 0x54, 0x22, 0xef, 0x24, 0x30 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - Invokes RegisterPeriodicCallback() installs an interrupt handler function and returns EFI\_SUCCESS. | Call RegisterPeriodicCallback() with a valid interrupt handler function. The return code should be EFI\_SUCCESS. |
| 5.12.1.2.2 | 0x792e517a, 0xf006, 0x46e6, 0xb3, 0x19, 0xc0, 0xc8, 0x7e, 0x43, 0x8b, 0x32 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - The SYSTEM\_TIMER\_VECTOR interrupt invokes the PeriodicCallback(). | Wait for the PeriodicCallback() to be invoked by the SYSTEM\_TIMER\_VECTOR interrupt. The PeriodicCallback() should be invoked. |
| 5.12.1.2.3 | 0xef21928d, 0xa7c3, 0x4c92, 0xaa, 0x22, 0x97, 0xc3, 0x3d, 0x4d, 0xd2, 0x00 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - The PeriodicCallback() is invoked earlier than the time event callback function. | Create a time event and register a callback function for it with less time than the machine clock. Wait for two callback functions to be invoked. The PeriodicCallback() should be invoked earlier than the time event callback function. |
| 5.12.1.2.4 | 0x9f3d4d83, 0xee41, 0x41dd, 0x83, 0x13, 0x6c, 0xc0, 0x59, 0x7f, 0x22, 0x21 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - Invokes RegisterPeriodicCallback() installs another interrupt handler function and returns EFI\_ALREADY\_STARTED. | Call RegisterPeriodicCallback() with a valid interrupt handler function. The return code should be EFI\_ALREADY\_STARTED. |
| 5.12.1.2.5 | 0x29778e36, 0x09ad, 0x47db, 0x82, 0x4c, 0x5b, 0x46, 0x25, 0xd0, 0xe5, 0xb4 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - Invokes RegisterPeriodicCallback() unstalls the interrupt handler function and returns EFI\_SUCCESS. | Call RegisterPeriodicCallback() with a NULL interrupt handler function. The return code should be EFI\_SUCCESS. |
| 5.12.1.2.6 | 0xc34688c4, 0x9f84, 0x40a7, 0x90, 0x84, 0xe6, 0x5e, 0x2c, 0xbe, 0xae, 0x45 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterPeriodicCallback - The PeriodicCallback() is not invoked after the SYSTEM\_TIMER\_VECTOR interrupt. | Wait for the SYSTEM\_TIMER\_VECTOR interrupt. The PeriodicCallback() should not be invoked. |

### RegisterExceptionCallback()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.1.3.1 | 0x20bc4ac1, 0x8958, 0x446a, 0x8b, 0x5f, 0x27, 0xb3, 0xcc, 0x77, 0x41, 0x06 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Invokes RegisterExceptionCallback() installs an interrupt handler function. | Call RegisterExceptionCallback() with a valid InterrruptHandler function, the exception type is EXCEPT\_IA32\_BREAKPOINT. The return code should be EFI\_SUCCESS. |
| 5.12.1.3.2 | 0xfbfa47e8, 0xbd32, 0x4f81, 0x89, 0x38, 0xb7, 0x36, 0x47, 0x08, 0xa2, 0xb9 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Calling INT3 invokes the interrupt handler function. | Use “INT 3” instruction to invokes the interrupt. After “INT 3” is called, the interrupt handler function should be invoked. |
| 5.12.1.3.3 | 0x14362c36, 0xf284, 0x4a95, 0xab, 0x1b, 0x3b, 0x67, 0xa9, 0x6e, 0x1d, 0xe8 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Invokes RegisterPeriodicCallback() installs the Periodic interrupt handler function and two callback functions are invoked. | Call RegisterPeriodicCallback() with a valid InterrruptHandler function.Use “INT 3” instruction to invokes the Exception callback function, and wait for the periodic callback function to be invoked. The return code of RegisterPeriodicCallback() should be EFI\_SUCCESS.Two callback functions should be invoked successfully. |
| 5.12.1.3.4 | 0x0cf314a2, 0xfe51, 0x4093, 0xb4, 0x22, 0x9f, 0x4a, 0x90, 0x98, 0xd2, 0x89 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Invokes RegisterExceptionCallback()installs another interrupt handler function. | Call RegisterExceptionCallback() with a valid InterrruptHandler function. The return code should be EFI\_ALREADY\_STARTED. |
| 5.12.1.3.5 | 0x28e232bd, 0xfe72, 0x4963, 0xb3, 0x33, 0x1e, 0x83, 0x61, 0x5e, 0x1e, 0x2e | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Invokes RegisterExceptionCallback()uninstalls the interrupt handler function. | Call RegisterExceptionCallback() with NULL InterrruptHandler function. The return code should be EFI\_SUCCESS. |
| 5.12.1.3.6 | 0x59efd2fb, 0x2f7d, 0x4535, 0xa2, 0x1c, 0x39, 0x25, 0xcb, 0xb3, 0x0b, 0x87 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.RegisterExceptionCallback - Using “INT 3“ instruction does not invokes the previously installed (but now uninstalled) interrupt handler function. | Use “INT 3“ instruction to invokes the interrupt. After “INT 3” is called, the previously installed (but now uninstalled) interrupt handler function should not be invoked. |

### InvalidateInstructionCache()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.1.4.1 | 0x41c3bc2c, 0xf066, 0x4272, 0xac, 0xa7, 0xb9, 0x48, 0x9f, 0xac, 0x94, 0x2b | EFI\_DEBUG\_SUPPORT\_PROTOCOL.InvalidateInstructionCache - Invokes InvalidateInstructionCache() returns EFI\_SUCCESS, verifying interface correctness. | Call InvalidateInstructionCache().The return code should be EFI\_SUCCESS. |

### Isa

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.1.5.1 | 0x701d9223, 0x1123, 0x40a2, 0xa8, 0x81, 0x5f, 0xd6, 0x68, 0xeb, 0x32, 0x87 | EFI\_DEBUG\_SUPPORT\_PROTOCOL.Isa – The instruction is IA32, IPF, or EBC. | Get the Isa value, it should be IA32 (0x014C), IPF (0x0200), or EBC (0xEBC). |

## EFI\_DEBUGPORT\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DEBUGPORT\_PROTOCOL Section.

### Reset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.2.1.1 | 0x6aca7c62, 0x7bbe, 0x4d1b, 0x9c, 0x8a, 0xc7, 0x7a, 0x6c, 0x68, 0x74, 0x76 | EFI\_DEBUGPORT\_PROTOCOL.Reset - Invokes Reset() returns EFI\_SUCCESS, verifying interface correctness within test case. | Call Reset().It should return EFI\_SUCCESS. |

### Write()

No automatic test is designed to verify this function.

### Read()

No automatic test is designed to verify this function.

### Poll()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.12.2.4.1 | 0x4bf087b2, 0xe914, 0x4056, 0x8e, 0x1a, 0x25, 0xf0, 0x13, 0x54, 0x31, 0x26 | EFI\_DEBUGPORT\_PROTOCOL.Poll - Calling Poll()when the debug port has data returns EFI\_SUCCESS. | Call Write() to send data to the debug port. Call Poll() to check the debug port to see if any data is available to be read. The return code of Poll() should be EFI\_SUCCESS. |
| 5.12.2.4.2 | 0x838a1da2, 0x9640, 0x47f3, 0xba, 0xc1, 0x39, 0x26, 0xf3, 0x1d, 0x00, 0xc2 | EFI\_DEBUGPORT\_PROTOCOL.Poll - Calling Poll() when the debug port does not have data returns EFI\_NOT\_READY. | Call Reset() to reset the debug port. Call Poll() to check the debug port to see if any data is available to be read. The return code of Poll() should be EFI\_NOT\_READY. |

# Protocols ACPI Test

## EFI\_ACPI\_TABLE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ACPI\_TABLE\_PROTOCOL Section.

### InstallAcpiTable ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.16.1.1.1 | 0x278963cf, 0x0c77, 0x47b5, 0xa9, 0x1f, 0x2b, 0xa7, 0xde, 0x9d, 0xa3, 0x75 | ACPI\_TABLE\_PROTOCOL.InstallAcpiTable - InstallAcpiTable() returns EFI\_INVALID\_PARAMETER with NULL AcpiTableBuffer. | Call InstallAcpiTable() with NULL AcpiTableBuffer. The return status should be EFi\_INVALID\_PARAMETER. |
| 5.16.1.1.2 | 0xa3f1e4b1, 0xe8d9, 0x4516, 0xa2, 0xbc, 0x3d, 0xef, 0x20, 0x15, 0xec, 0x7d | ACPI\_TABLE\_PROTOCOL.InstallAcpiTable - InstallAcpiTable() returns EFI\_INVALID\_PARAMETER with NULL TableKey. | Call InstallAcpiTable() with NULL TableKey. The return status should be EFi\_INVALID\_PARAMETER. |
| 5.16.1.1.3 | 0xb03fa7b4, 0xeb94, 0x4f56, 0x8a, 0x69, 0x5a, 0x13, 0x59, 0xcf, 0x57, 0x3f | ACPI\_TABLE\_PROTOCOL.InstallAcpiTable - InstallAcpiTable() returns EFI\_INVALID\_PARAMETER with AcpiTableBufferSize is different with the size field in AcpiTableBuffer. | Call InstallAcpiTable() with the size of AcpiTableBuffer not the same as the AcpiTableBufferSize. The return status should be EFi\_INVALID\_PARAMETER. |
| 5.16.1.1.4 | 0x40949ceb, 0x734b, 0x468d, 0x88, 0xca, 0xfe, 0xc2, 0x7e, 0x4c, 0x19, 0xd2 | ACPI\_TABLE\_PROTOCOL.InstallAcpiTable - InstallAcpiTable() returns EFI\_SUCCESS with valid parameters | Call InstallAcpiTable() with valid parameter. The return status should be EFI\_SUCCESS.  Call UninstallAcpiTable() to restore the environment. |
| 5.16.1.1.5 | 0xfd58070a, 0xcefe, 0x4aea, 0x90, 0x3b, 0xa7, 0xa9, 0xbe, 0x53, 0x9c, 0xaf | **ACPI\_TABLE\_PROTO COL.InstallAcpiTable-**  InstallAcpiTable()returns EFI\_SUCCESS and automatically correct AcpiTable checksum | 1. Call **InstallAcpiTable()** with **AcpiTable** with wrong checksum.  2. The return status should be  **EFI\_SUCCESS** & **AcpiTable** checksum corrected.  3. Call **UninstallAcpiTable()** to restore the environment. |

### UninstallAcpiTable ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.16.1.2.1 | 0x5c72198c, 0x74d2, 0x4c55, 0xb9, 0xcf, 0x17, 0xdc, 0x02, 0x30, 0xac, 0x71 | ACPI\_TABLE\_PROTOCOL.UninstallAcpiTable - UninstallAcpiTable() returns EFI\_NOT\_FOUND with TableKey not refer to a table entry. | Call InstallAcpiTable() with valid parameter. The return status should be EFI\_SUCCESS.  Call UninstallAcpiTable(). The return status should be EFI\_SUCCESS.  Call UninstallAcpiTable() again. The return status should EFI\_NOT\_FOUND.. |
| 5.16.1.2.2 | 0xf1c7de32, 0xd0fe, 0x4d67, 0xb0, 0x28, 0x06, 0xb4, 0xa0, 0x84, 0x06, 0xc4 | ACPI\_TABLE\_PROTOCOL.UninstallAcpiTable - UninstallAcpiTable() returns EFI\_SUCCESS with TableKey refer to a table entry. | Call InstallAcpiTable() with valid parameter. The return status should be EFI\_SUCCESS.  Call UninstallAcpiTable(). The return status should be EFI\_SUCCESS. |

# Network Protocols Managed Network

## EFI\_MANAGED\_NETWORK\_PROTOCOL Test

Reference Document:

*UEFI 2.0 Specification*, Section 21.

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.1.1 | 0xfd5600b1, 0x958d, 0x4cf3, 0x9a, 0x6a, 0xb4, 0x5e, 0x26, 0x73, 0x19, 0xc6 | EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData **–** invokes GetModeData() with a *MnpConfigData* value other than NULL when the MNP child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**GetModeData() with a *MnpConfigData* value other than NULL when the MNP child has not been configured. The return status should be **EFI\_NOT\_STARTED**, and the default values are returned in*MnpConfigData*.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.1.2 | 0xf39fc5b4, 0xcea9, 0x498d, 0xb7, 0xe4, 0xce, 0x0a, 0x7c, 0x9e, 0x0b, 0x35 | EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData – invokes GetModeData() to get the previously configured data. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameter for the child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**GetModeData() to get the previously configured data in step 2,  4. Verify the data. The return status should be EFI\_SUCCESS.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.1.3 | 0x5b579cdd, 0xae9b, 0x4415, 0xbd, 0xc0, 0x39, 0xb0, 0x14, 0xcf, 0x29, 0xe2 | EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData **–** invokes GetModeData() with a MnpConfData value of NULL and a SnpModeData value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameter for the child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData() with a MnpConfData value of NULL and a SnpModeDatavalue ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.1.4 | 0xd34ce9f5, 0x8fb5, 0x4f50, 0xac, 0x68, 0x64, 0x0e, 0xc9, 0x3b, 0xc0, 0xbf | EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData – invokes GetModeData() with a MnpConfData value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameter for the child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData() with a MnpConfDatavalue ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.1.5 | 0xbde40b90, 0xf94f, 0x4c26, 0xac, 0x32, 0x21, 0x07, 0xa4, 0x19, 0x82, 0xde | EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData – invokes GetModeData() with a SnpModeDat*a* value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameter for the child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.GetModeData() with a SnpModeDatavalue of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.2.1 | 0x4c4b70cd, 0x5492, 0x440f, 0x87, 0xd8, 0xc8, 0x4d, 0x0b, 0x61, 0x02, 0x9f | EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure – invokes Configure() with an invalid *MnpConfigData.ProtocolTypeFilter* value. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() with an invalid MnpConfigData.ProtocolTypeFilter value. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.2.2 | 0x437bdc0d, 0xe159, 0x4535, 0x92, 0xe0, 0x56, 0x59, 0xd7, 0xa4, 0xc7, 0xfc | EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure – invokes Configure() after creating a new MNP child. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child. The return status should be EFI\_SUCCESS.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.2.3 | 0x3d69e8d4, 0x34fa, 0x4a15, 0xaa, 0xb1, 0x95, 0x48, 0x13, 0x9a, 0x62, 0x59 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure – invokes Configure() with unicast and broadcast disabled, which means set the parameter *EnableUnicastReceive* and *EnableBroadcaseReceive* set to FALSE**.** | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() with the parameter *EnableUnicastReceive* and *EnableBroadcaseReceive* a set to FALSE. The return status should be EFI\_SUCCESS.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.2.4 | 0x5e075f02, 0x708d, 0x4c3d, 0x8e, 0xc6, 0x53, 0x91, 0x6c, 0x30, 0xf4, 0x2b | EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure – invokes Configure() when the configuration data is reset to NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() when the configuration data is reset to NULL. The return status should be EFI\_SUCCESS.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.2.5 | 0xfbbaf8a7, 0x91ac, 0x497a, 0x9f, 0x9d, 0xec, 0x0a, 0x35, 0x34, 0xa1, 0xd7 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure – invokes Configure() when *ReceiveQueueTimeout* is enabled. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() when *ReceiveQueueTimeout* is enabled. The return status should be EFI\_SUCCESS.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### McastlpToMac()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.3.1 | 0x5902f01b, 0x124a, 0x4fe9, 0x98, 0xfa, 0x07, 0x97, 0x71, 0x4b, 0x39, 0xc3 | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() when the child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() when the child has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.3.2 | 0x0b2990e3, 0xc947, 0x4121, 0xb8, 0xa5, 0x9c, 0x47, 0x7b, 0xac, 0x28, 0xf7 | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() with an *IpAddress* value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() with an IpAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.3.3 | 0x0227a52e, 0x22b9, 0x4c6a, 0x8e, 0x13, 0x06, 0x62, 0x4c, 0x92, 0x39, 0x7f | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() with an *IpAddress* value that is an invalid multicast IP address. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() with an *IpAddress* value that is an invalid multicast IP address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.3.4 | 0x318eae7a, 0xa94d, 0x4eec, 0xbf, 0xde, 0x4e, 0x04, 0x04, 0xe3, 0x2c, 0x34 | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() with a *MacAddress* value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() with a *MacAddress* value of NULL.The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.3.5 | 0x8571d2b8, 0xe8e9, 0x450a, 0x84, 0x58, 0xf8, 0xb4, 0xa4, 0xa4, 0xc6, 0x5d | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() with the parameter *Ipv6Flag* set to TRUE. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() with the parameter *Ipv6Flag* set to TRUE.The return status should be EFI\_UNSUPPORTED.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.3.6 | 0xa6a2d468, 0x07b3, 0x47d7, 0x82, 0xec, 0x76, 0x85, 0x92, 0x6a, 0x78, 0x09 | EFI\_MANAGED\_NETWORK\_PROTOCOL. McastlpToMac – invokes McastlpToMac() to change multicast IPv4 address to MAC. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.McastlpToMac() to change multicast IPv4 address to MAC. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Groups()

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| Number | GUID | Assertion | Test Description |
| 5.23.1.4.1 | 0xdae4ffb7, 0x4cc2, 0x4d04, 0xbe, 0x90, 0xef, 0xd1, 0x9e, 0x62, 0x94, 0xd8 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() when the child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups() when the child has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.2 | 0x60fffa21, 0x3c10, 0x427a, 0xaf, 0x6e, 0xee, 0x78, 0x39, 0x14, 0xc5, 0xbe | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() with the parameter JoinFlag set to TRUE and a MacAddress value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups() with the parameter *JoinFlag* set to TRUE and a *MacAddress* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.3 | 0x8e49561e, 0x667b, 0x4da2, 0xae, 0x57, 0xa3, 0x51, 0x07, 0xaa, 0xb0, 0xce | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() with a *\*MacAddress* value that is an invalid multicast MAC address. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups() with a *\*MacAddress* value that is an invalid multicast MAC address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.4 | 0xbf473ce1, 0x8bf5, 0x4386, 0x81, 0x3b, 0x73, 0x34, 0xff, 0xc1, 0x8b, 0xb2 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() when the supplied multicast group has already been joined. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups() to join a multicast group. The return status should be EFI\_SUCCESS.  4. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups() to join the same multicast group joined in step 3. The return status should be EFI\_ALREADY\_STARTED.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.5 | 0x0ea6fd9b, 0xb4d3, 0x46d0, 0xa9, 0xb5, 0xe3, 0x41, 0x8f, 0x76, 0x59, 0x9e | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() to remove a multicast group that has not been joined. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Groups() to remove a multicast group that has not been joined. The return status should be **EFI\_NOT\_FOUND.**  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.6 | 0x10e81796, 0x75df, 0x4998, 0x95, 0x3b, 0xf6, 0x6a, 0x73, 0x65, 0xa6, 0xdf | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() to join a multicast group. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups ()** to join a multicast group. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.7 | 0x86d023ea, 0xcd2a, 0x4641, 0x82, 0x38, 0x19, 0x4c, 0x5e, 0x1c, 0x72, 0x07 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() to delete a multicast group. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Groups() to delete the multicast group. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.4.8 | 0x28419ce8, 0xe2d3, 0x4434, 0x90, 0xd3, 0xc2, 0xe3, 0xb5, 0x34, 0x50, 0x52 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Groups – invokes Groups() to delete all groups. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new child.  3. Call Groups() to delete all groups. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Transmit()

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| Number | GUID | Assertion | Test Description |
| 5.23.1.5.1 | 0x5ae0ea70, 0x50d7, 0x49ab, 0xb7, 0x78, 0xb9, 0x12, 0xa9, 0xab, 0x5b, 0x91 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with a Token value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.2 | 0x254e59ae, 0x6184, 0x4885, 0x84, 0x9d, 0xd9, 0x96, 0x75, 0x12, 0xd2, 0x5f | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with a Token.Event value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.3 | 0xbcf56099, 0x84e9, 0x464b, 0xb8, 0x50, 0x64, 0x26, 0x5f, 0x91, 0x69, 0x6b | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with a *TxData.FragmentCount* value of 0. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() with a *TxData.FragmentCount* value of **0**. The rerurn status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.4 | 0x8612aa9b, 0x2c0d, 0x4512, 0xbf, 0xf9, 0xfd, 0x70, 0xae, 0x62, 0xaf, 0xfa | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() when *(*Token*.TxData.HeaderLength +* Token*.TxData.DataLength)* is not equal to the sum of the Token*.TxData.*FragmentTable*[].FragmentLength* fields. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() when *(*Token*.TxData.HeaderLength +* Token*.TxData.DataLength)* is not equal to the sum of the Token*.TxData.*FragmentTable*[].FragmentLength* fields. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.5 | 0xab47d163, 0x05ef, 0x4aac, 0xaa, 0x45, 0xae, 0x93, 0x8e, 0xf8, 0x25, 0x95 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with one or more Token.TxData.FragmentTable[].FragmentLength fields with values of **0**. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() with one or more Token.TxData.FragmentTable[].FragmentLength fields with values of **0**. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.6 | 0x8030770d, 0x056a, 0x4780, 0x98, 0xbe, 0xef, 0x85, 0x46, 0x7f, 0xb2, 0xec | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with one or more Token.TxData.FragmentTable[].FragmentBuffer fields with values of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() with one or more Token.TxData.FragmentTable[].FragmentBuffer fields with values of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.7 | 0xcd7bf7fb, 0xf3be, 0x4cd7, 0x8a, 0xc3, 0x50, 0x2d, 0xca, 0xe5, 0xcc, 0x5a | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() when the MNP child driver instance has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit() when the MNP child driver instance has has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.8 | 0x5f54752c, 0xa297, 0x4609, 0x9b, 0x4b, 0x44, 0x77, 0x45, 0x04, 0x18, 0x2d | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with transmit specified data to check the correction of data transmission. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Transmit() with transmit data specified. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.5.9 | 0x54a2a21b, 0x9acf, 0x4f61, 0x9c, 0xc1, 0x8e, 0x31, 0xa8, 0x3e, 0x9e, 0xc4 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Transmit – invokes Transmit() with transmit data not specified. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Transmit() with transmit data not specified. The return status should be EFI\_SUCCESS.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Receive()

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| Number | GUID | Assertion | Test Description |
| 5.23.1.6.1 | 0xf88f8d45, 0xedd2, 0x4adc, 0xb9, 0xd1, 0x8b, 0xec, 0x49, 0x25, 0xc5, 0x35 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() when the child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive() when the child has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.2 | 0xe0605ca4, 0x21d1, 0x4692, 0xa4, 0xcc, 0x90, 0x5f, 0xbe, 0xb0, 0xa9, 0xb5 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() when the receive completion token is already in the receive queue. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive() to place the token into the receiving queue.  4. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive() to receive the token which was placed in the receiving queue in step 3. The rerurn status should be EFI\_ACCESS\_DENIED.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.3 | 0x9349ff52, 0x8bfb, 0x4018, 0xa8, 0x5a, 0x41, 0x71, 0xb8, 0x36, 0x9f, 0x28 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() with a Token value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive() with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.4 | 0xfdb1c2d3, 0xcc35, 0x4bc7, 0xac, 0xa6, 0x6d, 0x0f, 0xda, 0x79, 0x85, 0x55 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() with a Token.Event value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive() with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.5 | 0x23fb0e81, 0xe831, 0x40fa, 0x8c, 0xc9, 0xc4, 0x10, 0x2f, 0x7d, 0x8f, 0xdc | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() to place an asynchronous receiving request into the receiving queue. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Receive() to place an asynchronous receiving request into the receiving queue. The return status should be EFI\_SUCCESS.  4. Verify that the received data is correct.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.6 | 0x2c0e86ce, 0xec73, 0x4840, 0x9c, 0x07, 0xb5, 0xf1, 0x75, 0xc6, 0x81, 0x79 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Cancel() to abort the receive | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Receive() to place an asynchronous receiving request into the receiving queue. The return status should be EFI\_SUCCESS.  4. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.Cancel() to abort the receive. The return status should be EFI\_SUCCESS.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.6.7 | 0x4e364693, 0xe0c7, 0x49d3, 0xa0, 0xe5, 0xb8, 0x43, 0xd4, 0x79, 0x84, 0xe6 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Receive – invokes Receive() to place an asynchronous receiving request into the receiving queue. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Receive() to place an asynchronous receiving request into the receiving queue. The return status should be EFI\_SUCCESS.  4. Verify source MAC address correction.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Cancel()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.7.1 | 0xf8c7e036, 0xfb8e, 0x4fbb, 0x94, 0x7c, 0x1c, 0x72, 0x75, 0xf5, 0xb9, 0x1f | EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancle – invokes Cancel()when the child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancel() when the child has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.7.2 | 0x36ca4137, 0x5272, 0x469b, 0xad, 0x35, 0xba, 0xb4, 0x25, 0xb6, 0x4c, 0x27 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancle – invokes Cancel()when the value of the Token parameter is not NULL but the asynchronous I/O request was not found in the transmit or receive queues. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Cancel()when the value of the Token parameter is not NULLbut the asynchronous I/O request was not found in the transmit or receive queues. The return status should be **EFI\_NOT\_FOUND**.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.7.3 | 0xe873ef06, 0x2a4c, 0x4679, 0xa3, 0xf8, 0xd1, 0x02, 0x17, 0x1c, 0x11, 0xeb | EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancle – invokes Cancel() when the value of the Token parameter is NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancel() when the value of the Token parameter is NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.7.4 | 0x21288fe0, 0x7c33, 0x423c, 0xaa, 0xd7, 0x95, 0x79, 0xa7, 0xec, 0xc6, 0x04 | EFI\_MANAGED\_NETWORK\_PROTOCOL.Cancle – invokes Cancel()to abort an asynchronous transmit or receive request. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Configure() to configure the parameters for the new MNP child.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Receive() to place a asynchronous request into the receive queue.  4. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Cancel()to abort an asynchronous transmit or receive request. The return status should be EFI\_SUCCESS.  5. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### Poll()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.8.1 | 0xf87f9d7f, 0xbe91, 0x4b28, 0xb6, 0x8d, 0x49, 0x4e, 0x28, 0x18, 0x07, 0xca | EFI\_MANAGED\_NETWORK\_PROTOCOL.Poll – invokes **Poll()** when the child has not been configured. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new MNP child.  2. Call EFI\_MANAGED\_NETWORK\_PROTOCOL.Poll() when the child has not been configured. The return status should be EFI\_NOT\_STARTED.  3. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.9.1 | 0x026c7391, 0x7ebe, 0x4715, 0xba, 0xe4, 0xc5, 0x1b, 0x2e, 0x9a, 0x99, 0xf4 | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild – invokes CreateChild() with a ChildHandle value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() with a ChildHandle value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.23.1.9.2 | 0x48b5ff0b, 0xd688, 0x4644, 0x86, 0x62, 0xa9, 0x63, 0x6f, 0x2f, 0x4c, 0x1c | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild – invokes CreateChild() with a ChildHandle value of NULL. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild() with a ChildHandle value of NULL. The return status should be EFI\_SUCCESS.  2. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |
| 5.23.1.9.3 | 0x27da9434, 0x20fa, 0x42af, 0x8b, 0xdf, 0x87, 0x8e, 0xc9, 0x8b, 0x3b, 0xb9 | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild – invokes CreateChild() when the ChildHandle value is an existing instance handle. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild()with valid parameter to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild()**with the parameter ChildHandle pointing to the handle created in step 1. The return status should be **EFI\_INVALID\_PARAMETE**.  3. Call **EFI\_MANAGED\_NETWORK\_PROTOCOL.**Configure() to configure the parameters for the new child.  4. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created MNP child and clean up the environment. |

### DestroyChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.23.1.10.1 | 0xc400df8b, 0x61d0, 0x4244, 0xb2, 0xec, 0xed, 0x2f, 0xc6, 0x54, 0x8c, 0x7e | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild – invokes DestroyChild() when the child does not exist. | 1.Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() when the parameter ChildHandle *i*s NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.23.1.10.2 | 0x9ed9c819, 0x95fc, 0x4b00, 0x99, 0x7c, 0x36, 0x20, 0xfa, 0x9f, 0xad, 0xb3 | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild – invokes DestroyChild() to destroy an existing child. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the child handle created in step 1. The return status should be EFI\_SUCCESS. |
| 5.23.1.10.3 | 0x8182f56c, 0x3fe6, 0x4583, 0x9b, 0xb7, 0xfd, 0x8a, 0xe2, 0x1b, 0xe6, 0xac | EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild – invokes DestroyChild()twice to destroy one child handle created before. | 1. Call EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create a new MNP child.  2. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the child handle created in step 1. The return status should be EFI\_SUCCESS.  2. Call **EFI\_MANAGED\_NETWORK\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the child handle created in step 1 again. The return status should be **EFI\_UNSUPPORTED**. |

# EFI Byte Code Virtual Machine Test

## EFI\_EBC\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_EBC\_PROTOCOL Section.

### CreateThunk()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.15.1.1.1 | 0x5de39abd, 0xe9d4, 0x4fee, 0xb4, 0xdd, 0x31, 0x73, 0xb7, 0x35, 0xe3, 0x20 | EFI\_EBC\_PROTOCOL.CreateThunk - Calling CreateThunk() with an invalid Parameters returns EFI\_INVALID\_PARAMETER. | Call CreateThunk() when the EBC image entry point is not 2-byte aligned.  The return code should be EFI\_INVALID\_PARAMETER. |
| 5.15.1.1.2 | 0x6f19a253, 0xc6ff, 0x41a3, 0xa5, 0x8b, 0xa4, 0x57, 0x16, 0xe1, 0x2f, 0x4c | EFI\_EBC\_PROTOCOL.CreateThunk - Calling CreateThunk() to create ebc thunk returns EFI\_SUCCESS. | Call CreateThunk() to create thunk for the EBC image.  The return code should be EFI\_SUCCESS. |
| 5.15.1.1.3 | 0xcabc5c1e, 0x75a0, 0x4349, 0xab, 0xd8, 0x41, 0x17, 0x7b, 0x25, 0x9e, 0x8a | EFI\_EBC\_PROTOCOL.CreateThunk – Calling CreateThunk() invokes the Ebc entry point. | Call CreateThunk() to create thunk for the EBC image and invokes the thunk.  The entry point of EBC image must be invoked. |

### UnloadIImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.15.1.2.1 | 0x99c53b53, 0x0998, 0x4fda, 0xaa, 0x4e, 0x9c, 0xc4, 0x9a, 0x1c, 0x8a, 0x19 | EFI\_EBC\_PROTOCOL.UnloadImage - Calling UnloadImage() with an invalid Parameters returns EFI\_INVALID\_PARAMETER. | Call UnloadImage() when the image handle is not recognized as belonging to an EBC image that has been executed.  The return code should be EFI\_INVALID\_PARAMETER. |
| 5.15.1.2.2 | 0xecea2853, 0xe14e, 0x493b, 0x9a, 0xb3, 0xcd, 0xa4, 0xc8, 0x32, 0x2c, 0x3e | EFI\_EBC\_PROTOCOL.UnloadImage - Calling UnloadImage() unloads ebc thunk. | Call UnloadImage() to unload the EBC image from memory.  The return code should be EFI\_SUCCESS. |

### RegisterICacheFlush()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.15.1.3.1 | 0xf362b36f, 0x819d, 0x45a4, 0xa5, 0xc7, 0xa0, 0x0a, 0x81, 0x2b, 0xf3, 0x5f | EFI\_EBC\_PROTOCOL.RegisterICacheFlush - Calling RegisterICacheFlush() registers an ebc callback function. | Call RegisterICacheFlush() to register a callback function.  The return code should be EFI\_SUCCESS. |
| 5.15.1.3.2 | 0x26480c1d, 0xac79, 0x46e5, 0xa4, 0xff, 0xec, 0x3e, 0xd5, 0x99, 0x87, 0xec | EFI\_EBC\_PROTOCOL.RegisterICacheFlush - Callback function is invoked after calling CreateThunk(). | 1. Call RegisterICacheFlush() to register a callback function.  2. Call CreateThunk() to create thunk for an EBC image.  The callback function should be invoked. |

### GetVersion()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.15.1.4.1 | 0xce787a92, 0x1ee8, 0x4f65, 0xb7, 0x7c, 0xb4, 0xcd, 0xcf, 0xcd, 0xd3, 0xf2 | EFI\_EBC\_PROTOCOL.GetVersion - Calling GetVersion() when version pointer is NULL and returns EFI\_INVALID\_PARAMETER. | Call GetVersion() when version pointer is NULL.  The return code should be EFI\_INVALID\_PARAMETER. |
| 5.15.1.4.2 | 0x57100f81, 0xe05a, 0x4abf, 0x93, 0xc2, 0x49, 0x1c, 0xf8, 0xd4, 0xb6, 0x7c | EFI\_EBC\_PROTOCOL.GetVersion - Calling GetVersion() to get ebc interpreter version returns EFI\_SUCCESS. | Call GetVersion() to get the version of the EBC interpreter.  The return code should be EFI\_SUCCESS. |

# Network Protocols ARP and DHCP

## EFI\_ARP\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_ARP\_PROTOCOL Section.

### Add()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.1.1.1 | 0xf6fa3bd8, 0xd8d0, 0x4c54, 0x88, 0xc2, 0x1f, 0xcf, 0x27, 0x62, 0xc5, 0xd4 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_INVALID\_PARAMETER with both the *DenyFlag* and *TargetAddress* value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with both the *DenyFlag* and *TargetAddress* value of NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.2 | 0x6404caf6, 0x9020, 0x4272, 0xa2, 0x79, 0x6f, 0x53, 0x8d, 0x42, 0x5c, 0x35 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_INVALID\_PARAMETER with a *DenyFlag* value of FALSE and the TargetHwAddress */*TargetSwAddress value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of FALSE and the TargetHwAddress */*TargetSwAddress value of NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.3 | 0x138858cd, 0x40fe, 0x4b05, 0xb4, 0x8c, 0xb5, 0x9f, 0xf2, 0xfd, 0xee, 0x5e | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_INVALID\_PARAMETER with a *DenyFlag* value of FALSE and a TargetHwAddress value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and a TargetHwAddress value of NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.4 | 0x48a946f4, 0x8ff7, 0x4b50, 0xa1, 0xb2, 0xc6, 0x82, 0xcd, 0xa5, 0x78, 0x62 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_INVALID\_PARAMETER with a *DenyFlag* value of FALSE and a TargetSwAddress value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of FALSE and a TargetSwAddress value of NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.5 | 0x32deb7c7, 0x9e67, 0x459f, 0xbf, 0x4c, 0xbc, 0x80, 0x33, 0x31, 0x36, 0x05 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_INVALID\_PARAMETER with a *DenyFlag* value of TRUE and both TargetHwAddress and TargetSwAddress value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() when *DenyFlag* is TRUE and both TargetHwAddress and TargetSwAddress are not NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.6 | 0x87d47f39, 0x8d82, 0x40c4, 0xb9, 0x36, 0x2c, 0xf5, 0x8b, 0xa2, 0xd9, 0x32 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_ACCESS\_DENIED when the ARP cache entry of the same TargetSwAddress already exists and *Overwrite* is FALSE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of FALSE and with valid TargetSwAddress / TargetHwAddress values.  4. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of TRUE and with the same TargetSwAddress as the one used in the last call while *Overwrite* is FALSE.  The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.7 | 0xecc2942f, 0xd23e, 0x421e, 0x8a, 0x31, 0x3c, 0xe2, 0xdf, 0xee, 0x82, 0xcb | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_ACCESS\_DENIED when the ARP cache entry of the same TargetHwAddress already exists and Overwrite is FALSE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of FALSE and with valid TargetSwAddress / TargetHwAddress values.  4. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of TRUE and with the same TargetHwAddress as the one used in the last call while Overwrite is FALSE.  The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.8 | 0x31b66402, 0x4c9a, 0x486f, 0x9e, 0x68, 0xf5, 0xb1, 0x8b, 0x7b, 0xb4, 0xbf | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_ACCESS\_DENIED when the ARP cache entry of the same TargetHwAddress already exists and Overwrite is **FALSE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and with valid TargetSwAddress/TargetHwAddress .  4. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of **FALSE** and with the same TargetSwAddress/TargetHwAddress as the ones used in the last call while Overwrite is **FALSE**.  The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.9 | 0x14c76af4, 0x29ca, 0x4018, 0x85, 0x6d, 0xfb, 0xfa, 0xfb, 0xae, 0x02, 0xa6 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured and TargetHwAddress is valid, while *DenyFlag* is **TRUE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of TRUE and with valid TargetHwAddress .  The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.10 | 0x8f07a21d, 0xfca8, 0x4d4a, 0xa7, 0x18, 0xaf, 0x80, 0x27, 0x46, 0x84, 0x40 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured and TargetSwAddress is valid, while *DenyFlag* is **TRUE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of TRUE and a valid TargetSwAddress value.  The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.11 | 0xf7e1b57e, 0x8499, 0x49b7, 0xa1, 0x35, 0xe0, 0x25, 0x7a, 0x68, 0x7c, 0xca | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured and TargetSwAddress/TargetHwAddress are valid, while *DenyFlag* is **FALSE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and with valid TargetSwAddress*/*TargetHwAddress .  The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.12 | 0x203039cb, 0xbfce, 0x472f, 0x9d, 0x46, 0xfe, 0x53, 0xcd, 0x47, 0x42, 0xb6 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when Adding normal entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and with valid TargetSwAddress*/*TargetHwAddress .  The return status must be EFI\_SUCCESS.  4. Call EFI\_ARP\_PROTOCOL.Request() with the same TargetSwAddress as the one added.  5. Call EFI\_ARP\_PROTOCOL.Request() with the TargetHwAddress added into the entry cache, and compare the TargetHwAddress brought back by it, then verify if they are the same.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.13 | 0x7e93dc4e, 0x2731, 0x41d4, 0x96, 0x89, 0x27, 0x3a, 0xfe, 0xdc, 0x26, 0x40 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS When overwrite is TRUE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and with valid TargetSwAddress*/*TargetHwAddress .  4. Call EFI\_ARP\_PROTOCOL.Add() with a *DenyFlag* value of **FALSE** and with the same *TargetSwAddress* as the one used in the last call and another different TargetHwAddress , while overwrite is **TRUE**.  The return status must be EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with the same *TargetSwAddress* as the one added.  6. Call EFI\_ARP\_PROTOCOL.Request() with the TargetHwAddress added at the second time, and compare the TargetHwAddress brought back by it, then verify if they are the same.  7. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.14 | 0xa00cc3c8, 0x005c, 0x4aed, 0xa1, 0x5c, 0x3e, 0x91, 0xca, 0x56, 0x33, 0xe5 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding normal entry with Timeout set. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() with a DenyFlag value of FALSE and with valid TargetSwAddress*/*TargetHwAddress .  4. Call EFI\_ARP\_PROTOCOL.Add() to overwrite the exist entry with TimeoutValue set to be 50 seconds.  The return status must be EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with the same *TargetSwAddress* as the same one added.  6. Call EFI\_ARP\_PROTOCOL.Request() with the TargetHwAddress added at the second time, and compare the TargetHwAddress brought back, then verify if they are the same.  7. Stall 30 seconds and then call EFI\_ARP\_PROTOCOL.Request() and verify if the Address is correct again.  8. Stall 20 seconds to let entry timeout, then call EFI\_ARP\_PROTOCOL.Request(), and now the return status must be EFI\_NOT\_READY.  9. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.15 | 0x46eee5b0, 0x7a16, 0x4be3, 0x87, 0x9e, 0xb6, 0x4f, 0xaa, 0xd0, 0xc0, 0x65 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding normal entry after the request call. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress.  The return status must be EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with the same *TargetSwAddress* as the one used in Request().  The return status must be EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with the TargetHwAddress added, and compare the TargetHwAddress brought back by it, then verify if they are the same.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.16 | 0x01321dca, 0xe8d4, 0x4022, 0xb7, 0xa1, 0xd6, 0x69, 0xca, 0xcb, 0x52, 0x0b | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding denied entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry with the valid *TargetSwAddress*.  The return status must be EFI\_SUCCESS.  4. Call EFI\_ARP\_PROTOCOL.Request() with the same *TargetSwAddress* as the one used in the last call.  The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_ARP\_PROTOCOL.Request() with a TargetHwAddress value of “0.0.0.0.0.0”, and compare the TargetHwAddress brought back by it, then verify if they are the same.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.17 | 0x7856bfd5, 0x758a, 0x4bcf, 0x9d, 0xc9, 0x2e, 0x36, 0x9a, 0xea, 0xf7, 0xdf | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding denied entry with a overwrite value of **TRUE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry with the valid TargetHwAddress (0:2:3:4:5:6) and overwrite value of **TRUE**.  The return status must be EFI\_SUCCESS.  4. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161). The OS side should capture the request packet sent from the EUT side.  5. If captured, the OS side configures the ARP reply packet with source IP “172.16.210.161”, source Mac “0:2:3:4:5:6”. Then send the packet back to EUT side.  6. Then the OS side configures another ARP reply packet with source IP “172.16.210.161”, source Mac “0:2:3:4:5:7”. Then sends the second packet back to EUT side.  The return status must be **EFI\_ACCESS\_DENIED**.  7. Call EFI\_ARP\_PROTOCOL.Request() with a TargetHwAddress value of “0:2:3:4:5:7” and compare the TargetHwAddress brought back by it, then verify if they are the same.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.18 | 0xefcdb906, 0xa43a, 0x437f, 0x81, 0x35, 0xe0, 0xef, 0xea, 0xd3, 0xdc, 0x0a | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS – Add denied entry with overwrite is **TRUE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with the valid *TargetSwAddress*”172.16.210.161” and TargetHwAddress “0:2:3:4:5:6”.  4. Call EFI\_ARP\_PROTOCOL.Add() to overwrite the existed entry with a deny entry and the TargetHwAddress is still “0:2: 3:4:5:6”.  The return status must be EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161). The OS side should capture the request packet sent from the EUT side.  6. If having captured, the OS side configures the ARP reply packet with sender IP “172.16.210.161”, sender Mac “0:2:3:4:5:6”. Then send the packet back to EUT side.  7. Then the OS side configures another ARP reply packet with sender IP “172.16.210.161”, sender Mac “0:2:3:4:5:7”. Then send the second packet back to EUT side.  The return status must be **EFI\_ACCESS\_DENIED**.  8. Compare the TargetHwAddress brought back by EFI\_ARP\_PROTOCOL.Request() with “0:2:3:4:5:7” and verify if they are same.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.19 | 0xccf3f6de, 0x5d43, 0x4dfa, 0xbe, 0x65, 0xe8, 0xc5, 0x3d, 0xe0, 0xdf, 0x95 | EFI\_ARP\_PROTOCOL.Add() – returns EFI\_SUCCESS when adding denied entry with overwrite value of **TRUE**. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with the valid *TargetSwAddress*”172.16.210.161” and TargetHwAddress “0:2:3:4:5:6”.  4. Call EFI\_ARP\_PROTOCOL.Add() to overwrite the existed entry with a deny entry and the TargetHwAddress is still “0:2: 3:4:5:6”.  The return status must be EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161). The OS side should capture the request packet sent from the EUT side.  6. If having captured, the OS side configures the ARP reply packet with sender IP “172.16.210.161”, sender Mac “0:2:3:4:5:6”. Then send the packet back to EUT side.  7. Then the OS side configures another ARP reply packet with sender IP “172.16.210.161”, sender Mac “0:2:3:4:5:7”. Then send the second packet back to EUT side.  The return status must be **EFI\_ACCESS\_DENIED**.  8. Compare the TargetHwAddress brought back by EFI\_ARP\_PROTOCOL.Request() with “0:2:3:4:5:7” and verify if they are same.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment.  9. Call EFI\_ARP\_PROTOCOL.Add() to overwrite the exist entry with a deny entry whose *TargetSwAddress* is “172.16.210.161”.  The return status must be EFI\_SUCCESS. |
| 5.24.1.1.19 (continued) |  |  | 10. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_ACCESS\_DENIED. |
| 5.24.1.1.20 | 0xb294d2a8, 0xb3f7, 0x4ec0, 0xa1, 0x4c, 0x74, 0xa9, 0x6d, 0xcc, 0x56, 0xb7 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding denied entry with Timeout set. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry whose *TargetSwAddress* is ”172.16.210.161” and a Timeout value of set to be 50.  The return status must be EFI\_SUCCESS.  4. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161).  The return status must be  **EFI\_ACCESS\_DENIED** and the return TargetHwAddress must be “0:0:0:0:0:0”.  5. Stall 30 seconds, call EFI\_ARP\_PROTOCOL.Request() again with valid *TargetSwAddress*”172.16.210.161”.  The return status must be **EFI\_ACCESS\_DENIED** and the return TargetHwAddress must be “0:0:0:0:0:0”.  6. Stall 20 seconds, call EFI\_ARP\_PROTOCOL.Request() again with valid *TargetSwAddress*”172.16.210.161”.This time the return status must be EFI\_NOT\_READY.  7. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.1.21 | 0x48d3af46, 0x09db, 0x4c34, 0xb9, 0x1e, 0xb0, 0x48, 0xe0, 0x1a, 0x9d, 0x17 | EFI\_ARP\_PROTOCOL.Add() - returns EFI\_SUCCESS when adding denied entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry whose *TargetSwAddress* is ”172.16.210.161”.  The return status must be EFI\_SUCCESS.  5. Verify if the return TargetHwAddress is “0:0:0:0:0:0”.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

### Cancel()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.2.1 | 0x56539533, 0xee7d, 0x4e57, 0xaf, 0x89, 0x2a, 0xa7, 0x3d, 0x82, 0x36, 0x61 | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_INVALID\_PARAMETER with a TargetSwAddress value of invalid. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid *TargetSwAddress* (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with a TargetSwAddress value of NULL and a ResolvedEvent value other than NULL.  The return status must be EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.2 | 0xe9118c8c, 0x1e0e, 0x451b, 0x8f, 0x4f, 0xd6, 0x37, 0x8b, 0x82, 0xf3, 0x6a | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_INVALID\_PARAMETER with an invalid *Event* value. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with an Event value of NULL and a TargetSwAddress value of not NULL.  The return status must be EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.3 | 0x8b6cee26, 0x52c3, 0x45fe, 0xae, 0x7e, 0xfa, 0xa6, 0xd9, 0xc1, 0x80, 0xc7 | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_NOT\_FOUND with Event not found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with valid TargetSwAddress while *Event* is not issued by the EFI\_ARP\_PROTOCOL.Request().  The return status must be EFI\_NOT\_FOUND.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.4 | 0x09e570d8, 0xdc54, 0x4458, 0xb9, 0xa3, 0x58, 0x4f, 0xeb, 0x64, 0xc0, 0xdb | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_NOT\_FOUND with TargetSwAddress not found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with a TargetSwAddress value of “172.16.210.160” which is not issued by the EFI\_ARP\_PROTOCOL.Request().  The return status must be EFI\_NOT\_FOUND.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.5 | 0xbecb34c1, 0xbfed, 0x43c1, 0x81, 0xfe, 0xc5, 0x9f, 0x8d, 0xf4, 0xf2, 0x5a | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_NOT\_FOUND with TargetSwAddress not found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with a TargetSwAddress value of “172.16.210.160” which is not issued by the EFI\_ARP\_PROTOCOL.Request().  The return status must be EFI\_NOT\_FOUND.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.6 | 0x9511bd75, 0x971b, 0x4e14, 0xb2, 0xd1, 0x44, 0x9b, 0x2e, 0x0a, 0x90, 0x78 | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_NOT\_FOUND with both the TargetSwAddress and Event value of NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel()with both the TargetSwAddress and Event value of NULL.  The return status must be EFI\_NOT\_FOUND.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.7 | 0xd45a3a11, 0xf14c, 0x4dc2, 0x8d, 0x91, 0xfe, 0x0b, 0xa7, 0x14, 0xac, 0x97 | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Configure() with a *ConfigData* value of NULL to reset the ARP driver instance.  5. Call EFI\_ARP\_PROTOCOL.Cancel() with valid parameters which Request () had issued.  The return status must be EFI\_NOT\_STARTED.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.2.8 | 0x1b5f4fbb, 0x0d7d, 0x4b4c, 0xad, 0x29, 0x7b, 0x8b, 0xa5, 0x3e, 0xab, 0xc6 | EFI\_ARP\_PROTOCOL.Cancel() - returns EFI\_SUCCESS when canceling request. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress (172.16.210.161).  The return status must be  EFI\_NOT\_READY.  4. Call EFI\_ARP\_PROTOCOL.Cancel() with parameters issued by EFI\_ARP\_PROTOCOL.Request().  The return status must be EFI\_SUCCESS.  5. Then the OS side shouldn’t capture any packet sent from the EUT side.  6. Call EFI\_ARP\_PROTOCOL.Request() again, the return status should be EFI\_NOT\_READY and the return TargetHwAddress should be “0:0:0:0:0:0”.  7. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

### Configure()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.3.1 | 0xcdbd6b40, 0x3b1f, 0x4cd5, 0x8b, 0xd9, 0x33, 0x99, 0x63, 0x8e, 0x80, 0x35 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER with invalid SwAddressLength. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 0.  The return status must be  EFI\_INVALID\_PARAMETER.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.2 | 0x072fb583, 0x5885, 0x4b2e, 0x99, 0x72, 0xe7, 0x2c, 0x5b, 0xd3, 0x34, 0xd5 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER with invalid StationAddress. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a StationAddress value of NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.3 | 0x3a8fde87, 0x1d5d, 0x462e, 0x8e, 0x3c, 0x01, 0xec, 0x3b, 0x9f, 0xf7, 0x5b | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_ACCESS\_DENIEDwhen the StationAddress is different from the one that has already registered. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with different StationAddress with the one that has already registerd.  The return status must be  EFI\_ACCESS\_DENIED.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.4 | 0x2747e156, 0xee8d, 0x4533, 0xb4, 0x63, 0xa8, 0xb0, 0x5f, 0xe0, 0x6b, 0xc1 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_ACCESS\_DENIED when the *SwAddressLength* is different from the one that has already registered. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with a different *SwAddressLength* from the one that has already registered.  The return status must be  EFI\_ACCESS\_DENIED.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.5 | 0x790466e9, 0x0f6e, 0x4a3d, 0xa7, 0xdb, 0x5c, 0xb5, 0x6b, 0x59, 0x01, 0xef | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_ACCESS\_DENIED when the *SwAddressLength* is different from the one that has already registered. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with different *SwAddressLength* from the one that has already registerd.  The return status must be  EFI\_ACCESS\_DENIED.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.6 | 0xab90d4d0, 0xa0ac, 0x44c3, 0xb7, 0x03, 0x12, 0xdd, 0x10, 0x37, 0x74, 0x1d | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_ACCESS\_DENIED when the *SwAddressType* is different from the one that has already registered. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with different *SwAddressType* from the one that has already registered.  The return status must be  EFI\_ACCESS\_DENIED.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.7 | 0xf41970a5, 0x733f, 0x47d4, 0x8f, 0x52, 0xd5, 0x5c, 0x86, 0xd7, 0x96, 0x9f | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_ACCESS\_DENIED when the *SwAddressType* is different from the one that has already registered. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with different *SwAddressType* from the one that has already registerd.  The return status must be  EFI\_ACCESS\_DENIED.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.8 | 0x8b9bcd53, 0x9a83, 0x45c0, 0x9b, 0x5f, 0xf2, 0x99, 0x2c, 0x78, 0xf8, 0x1b | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS with valid parameters. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet, and send back the ARP reply packet filled with source IP”172.16.210.161” and source MAC “0:2:3:4:5:6”.  5. The return status must be EFI\_NOT\_READY and the return TargetHwAddress should be“0:2:3:4:5:6”.  6. The OS side sends a request packet to resolve IP “172.16.210.102” with the source IP”172.16.210.161” and source MAC”0:2:3:4:5:7”.  7. Then OS should capture the ARP reply packet sent from the EUT side.  8. If having captured, call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  9. The return TargetHwAddress must be “0:2:3:4:5:7”, and  The return status must be  EFI\_SUCCESS.  10. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.9 | 0xeee99be3, 0xa701, 0x4612, 0x98, 0x1a, 0xad, 0x8c, 0x06, 0x4a, 0xd7, 0xa5 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS with valid parameters. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Configure() with a *ConfigData* value of NULL to reset the ARP driver instance.  4. Call EFI\_ARP\_PROTOCOL.Request(), the return status should be EFI\_NOT\_STARTED.  5. Call EFI\_ARP\_PROTOCOL.Configure() again with valid parameters.  6. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “172.16.210.161”.  7. The OS side should capture the request packet, and send back the ARP reply packet filled with source IP”172.16.210.161” and source MAC “0:2:3:4:5:6”.  The return status must be EFI\_SUCCESS.  8. Verify if the return TargetHwAddress is “0:2:3:4:5:6”.  9 Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.10 | 0x4423e5b6, 0x6f3c, 0x41c3, 0x8c, 0x50, 0xea, 0x71, 0xd8, 0x52, 0x3b, 0x74 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS with parameter timeout set. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters with timeout set to be 50.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet, and send back the ARP reply packet filled with source IP”172.16.210.161” and source MAC “0:2:3:4:5:6”.  The return status must be EFI\_SUCCESS.  5. Verify if the return TargetHwAddress is “0:2:3:4:5:6”.  6. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “172.16.210.161” again.  7. The return status should be EFI\_SUCCESS and the TargetHwAddress be “0:2:3:4:5:6”.  8. Stall 30 seconds, call EFI\_ARP\_PROTOCOL.Request() like the step 6 again.  9. The return status should be EFI\_SUCCESS and the TargetHwAddress be “0:2:3:4:5:6”.  10. Stall 20 seconds, call EFI\_ARP\_PROTOCOL.Request() like the step 6 again.  11. This time the return status should be **EFI\_NOT\_READY** and the TargetHwAddress be “0:0:0:0:0:0”.  12. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.11 | 0x79f9aacd, 0xfb79, 0x4746, 0x8f, 0x5c, 0x38, 0x4b, 0xf9, 0x2e, 0x0a, 0x53 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS and packet count is correct when *ConfigData.RetryCount* is 5. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with  The return status must be EFI\_SUCCESS.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet for 5 times.  The return status should be **EFI\_NOT\_READY** and the TargetHwAddress should be “0:0:0:0:0:0”.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.12 | 0x970634b0, 0x57a5, 0x40c5, 0x92, 0x01, 0xcb, 0xb2, 0x00, 0x8c, 0xbb, 0x43 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS with valid parameters. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with EntryTimeOut, RetryCount, RetryTimeOut value of 0.  3. Call EFI\_ARP\_PROTOCOL.Configure() with a *EntryTimeOut* value of 5000000, a *RetryCount* value of 30, and a *RetryTimeOut* value of 5000000.  4. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet.  5. If having captured, the OS side sends an ARP reply back with source IP “172.16.210.161”, source MAC “0:2:3:4:5:6”.  The return status must be EFI\_SUCCESS.  In addition, the TargetHwAddress should be “0:2:3:4:5:6”.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.13 | 0xc6c2e0c3, 0x9715, 0x48a8, 0x86, 0xba, 0x36, 0xbd, 0xac, 0x70, 0x71, 0x6d | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS when SwAddressLength is 1. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 1.  The return status must be EFI\_SUCCESS.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “171.16.210.161”.  4. The OS side should capture the request packet.  5. If having captured, the OS side sends an ARP reply back with source IP “171”, source MAC “0:2:3:4:5:6”, Target IP “172”.  The return status should be **EFI\_NOT\_READY** and the TargetHwAddress should be “0:2:3:4:5:6”.  6. The OS sends an ARP request to the broadcast address with source IP “171” and source MAC” 0:2:3:4:5:6” to resolve Target IP “172”.  7. The OS should capture the packet.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.3.14 | 0xf4972462, 0x1dc5, 0x484f, 0xb6, 0x55, 0x8b, 0x2e, 0x89, 0xec, 0x2c, 0x46 | EFI\_ARP\_PROTOCOL.Configure() - returns EFI\_SUCCESS when SwAddressLength is 16. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 16.  The return status must be EFI\_SUCCESS.  3. Call EFI\_ARP\_PROTOCOL.Request() with valid TargetSwAddress “171.16.210.161”.  4. The OS side should capture the request packet.  5. If having captured, the OS side sends an ARP reply back filled with source IP “172.16.210.161.0.0.0.0.0.0.0.0.0.0.0.0”, source MAC “0:2:3:4:5:6”, Target IP “172.16.210.102.0.0.0.0.0.0.0.0.0.0.0.0”.  The return status should be “EFI\_NOT\_READY” and the TargetHwAddress “0:2:3:4:5:6”.  6. The OS sends an ARP request to the broadcast address with source IP “172.16.210.161.0.0.0.0.0.0.0.0.0.0.0.0” and source MAC” 0:2:3:4:5:6” to resolve Target IP “172.16.210.102.0.0.0.0.0.0.0.0.0.0.0.0”.  7. The OS should capture the packet.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

### Delete()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.4.1 | 0x1ba44874, 0x8e16, 0x422e, 0x97, 0x73, 0x43, 0x6f, 0x06, 0x2f, 0x6f, 0x01 | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_NOT\_FOUND when the specified deletion key of MacAddress is not found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete() to delete the added entry with key specified as IpAddress which is the same as the TargetSwAddress of added entry.  5. Call EFI\_ARP\_PROTOCOL.Delete() again with key specified as MacAddress which is the same with the TargetHwAddress of added entry.  The return status must be  EFI\_NOT\_FOUND.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.2 | 0xab90c68f, 0xa0af, 0x4188, 0x9a, 0x74, 0x66, 0x5a, 0x9c, 0x8a, 0x4b, 0x92 | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_NOT\_FOUND when the specified deletion key of IpAddress was not found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete() to delete the added entry with key specified as MacAddress which is the same with the TargetHwAddress of the added entry.  5. Call EFI\_ARP\_PROTOCOL.Delete() again with key specified as IpAddress which is the same as the TargetSwAddress of the added entry.  The return status must be  EFI\_NOT\_FOUND.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.3 | 0xe03b088c, 0x8cf0, 0x4db9, 0xa0, 0xc1, 0x77, 0xa9, 0xf4, 0x1a, 0xce, 0x0a | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_NOT\_STARTED when ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Delete() with key specified as IpAddress.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.4 | 0x4b8b9c7f, 0x96fc, 0x41fb, 0xbc, 0x58, 0x32, 0x1d, 0x13, 0x75, 0xed, 0x7b | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_NOT\_STARTED when ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Delete() with key specified as MacAddress.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.5 | 0x494278d5, 0x4ff5, 0x4ac5, 0x9e, 0xd7, 0xfa, 0x53, 0xa1, 0x7e, 0x03, 0xed | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_SUCCESS when deleting the normal entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete() to delete the added entry with key specified as IpAddress which is the same as the TargetSwAddress of the added entry.  The return status must be  EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress which is the same as the TargetSwAddress of the added entry.  The return status must be **EFI\_NOT\_READY**.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.6 | 0xd2477a4f, 0xef0d, 0x46a2, 0x9a, 0x86, 0x32, 0x82, 0x3f, 0x2c, 0x4b, 0xa3 | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_SUCCESS when deleting the normal entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete() to delete the added entry with key specified as MacAddress which is the same as the TargetHwAddress of the added entry.  The return status must be  EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress which is the same as the TargetSwAddress of the added entry.  The return status must be **EFI\_NOT\_READY**.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.7 | 0x1e618ee9, 0x40b9, 0x4f79, 0xb9, 0x26, 0xee, 0x2b, 0xa3, 0x73, 0x51, 0x4c | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_SUCCESS when deleting all entries. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete()with AddressBuffer set to NULL and *BySwAddress* set to **TRUE** to delete all entries.  The return status must be  EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress which is the same as the TargetSwAddress of the added entry.  The return status must be **EFI\_NOT\_READY**.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.4.8 | 0x34a1c3fa, 0xf335, 0x471d, 0x83, 0x03, 0xef, 0x50, 0x98, 0xa3, 0x05, 0x30 | EFI\_ARP\_PROTOCOL.Delete() - returns EFI\_SUCCESS when deleting all entries. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Delete()with AddressBuffer set to NULL and *BySwAddress* set to **FALSE** to delete all entries.  The return status must be  EFI\_SUCCESS.  5. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress which is the same as the TargetSwAddress of the added entry.  The return status must be **EFI\_NOT\_READY**.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

### Find()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.5.1 | 0x16bcb5a1, 0xf2c1, 0x419a, 0x8a, 0xf1, 0xea, 0x4b, 0xd9, 0x89, 0x5f, 0xda | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_INVALID\_PARAMETER when both EntryLength and EntryCount are NULL and Refresh is FALSE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Find() with both EntryLength and EntryCount are NULL, BySwAddress is TRUE,and Refresh is FALSE.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.2 | 0x210ce61b, 0xa76d, 0x4c56, 0xbe, 0x24, 0xe7, 0xb8, 0x11, 0x50, 0xd7, 0x10 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_INVALID\_PARAMETER when both EntryLength and EntryCount are NULL and Refresh is FALSE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Find() with both the EntryLength and EntryCount value of NULL and a BySwAddress value of FALSE while Refresh is FALSE.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.3 | 0xf6244c19, 0x6e26, 0x4b9e, 0x84, 0xd3, 0x43, 0x65, 0xb7, 0x6c, 0x17, 0x39 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_INVALID\_PARAMETER when both EntryLength and EntryCount are NULL and Entries are not NULL while Refresh is TRUE. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Find() with both EntryLength and EntryCount are NULL and Entries are not NULL while Refresh is TRUE.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.4 | 0x5508b3bb, 0x7062, 0x46e7, 0xa4, 0x31, 0xf2, 0xed, 0x67, 0x0b, 0xee, 0x61 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with the specified IpAddress.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.5 | 0x9d95d0d7, 0x8e23, 0x4db4, 0xb1, 0xb6, 0x76, 0xc2, 0xee, 0xdc, 0x0f, 0x4f | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with the specified MacAddress.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.6 | 0x056e9bc8, 0xb221, 0x4063, 0xa2, 0x59, 0x19, 0xe0, 0x08, 0xff, 0x86, 0xda | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with the specified IpAddress and a *Refresh* value of **TRUE**.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.7 | 0xc8b3f76f, 0x5ec3, 0x40f6, 0x98, 0x72, 0x31, 0xea, 0x23, 0x6f, 0xc8, 0x08 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with the specified MacAddress and a *Refresh* value of **TRUE**.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.8 | 0xe0814da9, 0x47fb, 0x443d, 0x84, 0xce, 0xaf, 0x65, 0x01, 0x33, 0x3f, 0x69 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with AddressBuffer set to NULL and *BySwAddress* set to **FALSE** while *Refresh* is **TRUE** so as to *refresh* all the entries.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.9 | 0xdb367aca, 0xbc94, 0x4c36, 0x92, 0xbd, 0x3b, 0xba, 0x16, 0x9e, 0xc0, 0x6e | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_FOUND when no matching entries were found. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Find() with AddressBuffer set to NULL and *BySwAddress* set to **TRUE** while *Refresh* is **TRUE** so as to *refresh* all the entries.  The return status must be  EFI\_NOT\_FOUND.  4. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.10 | 0x883abd28, 0xd498, 0x4868, 0xb1, 0xa7, 0xe3, 0x22, 0xd1, 0x22, 0x6a, 0x12 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress when *Refresh* is **FALSE**.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.11 | 0x9301dc5d, 0xc1f2, 0x4858, 0x93, 0xcf, 0xda, 0x77, 0x96, 0xa6, 0x2a, 0x8f | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddressand *Refresh* is **TRUE**.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.12 | 0x6350837b, 0x0e0e, 0x4241, 0xbd, 0x10, 0x87, 0x77, 0xb3, 0x35, 0xa7, 0xd3 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first call to EFI\_ARP\_PROTOCOL.Add(), while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress that is the same as the TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add() call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2. |
| 5.24.1.5.13 | 0x81716a64, 0x63db, 0x4625, 0xad, 0x87, 0xf1, 0x23, 0x46, 0x94, 0x9f, 0xa9 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the first EFI\_ARP\_PROTOCOL.Add(), while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress that is the same as the TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add() call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2.  6. Call EFI\_ARP\_PROTOCOL.Delete() to delete the entry added in the second time.  7. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress that is the same as the TargetSwAddress in the first EFI\_ARP\_PROTOCOL.Add() call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x1.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.14 | 0x34fd32ad, 0x8e3e, 0x4f49, 0xa0, 0xd7, 0xcc, 0xca, 0xac, 0xa3, 0xce, 0x1f | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first call to EFI\_ARP\_PROTOCOL.Add(), while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with AddressBuffer set to NULL to find all the entries.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2. |
| 5.24.1.5.15 | 0x3b98d05b, 0x0cd1, 0x41a3, 0xa4, 0x8b, 0x2c, 0xe3, 0x37, 0x6e, 0x0f, 0x09 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the first EFI\_ARP\_PROTOCOL.Add(), while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress that is the same as the TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add() call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2.  6. Call EFI\_ARP\_PROTOCOL.Delete() to delete the entry added in the second time.  7. Call EFI\_ARP\_PROTOCOL.Find() with AddressBuffer set to NULL to find all the entries.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x1.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.16 | 0x0c8090e4, 0xa0c5, 0x427f, 0xa2, 0xf9, 0x34, 0xd8, 0x10, 0x91, 0x11, 0x2f | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry with refreshing. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with timeout set to 50s.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first all to EFI\_ARP\_PROTOCOL.Add(),while the TargetSwAddress is different. In addition, timeout is set to 50s.  5. Stall 20 s.  6. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add( ) call when **refresh** is **TRUE**.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2.  7. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.17 | 0x89474dd0, 0x461b, 0x49c3, 0xa8, 0x5e, 0xaa, 0x16, 0x74, 0xad, 0x6f, 0x9d | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry without refreshing. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with timeout set to 50s.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first all to EFI\_ARP\_PROTOCOL.Add(),while the TargetSwAddress is different. In addition, timeout is set to 50s.  5. Stall 20 s.  6. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the **EFI\_ARP\_PROTOCOL.Add(**) call when *refresh* is **TRUE**.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2.  7. Stall 35 s.  8. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the **EFI\_ARP\_PROTOCOL.Add()** call and a *refresh* value of **FALSE**.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x16 and the return *EntryCount* should be 0x2.  9. Stall 20 s.  10. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add( ) call with a *refresh* value of **FALSE**.  The return status must be **EFI\_NOT\_FOUND**.  11. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.18 | 0x97fbb88f, 0x0566, 0x4b4b, 0x93, 0xfe, 0x5e, 0xc9, 0xad, 0x60, 0x8d, 0x7e | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry with a SwAddressLength value of 16. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 16.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first call to EFI\_ARP\_PROTOCOL.Add(), while TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x22 and the return *EntryCount* should be 0x2.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.19 | 0xcbd6f47d, 0x2edc, 0x4235, 0x91, 0x50, 0x1f, 0xba, 0xe9, 0x07, 0xac, 0x26 | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry with a SwAddressLength value of 16. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 16.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the one used in the first call to **EFI\_ARP\_PROTOCOL.Add()**, while TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as TargetHwAddress in the **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  In addition, the return **EntryLength** should be 0x22 and the return **EntryCount** should be 0x2.  6. Call EFI\_ARP\_PROTOCOL.Delete() to delete the entry added in the second time.  7. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress the same as TargetSwAddress in the first **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x22 and the return *EntryCount* should be 0x1.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.20 | 0x630e139e, 0x287a, 0x456c, 0xa5, 0xf7, 0x58, 0x35, 0xaf, 0x42, 0xf7, 0x7d | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry with a SwAddressLength value of 1. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 1.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the first **EFI\_ARP\_PROTOCOL.Add()**, while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as the TargetHwAddress in the EFI\_ARP\_PROTOCOL.Add() call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x13 and the return *EntryCount* should be 0x2.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.5.21 | 0xf7c0f95a, 0xfaa2, 0x4577, 0x8c, 0x66, 0xb4, 0x76, 0x82, 0x00, 0x85, 0x5d | EFI\_ARP\_PROTOCOL.Find() - returns EFI\_SUCCESS when finding the entry with a SwAddressLength value of 1. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with a SwAddressLength value of 1.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add another normal entry with the same TargetHwAddress as the first **EFI\_ARP\_PROTOCOL.Add()**, while the TargetSwAddress is different.  5. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as the TargetHwAddress in the **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x13 and the return *EntryCount* should be 0x2.  6. Call EFI\_ARP\_PROTOCOL.Delete() to delete the entry added in the second time.  7. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress the same as the TargetSwAddress in the first **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  In addition, the return *EntryLength* should be 0x13 and the return *EntryCount* should be 0x1.  8. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

### Flush()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.6.1 | 0x057bd5b9, 0xc869, 0x4446, 0xa9, 0xd1, 0x79, 0x07, 0xdc, 0xf8, 0x74, 0xf0 | EFI\_ARP\_PROTOCOL.Flush() - returns EFI\_NOT\_FOUND when flushing the entry again after the first flush. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal permanent entry 1.  4. Call EFI\_ARP\_PROTOCOL.Add() to add a normal dynamic entry 2.  5. Call EFI\_ARP\_PROTOCOL.Add() to add a normal permanent entry 3.  6. Call EFI\_ARP\_PROTOCOL.Add() to add a normal dynamic entry 4.  7. Call EFI\_ARP\_PROTOCOL.Flush() to remove all dynamic cache entries.  8. Call EFI\_ARP\_PROTOCOL.Flush() again.  The return status must be  EFI\_NOT\_FOUND.  9. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.6.2 | 0xe34bd9b5, 0x94b2, 0x422a, 0xb8, 0xd1, 0x6c, 0x18, 0x07, 0x6c, 0xef, 0xbb | EFI\_ARP\_PROTOCOL.Flush() - returns EFI\_NOT\_STARTED when the arp driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Flush().  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.6.3 | 0xf2cc7ff1, 0x9049, 0x4daa, 0xa3, 0x4d, 0xca, 0x55, 0xf5, 0xe9, 0x67, 0x55 | EFI\_ARP\_PROTOCOL.Flush() - returns EFI\_SUCCESS when flushing the entry. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.e  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal permanent entry 1.  4. Call EFI\_ARP\_PROTOCOL.Add() to add a normal dynamic entry 2 – timeout is 50s.  5. Call EFI\_ARP\_PROTOCOL.Add() to add a normal permanent entry 3.  6. Call EFI\_ARP\_PROTOCOL.Add() to add a normal dynamic entry 4 – timeout is 50s.  7. Call EFI\_ARP\_PROTOCOL.Flush() to remove all dynamic cache entries.  The return status must be  EFI\_SUCCESS.  8. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress the same as the TargetSwAddress in the first **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  9. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress the same as the TargetHwAddress in the first **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be EFI\_SUCCESS.  10. Call EFI\_ARP\_PROTOCOL.Find() with specified key of IpAddress the same as the TargetSwAddress in the second **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be **EFI\_NOT\_FOUND**.  11. Call EFI\_ARP\_PROTOCOL.Find() with specified key of MacAddress as same as the TargetHwAddress in the second **EFI\_ARP\_PROTOCOL.Add()** call.  The return status must be **EFI\_NOT\_FOUND**.  14. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()to destroy the newly created Arp child handle and clean up the environment. |

### Request()

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| Number | GUID | Assertion | Test Description |
| 5.24.1.7.1 | 0x464366ea, 0xf5a5, 0x47a0, 0x8b, 0x3b, 0x67, 0x09, 0x89, 0xcf, 0x43, 0xd2 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_INVALID\_PARAMETER when TargetHwAddress is NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Request() with a TargetHwAddress value of NULL ,and both the ResolvedEvent and TargetSwAdddress value other than NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.2 | 0xb4df082c, 0xb895, 0x4ec8, 0xac, 0xc7, 0x26, 0x58, 0x87, 0xc7, 0xe3, 0xbb | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_INVALID\_PARAMETER when TargetHwAddress is NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Request() with a TargetHwAddress value of NULL ,a ResolvedEvent value of NULL, and a TargetSwAdddress value other than NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.3 | 0x58d0454a, 0xeed1, 0x4ccd, 0xa3, 0xd0, 0x10, 0xa5, 0xa8, 0x71, 0x46, 0x38 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_INVALID\_PARAMETER when TargetHwAddress TargetHwAddress is NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Request() with a TargetHwAddress value of NULL, and both the ResolvedEvent and *TargetSwAdddress* value of NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.4 | 0xe726cb6e, 0x3ee3, 0x474e, 0x9c, 0x1c, 0xa7, 0xc7, 0xa6, 0x93, 0x85, 0x1d | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_ACCESS\_DENIED when the requested Address is present in the deny address list. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry.  4. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry whose TargetSwAddress is the same as the one used in the first Add() call to overwrite the entry first added.  5. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress the same as the one used in the call to EFI\_ARP\_PROTOCOL.Add().  The return status must be  EFI\_ACCESS\_DENIED.  In addition, the return TargetHwAddress should be 0:0:0:0:0:0.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.5 | 0xd774703f, 0x7ed8, 0x48da, 0x9f, 0x86, 0x5e, 0xf8, 0x19, 0x47, 0xb6, 0x47 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Request() when both TargetSwAddress and ResolvedEvent are not NULL.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.6 | 0x122d41e6, 0x252a, 0x4afb, 0xa2, 0x47, 0x03, 0x56, 0xd5, 0x3c, 0x4a, 0x64 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_NOT\_STARTED when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Request() when TargetSwAddress is not NULL and ResolvedEvent is NULL.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.7 | 0xca3946d0, 0x64ff, 0x4139, 0x97, 0x66, 0x82, 0x91, 0xcb, 0xc1, 0x12, 0x09 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_NOT\_STARTED – when the ARP driver instance has not been configured. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Request() when both TargetSwAddress and ResolvedEvent are NULL.  The return status must be  EFI\_NOT\_STARTED.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.8 | 0xf4b08f82, 0xdafd, 0x4618, 0x94, 0xed, 0x15, 0xf8, 0x54, 0xce, 0xe3, 0x9f | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_NOT\_READY – when the request has been started and is not finished. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet and send back the reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:6”.  The return status must be  EFI\_NOT\_READY.  In addition, the return TargetHwAddress should be “0:2:3:4:5:6”.  10. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.9 | 0x3d6668d9, 0x631c, 0x4cee, 0xae, 0xc9, 0xc1, 0x0f, 0x3f, 0xe6, 0xee, 0x27 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_NOT\_READY – when the request has been started and is not finished. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet and send back the reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:6”.  The return status must be  EFI\_NOT\_READY.  In addition, the return TargetHwAddress should be “0:2:3:4:5:6”.  5. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargetHwAddress “0:2:3:4:5:6”.  6. Call EFI\_ARP\_PROTOCOL.Add() to add a deny entry with the same TargetHwAddress as the one used in the first Add( ) to overwrite the entry first added.  7. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  8. The OS side should capture the request packet and send back the first reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:6”.  9. Then OS sends back the second reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:7”.  The return status must be  EFI\_NOT\_READY.  In addition, the return TargetHwAddress should be “0:2:3:4:5:7”.  10. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.10 | 0xe37f681b, 0xab41, 0x4370, 0xab, 0x02, 0xf6, 0xd5, 0xfb, 0x0a, 0xf2, 0xb7 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when the data was copied from the ARP cache into the TargetHwAddress buffer. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet and validate whether the packet is rightly sent from the EUT side.  5. The OS sends back the reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:6”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress “0:2:3:4:5:6”.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.11 | 0x93e9a6d8, 0xb732, 0x40d7, 0x8d, 0x1e, 0xe5, 0xdb, 0xa6, 0xf6, 0x02, 0x1e | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when the data was copied from the ARP cache into the TargetHwAddress buffer. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  4. The OS side should capture the request packet and validate whether the packet is rightly sent from the EUT side.  5. The OS sends back the reply packet with SourceIp “172.16.210.161”, SourceMac “0:2:3:4:5:6”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress “0:2:3:4:5:6”.  6. Call EFI\_ARP\_PROTOCOL.Request() with broadcast destination address to resolve TargetSwAddress “172.16.210.161”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “0:2:3:4:5:6”.  7. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.12 | 0xa227797d, 0x00b5, 0x4ff0, 0xb4, 0x62, 0x46, 0x87, 0xa1, 0x31, 0xa0, 0x1c | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when the data was copied from the ARP cache into the TargetHwAddress buffer. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargeHwAddress “0:2:3:4:5:6”  4. Call EFI\_ARP\_PROTOCOL.Request() with TargetSwAddress “172.16.210.161”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “0:2:3:4:5:6”.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.13 | 0xd958bbd5, 0x3429, 0x4b94, 0x9f, 0xe5, 0x8e, 0xe1, 0xf4, 0x8b, 0xfd, 0xd2 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when requesting the entry whose TargetSwAddress is a multicast IP address. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargeHwAddress “0:2:3:4:5:6”  4. Call EFI\_ARP\_PROTOCOL.Request() to resolve multicast IP address “224.0.1.2”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “1:0:5e:0:1:2”.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.7.14 | 0x46146a28, 0x7af5, 0x43c5, 0xb7, 0xd1, 0x6f, 0xfb, 0xd6, 0xa4, 0x89, 0x97 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when requesting the entry whose TargetSwAddress is a multicast IP address. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargetHwAddress “0:2:3:4:5:6”  4. Call EFI\_ARP\_PROTOCOL.Request() to resolve multicast IP address “238.255.255.255”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress is “1:0:5e:7f: ff: ff”.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.15 | 0x50ecb99e, 0xfdab, 0x441c, 0x85, 0x08, 0x92, 0x5f, 0x1b, 0xdf, 0x42, 0x4b | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when requesting the entry whose TargetSwAddress is NULL. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargeHwAddress “0:2:3:4:5:6”  4. Call EFI\_ARP\_PROTOCOL.Request() when TargetSwAddress is NULL.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “ff: ff: ff: ff: ff: ff”. (Network interface hardware broadcast address).  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.16 | 0x50d9cb20, 0x1177, 0x4b13, 0xbc, 0x41, 0xf0, 0xf3, 0x2a, 0x3d, 0xf9, 0x02 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when requesting the entry whose TargetSwAddress is “255.255.255.255”. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Add() to add a normal entry with TargetSwAddress “172.16.210.161” and TargeHwAddress “0:2:3:4:5:6”  4. Call EFI\_ARP\_PROTOCOL.Request() when TargetSwAddress is “255.255.255.255”.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “ff: ff: ff: ff: ff: ff”. (Network interface hardware broadcast address).  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |
| 5.24.1.7.17 | 0xf7140dcf, 0x0d15, 0x438a, 0xa3, 0x4d, 0x47, 0x23, 0x97, 0x6f, 0x0b, 0xc8 | EFI\_ARP\_PROTOCOL.Request() - returns EFI\_SUCCESS when calling Request () twice with the same TargetSwAddress. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Call EFI\_ARP\_PROTOCOL.Request() when TargetSwAddress is “172.16.210.161”.  The return status should be **EFI\_NOT\_READY**.  4. Call EFI\_ARP\_PROTOCOL.Request() again when TargetSwAddress is “172.16.210.161”.  The return status should be **EFI\_NOT\_READY**.  5. The OS side should capture the request packet and send back the reply packet with SouceIP “172.16.210.161” and SourceMac ”0:2:3:4:5:6”.  The return EventContext should be 2.  The return status must be  EFI\_SUCCESS.  In addition, the return TargetHwAddress should be “0:2:3:4:5:6”.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment |

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.1.8.1 | 0xd01e591b, 0x6b83, 0x417c, 0xbf, 0xe0, 0x1d, 0xb3, 0x78, 0xea, 0x2c, 0x78 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_INVALID\_PARAMETER with NULL child handle. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() with the parameter a ChildHandle value of NULL.  The return status must be EFI\_INVALID\_PARAMETER. |
| 5.24.1.8.2 | 0x51d66e16, 0x39f6, 0x4fff, 0x8a, 0x99, 0xf2, 0x95, 0x01, 0xe3, 0x4b, 0xe8 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_INVALID\_PARAMETER with invalid child handle. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() with a invalid ChildHandle. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.24.1.8.3 | 0x460a6262, 0xaa4d, 0x4e25, 0x92, 0x6b, 0x55, 0x1e, 0xf0, 0xb5, 0x6d, 0x37 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – invokes CreateChild() to create different childs. | Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create childs three times and then destroy them. |

### DestroyChild()

|  |  |  |  |
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| Number | GUID | Assertion | Test Description |
| 5.24.1.9.1 | 0xfaabc3ef, 0xc56f, 0x44d1, 0xbe, 0xb6, 0x53, 0x5b, 0x26, 0x4d, 0xba, 0x63 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_UNSUPPORTED with invalid child handle. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle  The return status must be EFI\_SUCCESS.  3. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() again with value of Handle set to be 8 and clean up the environment.  The return status must be EFI\_UNSUPPORTED. |
| 5.24.1.9.2 | 0x7b8de1fe, 0x93e1, 0x48a4, 0xa0, 0x5e, 0x38, 0xad, 0x8f, 0x26, 0xf0, 0x83 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_INVALID\_PARAMETER with NULL child. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the NULL child. |
| 5.24.1.9.3 | 0xf651081a, 0xb71f, 0x4617, 0x99, 0x7a, 0xd1, 0x87, 0x7a, 0x07, 0x03, 0x28 | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_INVALID\_PARAMETER and inexistent child. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the inexistent child. |
| 5.24.1.9.4 | 0x5772a154, 0xb8f5, 0x4fec, 0xaa, 0x80, 0xae, 0xb9, 0x0c, 0x4c, 0xd2, 0x5d | EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() – invokes DestroyChild() to destroy different childs | Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL. DestroyChild ()to destroy the newly three created Arp childs. |

### RFC Related

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.1.10.1 | 0x0f6557a8, 0xf383, 0x436e, 0x96, 0x2b, 0x88, 0x2a, 0x28, 0x3c, 0x4c, 0x64 | EFI\_ARP\_PROTOCOL.Rfc – Send an ARP request and check the ARP reply . | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Send ARP request to the broadcast address with sender ip “172.16.210.161” and sender Mac”0:2:3:4:5:7” to resolve the Target ip”172.16.210.102”.  4. Then the OS side should capture the reply packet.  5. If having captured, dump the reply packet and validate whether the sender Mac is the MacAddress of TargetMachine.  6. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |
| 5.24.1.10.2 | 0x842c7377, 0x04b6, 0x459f, 0x92, 0x56, 0x39, 0xbf, 0x2e, 0x2f, 0xc5, 0x93 | EFI\_ARP\_PROTOCOL.Rfc – without reply when sending an ARP request with opcode invalid. | 1. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Arp child handle.  2. Call EFI\_ARP\_PROTOCOL.Configure() with valid parameters.  3. Send ARP request to the broadcast address with sender ip “172.16.210.161” and sender Mac”0:2:3:4:5:7” to resolve the Target ip”172.16.210.102” – the opcode set to 255.  4. Then the OS side shouldn’t capture the reply packet.  5. Call EFI\_ARP\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created Arp child handle and clean up the environment. |

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## EFI\_DHCP4\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DHCP4\_PROTOCOL Section.

### GetModeData()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.2.1.1 | 0x52159e94, 0x4a67, 0x44f6, 0x9b, 0x0b, 0x83, 0x21, 0x93, 0x41, 0xe1, 0xf3 | EFI\_DHCP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data when the Dhcp4 child has not been configured. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL**.**GetModeData() to get all mode data when the Dhcp4 child has not been configured. The ModeData.State should be Dhcp4Stopped.The return status should be EFI\_SUCCESS.  3. Call EFI\_DHCP4\_PROTOCOL**.Stop()** to verify the Dhcp4 child in the Dhcp4Stopped state.  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.1.2 | 0x969e5dac, 0x2097, 0x4a3f, 0xaa, 0x15, 0xb0, 0x6d, 0xff, 0x26, 0x48, 0xec | EFI\_DHCP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get DHCP4 mode data during the configuration process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData() to get Dhcp4 mode data when the Dhcp4 child has been configured. The ModeData.State should be Dhcp4Init.The return status should be EFI\_SUCCESS.  4. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  5. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data during the configuration process. The ModeData.State should be Dhcp4Selecting.The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.1.3 | 0xca520116, 0x5097, 0x4cda, 0x80, 0x79, 0x4a, 0x9b, 0x8f, 0xdd, 0x88, 0x38 | EFI\_DHCP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get DHCP4 mode data during the configuration process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.1.24".  3. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData() to get Dhcp4 mode data when the Dhcp4 child has been configured. The ModeData.State should be Dhcp4InitReboot.The return status should be EFI\_SUCCESS.  4. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  5. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data during the configuration process. The ModeData.State should be Dhcp4Rebooting.The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Configure()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.2.1 | 0xbd919c90, 0x708b, 0x4502, 0xad, 0xd7, 0xd5, 0x85, 0x30, 0x4b, 0x84, 0x0e | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure()when this driver instance was not in the Dhcp4Stopped, Dhcp4Init, Dhcp4InitReboot, or Dhcp4Bound state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data during the configuration process. The ModeData.State should be Dhcp4Selecting.The return status should be EFI\_SUCCESS.  5. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure the child during the configuration process. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.2 | 0x57b62321, 0x14a8, 0x4412, 0xb4, 0x20, 0xad, 0x49, 0x5d, 0x6a, 0xab, 0xbb | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() when Another instance is already in a valid configured state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child1.  2. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child2.  3. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure child1.  4. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child2. The return status should be EFI\_ACCESS\_DENIED.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.3 | 0x5101b2b6, 0x8021, 0x4a04, 0x90, 0x83, 0xf6, 0x6b, 0x9f, 0x4d, 0x10, 0x1f | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() with invalid parameters, among which DiscoverTryCount is positive and DiscoverTimeout is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure the new instance with a *DiscoverTryCount* value of positive and a *DiscoverTimeout* value of NULL. The return status should be **EFI\_INVALID\_PATAMETER**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.4 | 0x50f034a4, 0x2aa4, 0x4d1a, 0x8a, 0x8c, 0x9d, 0x7c, 0x06, 0x48, 0xc9, 0x35 | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() with invalid parameters, among which RequestTryCount is positive and RequestTimeout is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure the new instance with a *RequestTryCount* value of positive and a *RequestTimeout* value of NULL. The return status should be **EFI\_INVALID\_PATAMETER**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.5 | 0xc199419b, 0x62b1, 0x4cda, 0xb4, 0x38, 0x9d, 0xcd, 0xed, 0x4d, 0x83, 0x6d | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() with invalid parameters, among which OptionCount is positive and OptionList is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure the new instance with a *OptionCount* value of positive and a *OptionList* value of NULL. The return status should be **EFI\_INVALID\_PATAMETER**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.6 | 0xada01077, 0x4869, 0x4c21, 0x8f, 0x6d, 0x6e, 0x65, 0x93, 0x41, 0xbc, 0xa6 | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() with invalid parameters, except that ClientAddress is an invalid unicast address. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure the new instance with a *ClientAddress* value of an invalid unicast address. The return status should be **EFI\_INVALID\_PATAMETER**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.7 | 0xde6079f0, 0x4aa4, 0x4665, 0x80, 0x8b, 0xa0, 0x22, 0x3c, 0x8b, 0xf6, 0x40 | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() to Validate the configuration data effect before and after calling Dhcp.start() to start the Configuration. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure child with setting *ClientAddress* "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.GetModeData()to check the configuration data effect.  4. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  5. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  6. Call Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting *ClientAddress* "192.168.2.3".  7. Call EFI\_DHCP4\_PROTOCOL.GetModeData()to check the configuration data effect.  8. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  9. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  10. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.8 | 0x73401b2e, 0x30aa, 0x422d, 0xa3, 0xca, 0x9f, 0x36, 0x78, 0x1c, 0xfa, 0x94 | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() to Validate the configuration data effect before and after calling Dhcp->start to start the Configuration, Call Dhcp.stop() before calling Dhcp.start() again. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.GetModeData()to check the configuration data effect.  4. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  5. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration.  6. Call Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting **ClientAddress** "192.168.2.3".  7. Call EFI\_DHCP4\_PROTOCOL.GetModeData()to check the configuration data effect.  8. Call EFI\_DHCP4\_PROTOCOL.Start() again to start the configuration process with a CompletionEvent value of NULL.  9. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  10. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.2.9 | 0x1a27208e, 0x08a8, 0x42a6, 0xb9, 0x3f, 0x8b, 0x95, 0x94, 0x24, 0x46, 0xb7 | EFI\_DHCP4\_PROTOCOL.Configure() - invokes Configure() with the following condition:  if one instance wants to make it possible for another instance to configure successfully, it must call EFI\_DHCP4\_PROTOCOL.Configure() with DhcpCfgData set to NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child1.  2. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child2.  3. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure child1.  4. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child2. The return status should be EFI\_ACCESS\_DENIED.  5. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child1 with setting ConfigData to NULL. The return status should be EFI\_SUCCESS.  6. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child2. The return status should be EFI\_SUCCESS.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Start()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.2.3.1 | 0xbac2be63, 0xd705, 0x4667, 0x9d, 0x1b, 0x04, 0xe0, 0x5e, 0xeb, 0xcb, 0x3a | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** when the driver instance is in the Dhcp4Stopped state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL. The return status should be EFI\_NOT\_STARTED.  3. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process.  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.2 | 0xc67ae0d7, 0x3401, 0x4daf, 0xa6, 0x4c, 0xb9, 0xa6, 0x0e, 0xea, 0x17, 0x71 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** with no response during the specified timeout value. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  2. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL. The return status should be EFI\_TIMEOUT.  3. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  4. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.3 | 0xd7cd1980, 0x7509, 0x4612, 0x80, 0xc0, 0x5c, 0x21, 0x5b, 0x9e, 0x8e, 0x10 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** while the user aborts the DHCP process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0" and Dhcp4Callback=1(Callbackfunctionlist[1]=Aborted)  2. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL. The return status should be EFI\_ABORTED.  3. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process.  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.4 | 0x580e7e81, 0x506d, 0x4339, 0xb7, 0xc2, 0x9f, 0x05, 0x53, 0x8f, 0xf5, 0xde | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** to start configuration process while another instance has already started the DHCP process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child1.  2. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child2.  3. Call EFI\_DHCP4\_PROTOCOL.Configure() to configure child1.  4. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process of child1 with a CompletionEvent value other than NULL. The return status should be EFI\_SUCCESS.  5. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process of child2 with a CompletionEvent value of NULL. The return status should be EFI\_ALREADY\_STARTED.  6. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process of child1.  7. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process of child2.  8. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.5 | 0x8bd59e83, 0x3f3a, 0x4649, 0xb8, 0x61, 0x36, 0x56, 0x23, 0x5c, 0x8f, 0x7d | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and Asynchronous Mode. (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of not NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.6 | 0xaca2403d, 0x458b, 0x4c8e, 0x8f, 0x77, 0x1f, 0x87, 0x85, 0x31, 0x08, 0xed | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and Asynchronous Mode. (Calling functions in sequence B). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.7 | 0x7344b984, 0x306d, 0x467b, 0xa4, 0x3d, 0x36, 0x77, 0xf8, 0xc9, 0x79, 0x78 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and Asynchronous Mode. (Calling functions in sequence C). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPNAK packet. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.8 | 0xf9a23299, 0xeb65, 0x472b, 0xbe, 0x96, 0xe5, 0xea, 0x77, 0x2e, 0x03, 0xc0 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and Asynchronous Mode. (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting *ClientAddress* "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.9 | 0x723e3088, 0x5f48, 0x4b09, 0x9b, 0x17, 0x80, 0x45, 0x86, 0xf9, 0x9a, 0xad | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and Asynchronous Mode. (Calling functions in sequence B). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver havng stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.10 | 0xa8fcde55, 0x522b, 0x49ea, 0xbc, 0xe8, 0x6b, 0xea, 0x80, 0x57, 0x91, 0x21 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and Asynchronous Mode. (Calling functions in sequence C). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPNAK packet. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.11 | 0x941de4e1, 0xc289, 0x417b, 0x87, 0xeb, 0xef, 0x3e, 0x1e, 0xc0, 0x12, 0x3d | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and synchronous Mode. (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.12 | 0xff3f4b6d, 0x2b40, 0x49b5, 0xb9, 0xe0, 0x7e, 0x11, 0x8a, 0x73, 0x70, 0x0a | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and synchronous Mode. (Calling functions in sequence B). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.13 | 0x35972f03, 0x90dc, 0x41ae, 0x8e, 0x1e, 0x27, 0x72, 0x47, 0x3b, 0x06, 0xb6 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4Init State and synchronous Mode. (Calling functions in sequence C). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPNAK packet. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.14 | 0x90924db4, 0x1237, 0x4d59, 0x88, 0xf3, 0x11, 0x8b, 0xed, 0x01, 0x80, 0xae | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and synchronous Mode. (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.15 | 0x434f1845, 0xd940, 0x4129, 0xaa, 0xeb, 0x7a, 0x1b, 0xe7, 0xe1, 0x39, 0x48 | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and synchronous Mode. (Calling functions in sequence B). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.3.16 | 0x340ff4c6, 0x7412, 0x44d4, 0x8f, 0x33, 0xeb, 0xc2, 0x6f, 0x22, 0x1d, 0x0c | EFI\_DHCP4\_PROTOCOL.Start() - invokes **Start()** in Dhcp4InitReboot State and synchronous Mode. (Calling functions in sequence C). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPNAK packet. The ModeData.State should be Dhcp4Init.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### RenewRebind()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.4.1 | 0x15bdc212, 0xbad5, 0x4213, 0xb2, 0x38, 0x50, 0xac, 0x76, 0x18, 0xdc, 0x90 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** when the driver instance is in the Dhcp4Stopped state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.RenewRebind() with a RebindRequest value of TRUE. The return status should be EFI\_NOT\_STARTED.  3. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSE. The return status should be EFI\_NOT\_STARTED.  4. Call EFI\_DHCP4\_PROTOCOL.Stop()to stop the configuration process.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.2 | 0x2949dc87, 0xdbcd, 0x4d64, 0x8f, 0x10, 0x68, 0x2f, 0xa2, 0x27, 0xe0, 0x88 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** while getting no response during the specified time. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSEand aCompletionEventvalue of NULL. The return status should be EFI\_TIMEOUT.  6. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.3 | 0xd7f4cb11, 0xc3dc, 0x421f, 0x98, 0x80, 0x5c, 0x2a, 0x2d, 0x73, 0x06, 0x02 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** when the driver instance is not in the Dhcp4Bound state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having sent the DHCPREQUEST packet. The ModeData.State should be Dhcp4Rebooting.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of **TRUE** and aCompletionEventvalue of NULL. The return status should be EFI\_ACCESS\_DENIED.  6. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.4 | 0x38bb70ba, 0xb05c, 0x4431, 0xb4, 0xf9, 0x8f, 0x4e, 0x9b, 0x10, 0xc7, 0x54 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in Asynchronous Mode using unicast.  (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSEand a*CompletionEvent*value of not NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.5 | 0x432ccefe, 0x8586, 0x4358, 0xb7, 0xee, 0xf1, 0x36, 0xe3, 0x8a, 0xd8, 0x30 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in Asynchronous Mode using unicast.  (Calling functions in sequence B). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSEand aCompletionEventvalue of not NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.6 | 0xc0b17d39, 0x32bb, 0x41f8, 0xbd, 0x44, 0x6b, 0xb8, 0x53, 0x0f, 0xa4, 0xaf | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in Asynchronous Mode using broadcast.  (Calling functions in sequence A). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of TRUEand aCompletionEventvalue of not NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.7 | 0x819f530e, 0x0d51, 0x43ce, 0x83, 0x73, 0x0b, 0x27, 0xc6, 0x36, 0x3b, 0x63 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in Asynchronous Mode using broadcast.  Sequence B. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of TRUEand aCompletionEventvalue of not NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.8 | 0x982b5d48, 0x2d87, 0x40ea, 0xbe, 0x60, 0x44, 0x60, 0x49, 0xfe, 0x08, 0x98 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in synchronous Mode using unicast.  Sequence A. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSEand aCompletionEventvalue of NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.9 | 0x4cc9abee, 0xd9e8, 0x444b, 0xb8, 0x34, 0x3e, 0xd4, 0x57, 0x96, 0x25, 0xc9 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in synchronous Mode using unicast.  Sequence B. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of not NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind() with a RebindRequest value of TRUEand aCompletionEventvalue of NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.10 | 0x061ca38f, 0x5092, 0x483b, 0xa4, 0xd2, 0xf3, 0x1f, 0x53, 0x3f, 0xe7, 0xac | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in synchronous Mode using broadcast.  Sequence A. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind()with a RebindRequest value of FALSEand aCompletionEventvalue of NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.4.11 | 0xf9fa2078, 0x6283, 0x4510, 0xad, 0x21, 0xba, 0xe1, 0x15, 0x21, 0x56, 0xf9 | EFI\_DHCP4\_PROTOCOL.RenewRebind() - invokes **RenewRebind()** with the driver instance extending lease time in synchronous Mode using broadcast.  Sequence B. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call EFI\_DHCP4\_PROTOCOL.RenewRebind() with a RebindRequest value of TRUEand aCompletionEventvalue of not NULL. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Bound.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Release()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.5.1 | 0xa80fa204, 0x87dd, 0x4e92, 0x8a, 0x5d, 0xee, 0x55, 0x6c, 0x83, 0xac, 0x7c | EFI\_DHCP4\_PROTOCOL.Release() - invokes **Release()** with the driver in the configuration process, but not in the Dhcp4Bound or Dhcp4InitReboot state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of not NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.Release()** after Stop the REQUEST packet from the driver. The return status should be **EFI\_ACCESS\_DENIED**.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.5.2 | 0x70f9485c, 0x4fef, 0x4bf3, 0xac, 0xd5, 0x2e, 0xe0, 0xba, 0x30, 0x3d, 0xd9 | EFI\_DHCP4\_PROTOCOL.Release() - invokes **Release()** with the driver in the Dhcp4Stopped state, but not in the Dhcp4Bound or Dhcp4InitReboot state. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Stop()** to verify the driver in the Dhcp4Stopped state.  3. Call **EFI\_DHCP4\_PROTOCOL.Release()** when the driver is in the Dhcp4Stopped state. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.5.3 | 0x67c1be03, 0xf9c4, 0x4419, 0x88, 0xf0, 0xb9, 0xfc, 0x6c, 0x1a, 0xd2, 0x67 | EFI\_DHCP4\_PROTOCOL.Release() - invokes **Release()** when the driver is in the DhcpBound State**.** | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "0.0.0.0".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a CompletionEvent value of NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after the driver having stopped the DHCPACK packet. The ModeData.State should be Dhcp4Bound.  5. Call **EFI\_DHCP4\_PROTOCOL.Release()** and capture ARPREQUEST packet from the driver, send ARPREPLY packet to the driver, then capture DHCPRELEASE packet from the driver. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.5.4 | 0x555d101b, 0xf86a, 0x4e6f, 0x95, 0x70, 0x1c, 0xfa, 0xe7, 0xd2, 0xd6, 0x8a | EFI\_DHCP4\_PROTOCOL.Release() - invokes **Release()** when the driver is in the DhcpInitReboot State**.** | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data. The ModeData.State should be DhcpInitReboot.  5. Call **EFI\_DHCP4\_PROTOCOL.Release()** and capture ARPREQUEST packet from the driver, send ARPREPLY packet to the driver, then capture DHCPRELEASE packet from the driver. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after time out. The ModeData.State should be Dhcp4Init.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

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### Stop()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.6.1 | 0xda8661a5, 0x82d4, 0x4b1b, 0xa2, 0x68, 0xf3, 0x4f, 0xe5, 0xab, 0x03, 0x57 | EFI\_DHCP4\_PROTOCOL.Stop() - invokes **Stop()** when the driver is in the DhcpInitReboot State**.** | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting *ClientAddress* "192.168.2.4".  3. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after receiving REQUEST packet from the driver. The ModeData.State should be DhcpInitReboot.  4. Call **EFI\_DHCP4\_PROTOCOL.Stop()** to stop the configuration process. The return status should be EFI\_SUCCESS.  5. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.6.2 | 0x0f6193fc, 0x21f7, 0x4831, 0xbf, 0x53, 0x39, 0x28, 0xc0, 0x49, 0x6b, 0x48 | EFI\_DHCP4\_PROTOCOL.Stop() - invokes **Stop()** when the driver is in the configuration process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Configure()to configure child with setting ClientAddress "192.168.2.4".  3. Call EFI\_DHCP4\_PROTOCOL.Start() to start the configuration process with a *CompletionEvent* value other than NULL.  4. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data after receiving REQUEST packet from the driver. The ModeData.State should be Dhcp4Rebooting.  5. Call **EFI\_DHCP4\_PROTOCOL.Stop()** to stop the configuration process. The return status should be EFI\_SUCCESS.  6. Call **EFI\_DHCP4\_PROTOCOL.**GetModeData()to get Dhcp4 mode data. The ModeData.State should be Dhcp4Stopped.  7. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Build()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.7.1 | 0xc2aa2960, 0xdd52, 0x4e56, 0x87, 0x7e, 0x8c, 0x44, 0x6a, 0x5e, 0xea, 0x31 | EFI\_DHCP4\_PROTOCOL.Build() - invokes Build()when the parameter SeedPacket is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with a SeedPacket value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.2 | 0xf19cc8c3, 0x9a84, 0x4d62, 0x94, 0xae, 0xc3, 0x4b, 0x06, 0x3a, 0xea, 0x91 | EFI\_DHCP4\_PROTOCOL.Build() - invokes **Build()** when the parameter *SeedPacket* is not a well-formed DHCP packet (Magic Number Error). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with a SeedPacket.EFI\_DHCP4\_PROTOCOL.Magik value of error magic cookie. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.3 | 0xc650067b, 0x4ab0, 0x4170, 0x9b, 0x4b, 0x4f, 0x7a, 0xeb, 0x77, 0xc0, 0x5e | EFI\_DHCP4\_PROTOCOL.Build() - invokes **Build()** when the parameter AppendCountis not 0 and AppendList is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with a *AppendCount*value other than NULL and *AppendList* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.4 | 0x1debfafe, 0xdfbe, 0x4ff5, 0x8a, 0xcd, 0x8f, 0xe1, 0x11, 0x82, 0x30, 0xe0 | EFI\_DHCP4\_PROTOCOL.Build() - invokes Build()when the parameter DeleteCount is not 0 and DeleteList is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with a *DeleteCount* value of NULL and a *DeleteList* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.5 | 0xd0beca24, 0xa8f3, 0x4753, 0x8c, 0xdb, 0x96, 0xe6, 0x00, 0x92, 0x78, 0x47 | EFI\_DHCP4\_PROTOCOL.Build() - invokes Build()when the parameter NewPacket is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with a *NewPacket* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.6 | 0x7d05c782, 0xccf3, 0x42d0, 0x9a, 0x6e, 0x0d, 0x6b, 0x5c, 0x8d, 0x9c, 0x20 | EFI\_DHCP4\_PROTOCOL.Build() - invokes Build()when the parameter both DeleteCount and OptionCount are 0 and NewPacket is not NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with both the *DeleteCount* and *OptionCount* value of 0 and a *NewPacket* value other than NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.7 | 0xf52d8032, 0xd5c6, 0x48e1, 0x86, 0xb0, 0xac, 0x47, 0xae, 0x82, 0x93, 0xed | EFI\_DHCP4\_PROTOCOL.Build() - invokes **Build()** when the parameter *AppendCount*and *AppendList* are not NULL, and build a new packet with DHCP options appended. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with both the *AppendCount*and *AppendList* value other than NULL. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to parse the packet returned by the parameter *NewPacket* of EFI\_DHCP4\_PROTOCOL.Build(). The *NewPacket* should include the DHCP options matching the parameter *AppendList* of EFI\_DHCP4\_PROTOCOL.Build().  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.8 | 0x78dae7e2, 0x579a, 0x47a1, 0xb2, 0x45, 0x8c, 0xad, 0x39, 0xc8, 0x07, 0x27 | EFI\_DHCP4\_PROTOCOL.Build() - invokes **Build()** to delete defined options. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with both the *DeleteCount* and *DeleteList* value other than NULL. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to parse the packet returned by the parameter *NewPacket* of EFI\_DHCP4\_PROTOCOL.Build(). The *NewPacket* should not include the DHCP options matching the parameter *DeleteList* of EFI\_DHCP4\_PROTOCOL.Build().  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.7.9 | 0xfc1f9cb7, 0xed3d, 0x4e6d, 0x93, 0x2a, 0x63, 0xb5, 0xcf, 0xb4, 0xb3, 0x37 | EFI\_DHCP4\_PROTOCOL.Build() - invokes **Build()** to delete an undefined option. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Build() with both the *DeleteCount* and *DeleteList* value other than NULL, and *DeleteList* include an undefined option. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to parse the packet returned by the parameter *NewPacket* of EFI\_DHCP4\_PROTOCOL.Build(). The *NewPacket* should not include the DHCP options matching the parameter *DeleteList* of EFI\_DHCP4\_PROTOCOL.Build().  4. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Transmit**Receive()**

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| Number | GUID | Assertion | Test Description |
| 5.24.2.8.1 | 0x6d1bb6a7, 0x5d67, 0x4982, 0x96, 0x35, 0x54, 0xeb, 0x4b, 0x0c, 0xfa, 0xd5 | EFI\_DHCP4\_PROTOCOL.TransmitReceive() - invokes TransmitReceive() when the parameter RemoteAddress is 0. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.TransmitReceive() with a RemoteAddress value of 0. The return status should be EFI\_UNSUPPORTED.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.8.2 | 0xd2bec02f, 0x8304, 0x4713, 0x8a, 0x95, 0x4b, 0xd3, 0x4c, 0x69, 0x89, 0xc0 | EFI\_DHCP4\_PROTOCOL.TransmitReceive() - invokes TransmitReceive() when the parameter *Packet* is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.TransmitReceive() with a Packet value of NULL. The return status should be EFI\_UNSUPPORTED.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.8.3 | 0x9dfd549b, 0x59eb, 0x4f5d, 0x99, 0x5f, 0xb8, 0x2d, 0xdd, 0x18, 0x02, 0xba | EFI\_DHCP4\_PROTOCOL.TransmitReceive() - invokes **Transmit**Receive() when the parameter *Packet* is not a well-formed DHCP packet(Magic Number error). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Transmit**Receive()with a *Packet* value of not a well-formed DHCP packet(Magic Number error). The return status should be **EFI\_UNSUPPORTE**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.8.4 | 0xce99ae23, 0x910a, 0x4818, 0xa0, 0x89, 0xf3, 0xf4, 0x5b, 0xc5, 0xeb, 0xa8 | EFI\_DHCP4\_PROTOCOL.TransmitReceive() - invokes **Transmit**Receive() when the transaction ID in *Packet* is in used by another DHCP process. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Transmit**Receive()when the transaction ID in *Packet* is in use by another DHCP process. The return status should be **EFI\_UNSUPPORTED**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.8.5 | 0xbe6683bd, 0x807a, 0x4fb0, 0xbc, 0x7b, 0xf7, 0x51, 0x07, 0x0e, 0x0e, 0x66 | EFI\_DHCP4\_PROTOCOL.TransmitReceive() - invokes **Transmit**Receive() when the previous call to this function has not finished yet. Try to call this function after collection process completed. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Transmit**Receive()with the previous call to this function not finished yet. The return status should be **EFI\_UNSUPPORTE**.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### Parse()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.9.1 | 0x7cca1a2c, 0x4136, 0x4ff0, 0xbc, 0x22, 0xca, 0x80, 0x56, 0x8d, 0xfd, 0xbf | EFI\_DHCP4\_PROTOCOL.Parse() - invokes Parse() when the parameter Packet is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Parse()with a Packet value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.2 | 0x225ddf1b, 0x9fb9, 0x4a9b, 0xb3, 0xb6, 0xca, 0x25, 0xeb, 0x31, 0x0d, 0xbb | EFI\_DHCP4\_PROTOCOL.Parse() - invokes Parse() when the parameter OptionCount is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Parse()with a OptionCount value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.3 | 0xea1a95dd, 0xdb6c, 0x4200, 0xb7, 0xc7, 0x19, 0xb0, 0xa3, 0x81, 0x06, 0x5d | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when the Packet is not a well-formed DHCP packet (Magic Number error). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** with a *Packet* value other than a well-formed DHCP packet (Magic Number error). The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.4 | 0x91e4d243, 0x4ed6, 0x451a, 0xb0, 0x9c, 0x0a, 0x35, 0x6a, 0x06, 0x1d, 0xda | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when the Packet is not well-formed DHCP packet (No End option). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** with a Packet value other than a well-formed DHCP packet (No End option). The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.5 | 0xd836cddd, 0x6bb4, 0x455e, 0x9e, 0xc4, 0x49, 0x9f, 0xc3, 0x27, 0xdd, 0x21 | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when the Packet is not a well-formed DHCP packet (Length < Header Size). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** with a Packet value other than a well-formed DHCP packet (Length < Header Size). The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.6 | 0xed5c8f2b, 0x0043, 0x4f43, 0xae, 0x83, 0xa6, 0xbf, 0xab, 0x5b, 0xa2, 0xba | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when the Packet is not a well-formed DHCP packet (Size < Length). | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** with a Packet value other than a well-formed DHCP packet (Size < Length). The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.7 | 0x4bd82a66, 0xcede, 0x4132, 0xa8, 0xca, 0xd9, 0x95, 0xe8, 0xe7, 0x9a, 0xb2 | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when the parameter OptionCount is smaller than the number of options that were found in the Packet. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** with the parameter **OptionCount** smaller than the number of options that were found in the Packet. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.8 | 0xa73ac67a, 0xe5c9, 0x41e7, 0xb6, 0xc0, 0x80, 0xa2, 0x6f, 0x27, 0x7e, 0xc0 | EFI\_DHCP4\_PROTOCOL.Parse() - invokes Parse() when the parameter PacketOptionList is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call EFI\_DHCP4\_PROTOCOL.Parse()with a PacketOptionList value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.9 | 0xc84a412c, 0x702a, 0x40e1, 0xa3, 0x9c, 0x55, 0xa8, 0x8c, 0xbe, 0x60, 0x5a | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when options exist in packet. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to check the *PacketOptionList* when options exist in packet. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.10 | 0x2ba25811, 0x4069, 0x45da, 0xb3, 0x9e, 0xfa, 0x05, 0x14, 0x42, 0x4a, 0x4c | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** when no options exist in packet | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to check the *PacketOptionList* when no options exist in packet. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |
| 5.24.2.9.11 | 0x6ce744e5, 0x9e5a, 0x4fb5, 0xa5, 0xf2, 0x3b, 0xe8, 0xf5, 0xb5, 0xad, 0x42 | EFI\_DHCP4\_PROTOCOL.Parse() - invokes **Parse()** with Pad Option included in packet | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_PROTOCOL.Parse()** to check the *PacketOptionList* with Pad Option included in packet. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child and clean up the environment. |

### CreateChild()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.10.1 | 0x4b66733f, 0xd324, 0x4af9, 0x9d, 0x92, 0x91, 0x4f, 0x5f, 0x77, 0x2e, 0xf0 | EFI\_DHCP4\_PROTOCOL.CreateChild() - invokes CreateChild() when Child Handle is NULL. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child with NULL Handle Pointer. The return status should be **EFI\_INVALID\_PATAMETER**. |
| 5.24.2.10.2 | 0x1e0f5047, 0x1be9, 0x4db0, 0xa5, 0x71, 0xfc, 0x82, 0xbc, 0x2d, 0x0a, 0x06 | EFI\_DHCP4\_PROTOCOL.CreateChild() - to test the function of CreateChild(). | Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create childs three times and then destroy them. |

### DestroyChild()

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| Number | GUID | Assertion | Test Description |
| 5.24.2.11.1 | 0x1f92470a, 0x7aec, 0x4fb4, 0xa4, 0x0d, 0x5f, 0x0c, 0xd2, 0x40, 0x1f, 0x08 | EFI\_DHCP4\_PROTOCOL.DestroyChild() – invokes DestroyChild() when Call this function twice. | 1. Call EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Dhcp4 child.  2. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child. The return status should be EFI\_SUCCESS.  3. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Dhcp4 child again. The return status should be **EFI\_UNSUPPORTED**. |
| 5.24.2.11.2 | 0x06b43e55, 0xd8af, 0x494f, 0x8b, 0x93, 0x78, 0xf8, 0xd0, 0x7a, 0xa4, 0xc8 | EFI\_DHCP4\_PROTOCOL.DestroyChild() – invokes DestroyChild() when Child Handle is NULL. | 1. Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to Destroy a Dhcp4 child with NULL Handle Pointer. The return status should be **EFI\_INVALID\_PATAMETER**. |
| 5.24.2.11.3 | 0xc44a4b68, 0x1f16, 0x4098, 0xb2, 0x6d, 0x2c, 0x43, 0xcb, 0x27, 0x4d, 0xae | EFI\_DHCP4\_PROTOCOL.DestroyChild() – to test the function of DestroyChild(). | Call **EFI\_DHCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the newly three created Dhcp4 childs. |

## EFI\_DHCP6\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_DHCP6\_PROTOCOL Section.

### CreateChild()

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| Number | GUID | Assertion | Test Description |
| 5.24.3.1.1 | 0xbd25610a, 0xa4b3, 0x412a, 0xbf, 0x03, 0xb0, 0xf7, 0xce, 0x80, 0x98, 0xbf | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call CreateChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.1.2 | 0xcbf5cb1d, 0xd74d, 0x45bc, 0x94, 0xd2, 0x72, 0xda, 0x7f, 0xf7, 0xbe, 0xda | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with the 1st validChildHandle. | 5.24.3.1.2 to 5.24.3.1.5 belong to one case.  1. Call CreateChild()with the 1st valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.24.3.1.3 | 0xb9cfe63d, 0x2cc2, 0x4940, 0xb3, 0x01, 0x39, 0x22, 0xf3, 0xff, 0xdd, 0x35 | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with the 2nd validChildHandle. | 2. Call CreateChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.24.3.1.4 | 0x2336ebe8, 0x4934, 0x4a6c, 0xae, 0x72, 0x06, 0x73, 0xb6, 0x7a, 0xa0, 0xa6 | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with the 2nd validChildHandle. | 3. Call DestroyChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.24.3.1.5 | 0x0fe6555e, 0x3487, 0x4989, 0x89, 0x96, 0x18, 0xa7, 0x2a, 0x71, 0x52, 0xd5 | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with the 1st validChildHandle. | 4. Call DestroyChild()with the 1st valid ChildHandle, the return status should be EFI\_SUCCESS. |

### DestroyChild ()

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| Number | GUID | Assertion | Test Description |
| 5.24.3.2.1 | 0x6e2206aa, 0xbee7, 0x4f16, 0xa7, 0xaa, 0x71, 0x54, 0xa2, 0xe9, 0x63, 0x65 | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL. DestroyChild() - DestroyChild() returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle*.* | Call DestroyChild() with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.2.2 | 0x061893a7, 0x48de, 0x431a, 0xad, 0x5b, 0x56, 0x29, 0xb6, 0x9c, 0xe6, 0xce | EFI\_DHCP6\_SERVICE\_BINDING\_PROTOCOL. DestroyChild() - DestroyChild() returns EFI\_UNSUPPORTED with a ChildHandlewhich has been destroyed. | Call DestroyChild() with a ChildHandlewhich has been destroyed, the return status should be EFI\_UNSUPPORTED. |

### GetModeData()

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| Number | GUID | Assertion | Test Description |
| 5.24.3.3.1 | 0x3678146a, 0x0596, 0x4661, 0x8e, 0x53, 0xf6, 0x61, 0xa6, 0xec, 0xe2, 0xf3 | EFI\_DHCP6 PROTOCOL.GetModeData() - GetModeData()returns EFI\_ACCESS\_DENIED with an instance which has not been configured. | Call GetModeData()with an instance which has not been configured, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.3.2 | 0xf58195a9, 0x1924, 0x4490, 0x95, 0x4b, 0x17, 0x75, 0xfc, 0x1c, 0xbf, 0xb0 | EFI\_ DHCP6 PROTOCOL.GetModeData() - GetModeData()returns EFI\_INVALID\_PARAMETER with **NULL** **Dhcp6ConfigData** and **Dhcp6ModeData** | Call GetModeData()with **NULL** **Dhcp6ConfigData** and **Dhcp6ModeData,** The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.3.3 | 0x99d01c9a, 0x2bd6, 0x442f, 0x8f, 0xe5, 0xda, 0x8a, 0xa6, 0x88, 0x27, 0x29 | Dhcp6CfgData.CallbackContext should be 5. | 5.24.3.3.3 to 5.24.3.1.13 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create an event for the Dhcp6CfgData  3. Call Configure() to initialize the DHCP6 instance.  4. Call Start() to start S.A.R.R process.  5. The Dhcp6CfgData.CallbackContext should be 5. The reason is Callback() is called by SendSolict/RcvdAdvertise/SelectAdvertise/SendRequest/RcvdReply. Callback() add Dhcp6CfgData.CallbackContext with 1 each time. |
| 5.24.3.3.4 | 0x46993cb1, 0xfb2c, 0x44b3, 0xad, 0xe1, 0x7e, 0xa1, 0xe8, 0x43, 0xbd, 0x2e | Dhcp6CfgData.IaInfoEvent should be signaled. | 6. When Start() return, the Dhcp6CfgData.IaInfoEvent should be signaled. |
| 5.24.3.3.5 | 0x6a6bd40b, 0xb963, 0x4313, 0x8b, 0x4f, 0x45, 0x0e, 0x11, 0x4b, 0x6e, 0xeb | EFI\_ DHCP6 PROTOCOL.GetModeData() - GetModeData()returns EFI\_SUCCESS with **Dhcp6ConfigData** and **Dhcp6ModeData** | 7. Call GetModeData()with **Dhcp6ConfigData** and **Dhcp6ModeData,** The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.3.6 | 0x24694dfa, 0x5cc6, 0x4358, 0x9a, 0x14, 0x5c, 0xf2, 0x5e, 0x3a, 0x1a, 0xa4 | Dhcp6ModeData.Ia.State should be Dhcp6Bound | 8. Dhcp6ModeData.Ia.State should be Dhcp6Bound |
| 5.24.3.3.7 | 0x6a19ff82, 0x9ea9, 0x44c1, 0xb8, 0x71, 0x69, 0x05, 0xfe, 0x18, 0x58, 0xbc | **Dhcp6ConfigData.OptionCount** should be same with configured the value. | 9. **Dhcp6ConfigData.OptionCount** should be same with the configured value. |
| 5.24.3.3.8 | 0x9fa4ae6e, 0x82b3, 0x4ed7, 0xb9, 0xfc, 0x69, 0x0f, 0x0a, 0x98, 0xe5, 0xde | **Dhcp6ConfigData.OptionList** should be same with configured the value. | 10. **Dhcp6ConfigData.OptionList** should be same with the configured value. |
| 5.24.3.3.9 | 0xa803b115, 0x47b7, 0x496f, 0x95, 0xdb, 0x38, 0xf2, 0x3e, 0x27, 0x3c, 0x20 | **Dhcp6ConfigData.IaDescriptor** should be same with configured the value. | 11. **Dhcp6ConfigData.IaDescriptor** should be same with the configured value. |
| 5.24.3.3.10 | 0x2e4a61f7, 0x3a07, 0x4dd9, 0x8b, 0xf6, 0xc3, 0xef, 0xbb, 0x35, 0xb7, 0x90 | **Dhcp6ConfigData.** **IaInfoEvent** should be same with configured the value. | 12. **Dhcp6ConfigData.** **IaInfoEvent** should be same with the configured value. |
| 5.24.3.3.11 | 0x32797b99, 0x3b8b, 0x4456, 0x9d, 0xca, 0x3f, 0x76, 0xc6, 0x3f, 0x1c, 0xbf | **Dhcp6ConfigData.** **ReconfigureAccept** should be same with configured the value. | 13. **Dhcp6ConfigData.** **ReconfigureAccept** should be same with the configured value. |
| 5.24.3.3.12 | 0xb2f4a83b, 0xe44d, 0x4770, 0x81, 0xef, 0xef, 0x06, 0x29, 0xbd, 0x7f, 0xd7 | **Dhcp6ConfigData.** **RapidCommit** should be same with configured the value. | 14. **Dhcp6ConfigData.** **RapidCommit** should be same with the configured value. |
| 5.24.3.3.13 | 0x45ea153f, 0x2d5f, 0x40b4, 0xbd, 0x34, 0x04, 0x52, 0x27, 0xd9, 0xb5, 0xc3 | **Dhcp6ConfigData.SolicitRetransmission** should be same with configured the value. | 15. **Dhcp6ConfigData.SolicitRetransmission** should be same with the configured value. |

### Configure()

|  |  |  |  |
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| Number | GUID | Assertion | Test Description |
| 5.24.3.4.1 | 0x8aa05b75, 0x4bdf, 0x45e6, 0x81, 0x74, 0x21, 0x85, 0x55, 0x88, 0x19, 0x74 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **Dhcp6ConfigData.OptionCount** > 0 and **Dhcp6ConfigData. OptionList** is **NULL** | Call Configure() with **Dhcp6ConfigData.OptionCount** > 0 and **Dhcp6ConfigData. OptionList** is **NULL**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.2 | 0xee84c2d5, 0xda69, 0x45ca, 0x9b, 0x62, 0x6c, 0x5f, 0x9a, 0xd9, 0x0d, 0xe2 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **OptionList** containing ClientId option. | Call Configure() with **OptionList** containing ClientId option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.3 | 0xd6cda19e, 0xcec6, 0x458a, 0xb9, 0xc7, 0x9d, 0x5e, 0xc8, 0x3d, 0xdd, 0x3f | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **OptionList** containing ReconfigAccept option. | Call Configure() with **OptionList** containing ReconfigAccept option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.4 | 0x8a694b28, 0x7d56, 0x4171, 0xa9, 0x91, 0x07, 0x89, 0x56, 0x08, 0xf3, 0xb2 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **OptionList** containing RapidCommit option. | Call Configure() with **OptionList** containing RapidCommit option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.5 | 0x671c33eb, 0x66ab, 0x46db, 0xac, 0x12, 0xb6, 0x41, 0xca, 0xf3, 0xc2, 0xad | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **OptionList** containing IA for Non-temporary Addresses Option. | Call Configure() with **OptionList** containing IA for Non-temporary Addresses Option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.6 | 0x438764a3, 0x3419, 0x48c1, 0xbc, 0xb6, 0xa7, 0x82, 0x21, 0xaf, 0x4d, 0xb7 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with **OptionList** containing IA for temporary Addresses Option. | Call Configure() with **OptionList** containing IA for temporary Addresses Option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.7 | 0x4ae68d37, 0x1f81, 0x41a9, 0xbf, 0x5a, 0xf7, 0x5f, 0xd6, 0xcf, 0x04, 0x11 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with an invalid **IaDescriptor.Type** (neither **EFI\_DHCP6\_IA\_TYPE\_NA** nor **EFI\_DHCP6\_IA\_TYPE\_TA**). | Call Configure() with an invalid **IaDescriptor.Type** (neither **EFI\_DHCP6\_IA\_TYPE\_NA** nor **EFI\_DHCP6\_IA\_TYPE\_TA**), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.8 | 0xffb74292, 0x6403, 0x4e09, 0xb3, 0x83, 0xe9, 0xa8, 0x14, 0x98, 0x54, 0xfa | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with an **IaDescriptor** is not unique. | Call Configure() with an **IaDescriptor** is not unique, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.9 | 0x286b8508, 0x13bc, 0x44cc, 0xaa, 0x6a, 0xc2, 0xd9, 0xac, 0xc7, 0xeb, 0x49 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with both IaInfoEvent and SolicitRetransmission NULL. | Call Configure() with both IaInfoEvent and SolicitRetransmission NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.10 | 0xc74fd682, 0x5e75, 0x455d, 0xbf, 0xc2, 0x28, 0xe0, 0xf3, 0x54, 0x34, 0xfa | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with a non NULL SolicitRetransmission while Mrc and Mrd are zero. | Call Configure()with a non NULL Dhcp6ConfigData while Mrc and Mrd are zero, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.4.11 | 0x49935e3b, 0xe516, 0x423f, 0xa9, 0xb1, 0x99, 0x97, 0xea, 0xd4, 0x1c, 0x96 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_ACCESS\_DENIED with a non NULL Dhcp6ConfigData while the instance has already been configured. | Call Configure()with a non NULL Dhcp6ConfigData while the instance has already been configured, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.4.12 | 0x59090898, 0x378c, 0x4555, 0xa6, 0xab, 0x14, 0x10, 0x96, 0xdc, 0x4f, 0xde | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_SUCCESS with a valid Dhcp6ConfigData | 5.24.3.4.12 to 5.24.3.4.15 belong to one case.  1. Call Configure()with a valid Dhcp6ConfigData, The return status should be EFI\_SUCCESS. |
| 5.24.3.4.13 | 0x568406ba, 0xa297, 0x4917, 0x8e, 0x7f, 0x77, 0xbb, 0x73, 0x6b, 0x53, 0xae | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_SUCCESS with a NULL Dhcp6ConfigData | 2. Call Configure()with a NULL Dhcp6ConfigData, The return status should be EFI\_SUCCESS. |
| 5.24.3.4.14 | 0x670d8a4d, 0x57e4, 0x424a, 0xbb, 0x72, 0x02, 0xb6, 0x72, 0xb0, 0x2d, 0x78 | Dhcp6ModeData.ClientId should not be 0. | 3. Call GetModeData()to get GetModeData.  4. Dhcp6ModeData.ClientId should not be 0. |
| 5.24.3.4.15 | 0x93080b8e, 0x5908, 0x4c54, 0x8d, 0xa7, 0xf6, 0x73, 0x2c, 0x66, 0x68, 0x92 | Dhcp6ModeData.Ia should be 0. | 5. Dhcp6ModeData.Ia should be 0. |

### Start()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.5.1 | 0x2153bcbb, 0xd5d3, 0x487e, 0x80, 0x98, 0xea, 0x02, 0x22, 0x79, 0x60, 0x11 | EFI\_ DHCP6 PROTOCOL.Start() - Start()returns EFI\_ACCESS\_DENIED with the non configured instance. | Call Start() with the non configured instance, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.5.2 | 0x5b1e8f26, 0x72e7, 0x429a, 0xbc, 0xbd, 0xff, 0xd0, 0x27, 0x91, 0x8a, 0x35 | EFI\_ DHCP6 PROTOCOL.Start() - Start()returns EFI\_ALREADY\_STARTED with the configured instance which has been started. | Call Start() with the configured instance which has been started, The return status should be EFI\_ALREADY\_STARTED. |
| 5.24.3.5.3 | 0xc5eca119, 0x7635, 0x4c13, 0x98, 0x5d, 0xde, 0xed, 0xf6, 0x94, 0x83, 0x37 | EFI\_ DHCP6 PROTOCOL.Start() - Start()returns EFI\_NO\_RESPONSE while DHCPv6 S.A.R.R process failed because of no response. | Call Start() while DHCPv6 S.A.R.R process failed because of no response, The return status should be EFI\_NO\_RESPONSE. |
| 5.24.3.5.4 | 0x23731450, 0xf84f, 0x43cc, 0xa6, 0x2a, 0x87, 0x6c, 0x10, 0xb7, 0xb2, 0x08 | EFI\_ DHCP6 PROTOCOL.Start() - Start()returns EFI\_ABORTED when the user returns error status from callback function. | Call Configure()when the user returns error status from callback function, The return status should be EFI\_ABORTED. |
| 5.24.3.5.5 | 0xd5a092e9, 0xed43, 0x4e5e, 0x8d, 0x9f, 0xc9, 0xc4, 0x92, 0x65, 0x27, 0xce | EFI\_ DHCP6 PROTOCOL.Start() - Start() returns EFI\_SUCCESS when the S.A.R.R process successfully. | 5.24.3.5.5 to 5.24.3.5.7 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create an event for the Dhcp6CfgData  3. Call Configure() to initialize the DHCP6 instance.  4. Call Start() to start S.A.R.R process.  5. Get the return status of Start(), it should be EFI\_SUCCESS |
| 5.24.3.5.6 | 0xbb8655d9, 0x8d41, 0x452a, 0x92, 0x6e, 0xc8, 0xe7, 0x92, 0xf8, 0xc4, 0xcc | GetModeData.Ia.State should be Dhcp6Bound. | 6. Call GetModeData() to get the GetModeData  7. GetModeData.Ia.State should be Dhcp6Bound |
| 5.24.3.5.7 | 0xb7d13d3b, 0x6492, 0x4955, 0x9d, 0x51, 0xe0, 0xba, 0x96, 0x69, 0xfd, 0x43 | Dhcp6ConfigData.IaInfoEvent should be signaled. | 8. Dhcp6ConfigData.IaInfoEvent should be signaled |
| 5.24.3.5.8 | 0x6e3cc768, 0x1a9c, 0x466f, 0xa6, 0x0f, 0xac, 0xd4, 0x58, 0x76, 0xdb, 0x7f | EFI\_ DHCP6 PROTOCOL.Start() - Start() returns EFI\_SUCCESS when the S.A.R.R process successfully. | 5.24.3.5.8 to 5.24.3.5.9 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS |
| 5.24.3.5.9 | 0xf68a6461, 0x26cf, 0x4f37, 0xa5, 0xd2, 0x65, 0xb2, 0x65, 0xd1, 0x1a, 0x84 | EFI\_ DHCP6 PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER with both IaInfoEvent and SolicitRetransmission NULL. | 5. Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound |

### InfoRequest()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.6.1 | 0x5bf750bc, 0x349f, 0x4aa2, 0xa5, 0x9f, 0xfd, 0x09, 0xba, 0xf0, 0xcf, 0xc1 | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER with NULL OptionRequest. | Call InfoRequest() with NULL OptionRequest, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.2 | 0x3e90fc45, 0x7a27, 0x4c9b, 0x88, 0x8b, 0xfc, 0xa8, 0x56, 0x9f, 0x80, 0xef | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER with non zero OptionCount and an NULL OptionList. | Call InfoRequest() with non zero OptionCount and an NULL OptionList, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.3 | 0xa85f59d4, 0x3a09, 0x4a74, 0xa8, 0xd6, 0x71, 0xee, 0x08, 0x20, 0x2f, 0x7e | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER when OptionList contains client identity option. | Call InfoRequest() when OptionList contains client identity option, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.4 | 0x8647418d, 0xb3f9, 0x4bf5, 0xb5, 0x24, 0xf4, 0xc1, 0x7d, 0x36, 0x00, 0x20 | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER with an NULL Retransmission. | Call InfoRequest() with an NULL Retransmission, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.5 | 0xf18e8693, 0xd00f, 0x497f, 0x86, 0xfe, 0xf9, 0x3a, 0x2f, 0x50, 0x38, 0x04 | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER when both Retransmission.Mrd and Retransmission.Mrt are zero. | Call InfoRequest() when both Retransmission.Mrd and Retransmission.Mrt are zero, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.6 | 0x1669a032, 0x433a, 0x4dbc, 0x8c, 0x00, 0x81, 0xc4, 0xb6, 0x59, 0x78, 0x1f | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_INVALID\_PARAMETER when ReplyCallback is NULL. | Call InfoRequest() when ReplyCallback is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.6.7 | 0xaa884b5b, 0xb369, 0x46cc, 0x85, 0xa9, 0xfe, 0xb0, 0x33, 0xd1, 0xaa, 0x48 | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_NO\_RESPONSE when Dhcp6 server doesn’t response. | Call InfoRequest() when Dhcp6 server doesn’t response, The return status should be EFI\_NO\_RESPONSE. |
| 5.24.3.6.8 | 0x3ade8458, 0xd07a, 0x4f45, 0xbc, 0xc3, 0x49, 0x68, 0x20, 0xe9, 0x85, 0x0b | EFI\_ DHCP6 PROTOCOL.InfoRequest() - InfoRequest()returns EFI\_ABORTED when the user returns error status from ReplyCallback function. | Call InfoRequest()when the user returns error status from ReplyCallback function, The return status should be EFI\_ABORTED. |
| 5.24.3.6.9 | 0xc7cb2c53, 0xd008, 0x40b5, 0xb0, 0x53, 0xb2, 0x68, 0x08, 0xb8, 0x81, 0x3a | InfoRequestPacket should be received. | 5.24.3.6.9 to 5.24.3.6.12 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create a timeout event.  3. Call InfoRequest() to obtain configuration information without ant IA address.  4. InfoRequestPacket should be received. |
| 5.24.3.6.10 | 0x730310e5, 0x5df3, 0x41f9, 0xbf, 0x4a, 0x75, 0x1b, 0x01, 0xf9, 0x59, 0xef | The return status of InfoRequest() should be EFI\_SUCCESS | 5. Send the the Reply packet for the InfoRequest message.  6. The return status of InfoRequest() should be EFI\_SUCCESS |
| 5.24.3.6.11 | 0x1cb6efc5, 0x1d58, 0x4c8e, 0xb5, 0x7d, 0x83, 0x7d, 0xd2, 0x8c, 0xb0, 0xd3 | The CallbackContext should be updated with ReplyCallback() | 7. The CallbackContext should be updated with ReplyCallback() |
| 5.24.3.6.12 | 0x5738bba8, 0xf1ad, 0x4889, 0x87, 0xed, 0x29, 0x21, 0x59, 0x17, 0x61, 0x48 | The Timeout event should not be signaled. | 8. The Timeout event should not be signaled. |
| 5.24.3.6.13 | 0xa0995b80, 0x76ad, 0x4d99, 0xa5, 0xd3, 0x0d, 0x55, 0x1d, 0xb0, 0x94, 0x75 | InfoRequestPacket should be received. | 5.24.3.6.13 to 5.24.3.6.15 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call InfoRequest() to obtain configuration information without ant IA address.  3. InfoRequestPacket should be received. |
| 5.24.3.6.14 | 0x46a40db0, 0x5b97, 0x4272, 0x98, 0x98, 0x9c, 0xbb, 0xe7, 0xa2, 0x22, 0x5f | The return status of InfoRequest() should be EFI\_SUCCESS | 4. Send the the Reply packet for the InfoRequest message.  5. The return status of InfoRequest() should be EFI\_SUCCESS |
| 5.24.3.6.15 | 0x4b1612fa, 0x7561, 0x4b55, 0xb9, 0xa2, 0x76, 0x40, 0x02, 0xc6, 0x95, 0xe1 | The CallbackContext should be updated with ReplyCallback() | 6. The CallbackContext should be updated with ReplyCallback() |

### RenewRebind()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.7.1 | 0x613614f9, 0x2c96, 0x45ee, 0xad, 0xb8, 0xf0, 0x88, 0x72, 0xfd, 0x86, 0xf9 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_ACCESS\_DENIED when the instance has not been configured. | Call RenewRebind() when the instance has not been configured, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.7.2 | 0x28ce0a5d, 0x6f3d, 0x47ad, 0xb1, 0x95, 0xc2, 0x5f, 0xce, 0xd8, 0x98, 0xb5 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_ACCESS\_DENIED when the instance is not in Dhcp6Bound state. | Call RenewRebind() when the instance is not in Dhcp6Bound state, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.7.3 | 0x5c85dc0c, 0x634a, 0x4db3, 0x95, 0x81, 0x72, 0x0d, 0x1b, 0xda, 0x6c, 0x84 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_ALREADY\_STARTED with RebindRequest TRUE when the instance in Dhcp6Rebinding state. | Call RenewRebind() with RebindRequest TRUE when the instance in Dhcp6Rebinding state, The return status should be EFI\_ALREADY\_STARTED. |
| 5.24.3.7.4 | 0x94bc77a0, 0xb016, 0x4d71, 0x8f, 0x5b, 0xd0, 0x49, 0x1a, 0x2c, 0x4f, 0x0c | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_ALREADY\_STARTED with RebindRequest FALSE when the instance in Dhcp6Rebinding state. | Call RenewRebind() with RebindRequest FALSE when the instance in Dhcp6Rebinding state, The return status should be EFI\_ALREADY\_STARTED. |
| 5.24.3.7.5 | 0xcc0b1c38, 0x2b99, 0x4ef4, 0xb9, 0x35, 0x63, 0x2e, 0x12, 0x46, 0x4f, 0xf7 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_ABORTED when the user returns error status from callback function. | Call RenewRebind() when the user returns error status from callback function, The return status should be EFI\_ABORTED. |
| 5.24.3.7.6 | 0x2957725b, 0x7693, 0x40ac, 0xae, 0x81, 0x59, 0x54, 0x88, 0x25, 0xf7, 0x48 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_SUCCESS when the exchange process is executed successfully. | 5.24.3.7.6 to 5.24.3.7.8 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call RenewRebind() and execute exchange process, including RENEW-REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.7.7 | 0xf495e992, 0xe807, 0x4a38, 0xbf, 0x42, 0x57, 0x1d, 0xd1, 0xfe, 0x8f, 0xc7 | CallbackContext should updated. | 8. CallbackContext should be updated. |
| 5.24.3.7.8 | 0x23d22d31, 0x1852, 0x4527, 0x80, 0x73, 0xcf, 0x8a, 0x51, 0x16, 0xff, 0x92 | The state is still Dhcp6Bound. | 9. The state is still Dhcp6Bound |
| 5.24.3.7.9 | 0x6ae394d7, 0xa5dc, 0x4147, 0x93, 0x5e, 0xf5, 0x07, 0xb2, 0xb8, 0xea, 0x35 | EFI\_ DHCP6 PROTOCOL.RenewRebind() - RenewRebind()returns EFI\_SUCCESS when the exchange process is executed successfully. | 5.24.3.7.9 to 5.24.3.7.10 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call RenewRebind() and execute exchange process, including RENEW-REBIND-REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.7.10 | 0x9f653dd2, 0x3edd, 0x47d6, 0xa6, 0x2e, 0x6c, 0x79, 0x99, 0x3d, 0xd9, 0x58 | The state is still Dhcp6Bound. | 8. The state is still Dhcp6Bound. |

### Decline()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.8.1 | 0x30c90eee, 0x69f1, 0x4a41, 0x88, 0x4d, 0x27, 0x6e, 0x9f, 0x6c, 0x0e, 0x33 | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_ACCESS\_DENIED when the instance has not been configured. | Call Decline() when the instance has not been configured, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.8.2 | 0x2f3cd8a1, 0x8987, 0x434d, 0xa1, 0xbb, 0xfc, 0xb6, 0x83, 0x04, 0xf6, 0x0d | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_ACCESS\_DENIED when the instance is not in Dhcp6Bound state. | Call Decline() when the instance is not in Dhcp6Bound state, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.8.3 | 0x6224a781, 0xfa3a, 0x4190, 0xa4, 0xfa, 0x5b, 0xec, 0x33, 0xbf, 0x3f, 0xfc | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_INVALID\_PARAMETER when the AddressCount is zero. | Call Decline() when the AddressCount is zero, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.8.4 | 0x1c8166c0, 0xbc5e, 0x4d1f, 0xa3, 0x8b, 0x65, 0x34, 0x7e, 0x76, 0x10, 0x69 | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_INVALID\_PARAMETER when the Addresses is NULL. | Call Decline() when the Addresses is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.8.5 | 0xc14f0d80, 0xe7e5, 0x4742, 0x9c, 0xc5, 0x27, 0xd0, 0x37, 0x79, 0x1b, 0x0d | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_NOT\_FOUND when any specified address in Addresses is not correlated with the configured IA. | Call Decline() when any specified address in Addresses is not correlated with the configured IA, The return status should be EFI\_NOT\_FOUND. |
| 5.24.3.8.6 | 0x44b4fcda, 0xf970, 0x4f3e, 0x88, 0xbb, 0x52, 0xf2, 0x52, 0xe9, 0x81, 0xdf | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_ABORTED when the user returns error status from callback function. | Call Decline() when the user returns error status from callback function, The return status should be EFI\_ABORTED. |
| 5.24.3.8.7 | 0x86606604, 0x5e2b, 0x4268, 0x91, 0xcd, 0x99, 0xc6, 0xb5, 0x7a, 0x42, 0xd8 | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_SUCCESS with execute exchange process, including DECLINE- REPLY. | 5.24.3.8.7 to 5.24.3.8.8 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Decline() and execute exchange process, including DECLINE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.8.8 | 0x1119b246, 0x8627, 0x45a1, 0x87, 0x89, 0x5b, 0xba, 0x7b, 0x4c, 0x0b, 0x48 | The state is still Dhcp6Bound. | 8. The state is still Dhcp6Bound |
| 5.24.3.8.9 | 0x554529cc, 0x30e2, 0x4269, 0x88, 0xb7, 0x72, 0x8e, 0x31, 0x1d, 0xbd, 0x1b | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_SUCCESS to decline all IP6 addresses of the configured IA and execute exchange process, including DECLINE- REPLY. | 5.24.3.8.9 to 5.24.3.8.10 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Decline() to decline all IP6 addresses of the configured IA and execute exchange process, including DECLINE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.8.10 | 0xf7449f19, 0x53e0, 0x4130, 0xba, 0x62, 0xea, 0x2b, 0x1f, 0x74, 0x8c, 0xa0 | The state is still Dhcp6Init. | 8. The state is still Dhcp6Init. |
| 5.24.3.8.11 | 0xcdbd802e, 0x7647, 0x41bc, 0x9b, 0xe6, 0xe4, 0x11, 0x9f, 0x6c, 0x79, 0x2d | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_SUCCESS to decline all IP6 addresses of the configured IA and execute exchange process, including DECLINE- REPLY. | 5.24.3.8.11 to 5.24.3.8.13 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create IaInfoEvent  3. Call Configure() to initialize the DHCP6 instance.  4. Call Start() to start S.A.R.R process.  5. Get the return status of Start(), it should be EFI\_SUCCESS  6. The CallbackContext is updated  Call GetModeData() to get the GetModeData  7. GetModeData.Ia.State should be Dhcp6Bound  8. Call Decline() to decline all IP6 addresses of the configured IA and execute exchange process, including DECLINE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.8.12 | 0xfce31eb4, 0xeb16, 0x4b22, 0xb3, 0x55, 0xa8, 0xb0, 0x82, 0x0f, 0x0d, 0x3d | After the Decline exchange process returns,the IaInfoEvent will be signaled. | 9. After the Decline exchange process returns,the IaInfoEvent will be signaled. |
| 5.24.3.8.13 | 0x313da4fc, 0xf2ce, 0x4ecc, 0xa9, 0x97, 0x03, 0xea, 0x77, 0xfb, 0xdb, 0x59 | The state is still Dhcp6Init. | 10. The state is still Dhcp6Init. |
| 5.24.3.8.14 | 0x60c90ab2, 0x4372, 0x4b75, 0x84, 0x56, 0xe6, 0xe1, 0xfa, 0x34, 0x71, 0xad | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_NO\_RESPONSE to decline all IP6 addresses of the configured IA without the response from server. | 5.24.3.8.14 to 5.24.3.8.15 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Decline() to decline all IP6 addresses of the configured IA without the response from server, the return status should be EFI\_NO\_RESPONSE |
| 5.24.3.8.15 | 0x6af27ff2, 0xecb2, 0x4e96, 0xaf, 0xf7, 0xa7, 0x6b, 0x18, 0xe6, 0x38, 0xfa | The state is still Dhcp6Init. | 8. The state is still Dhcp6Init. |

### Release()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.9.1 | 0xfd3f1c62, 0x37d9, 0x4f34, 0x85, 0xe5, 0x93, 0x85, 0x28, 0x2f, 0xd3, 0xc4 | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_ACCESS\_DENIED when the instance has not been configured. | Call Release() when the instance has not been configured, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.9.2 | 0x38bc0e62, 0x4d8f, 0x4706, 0xb1, 0x39, 0xe0, 0xa7, 0x1c, 0xbd, 0x6d, 0x56 | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_ACCESS\_DENIED when the instance is not in Dhcp6Bound state. | Call Release() when the instance is not in Dhcp6Bound state, The return status should be EFI\_ACCESS\_DENIED. |
| 5.24.3.9.3 | 0x8e214193, 0x3dfb, 0x48e3, 0xb6, 0xe3, 0xdb, 0x4b, 0xde, 0xa4, 0xbc, 0xef | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_INVALID\_PARAMETER when the AddressCount is not zero and Addresses is NULL. | Call Release() when the AddressCount is not zero and Addresses is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.9.4 | 0x4b411cb3, 0x2427, 0x4315, 0xa3, 0x74, 0xa9, 0xdd, 0x29, 0xf7, 0x9a, 0xed | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_NOT\_FOUND when any specified address in Addresses is not correlated with the configured IA. | Call Release() when any specified address in Addresses is not correlated with the configured IA, The return status should be EFI\_NOT\_FOUND. |
| 5.24.3.9.5 | 0xa4b55b0e, 0x1037, 0x4717, 0x83, 0x53, 0x29, 0x24, 0xd3, 0x18, 0x23, 0x5d | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_ABORTED when the user returns error status from callback function. | Call Release() when the user returns error status from callback function, The return status should be EFI\_ABORTED. |
| 5.24.3.9.6 | 0x1459bb4e, 0xa926, 0x42cc, 0x99, 0x7d, 0xf8, 0x87, 0xf7, 0xd0, 0xbb, 0x71 | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_SUCCESS to release one of the IPv6 address that has already been assigned to the configured IA. | 5.24.3.9.6 to 5.24.3.9.7 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Release() to release one of the IPv6 address that has already been assigned to the configured IA, the return status should be EFI\_SUCCESS |
| 5.24.3.9.7 | 0x7251daef, 0x57ae, 0x4fc6, 0x81, 0xf4, 0x10, 0xe2, 0x34, 0xa5, 0x87, 0xa4 | The state is still Dhcp6Bound. | 8. The state is still Dhcp6Bound |
| 5.24.3.9.8 | 0x692e0cfb, 0x587d, 0x4906, 0x91, 0xa1, 0xcb, 0x20, 0x3b, 0x1e, 0xba, 0x2d | EFI\_ DHCP6 PROTOCOL.Decline() - Decline()returns EFI\_SUCCESS to release all IP6 addresses of the configured IA and execute exchange process, including RELEASE- REPLY. | 5.24.3.9.8 to 5.24.3.9.9 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Release() to release all IP6 addresses of the configured IA and execute exchange process, including RELEASE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.9.9 | 0x309de757, 0x2ab4, 0x4d5b, 0xb3, 0x7c, 0xb7, 0xdc, 0x46, 0x40, 0x4d, 0x1c | The state is still Dhcp6Init. | 8. The state is still Dhcp6Init. |
| 5.24.3.9.10 | 0x7b131129, 0x2fdb, 0x4a67, 0x8f, 0xaa, 0xe9, 0x0c, 0x1d, 0x08, 0xab, 0x94 | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_SUCCESS to release all IP6 addresses of the configured IA and execute exchange process, including RELEASE- REPLY. | 5.24.3.9.10 to 5.24.3.9.12 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create IaInfoEvent  3. Call Configure() to initialize the DHCP6 instance.  4. Call Start() to start S.A.R.R process.  5. Get the return status of Start(), it should be EFI\_SUCCESS  6. The CallbackContext is updated  Call GetModeData() to get the GetModeData  7. GetModeData.Ia.State should be Dhcp6Bound  8. Call Release() to release all IP6 addresses of the configured IA and execute exchange process, including RELEASE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.9.11 | 0x47d072fd, 0x5782, 0x413b, 0xb4, 0x62, 0xb3, 0x18, 0x58, 0x04, 0xad, 0x4e | After the Release exchange process returns,the IaInfoEvent will be signaled. | 9. After the Release exchange process returns, the IaInfoEvent will be signaled. |
| 5.24.3.9.12 | 0x22dc90e4, 0xd93c, 0x465d, 0x90, 0x27, 0x35, 0xe9, 0xab, 0x3f, 0x3a, 0x3a | The state is still Dhcp6Init. | 10. The state is still Dhcp6Init. |
| 5.24.3.9.13 | 0x52b03918, 0x1e8c, 0x4620, 0xa1, 0x44, 0x02, 0x09, 0xae, 0xf3, 0xc7, 0x9d | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_NO\_RESPONSE to release all IP6 addresses of the configured IA without the response from server. | 5.24.3.9.14 to 5.24.3.9.15 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Call Configure() to initialize the DHCP6 instance.  3. Call Start() to start S.A.R.R process.  4. Get the return status of Start(), it should be EFI\_SUCCESS  5. The CallbackContext is updated  Call GetModeData() to get the GetModeData  6. GetModeData.Ia.State should be Dhcp6Bound  7. Call Release() to release all IP6 addresses of the configured IA without the response from server, the return status should be EFI\_NO\_RESPONSE |
| 5.24.3.9.14 | 0xc65a96c1, 0x448c, 0x4d75, 0x81, 0x90, 0x19, 0x13, 0x76, 0x1e, 0x79, 0x3d | The state is still Dhcp6Init. | 8. The state is still Dhcp6Init. |

### Stop()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.10.1 | 0x592d9e8d, 0x82cd, 0x44d8, 0xbf, 0x26, 0x0b, 0x40, 0x81, 0x25, 0x65, 0x17 | EFI\_ DHCP6 PROTOCOL.Stop() - Stop()returns EFI\_SUCCESS when the instance has not been configured. | Call Stop() when the instance has not been configured, The return status should be EFI\_SUCCESS. |
| 5.24.3.10.2 | 0x69ac94c1, 0xb57f, 0x4251, 0xb9, 0x56, 0x20, 0xaa, 0x9f, 0x30, 0x0d, 0xc1 | EFI\_ DHCP6 PROTOCOL.Stop() - Stop()returns EFI\_SUCCESS when the instance has been configured. | Call Stop() when the instance has been configured, The return status should be EFI\_SUCCESS. |
| 5.24.3.10.3 | 0x51255767, 0x7218, 0x400d, 0xa2, 0xd7, 0x3f, 0x3e, 0x50, 0x8c, 0x90, 0x64 | EFI\_ DHCP6 PROTOCOL.Release() - Release()returns EFI\_INVALID\_PARAMETER when the AddressCount is not zero and Addresses is NULL. | 5.24.3.9.3 to 5.24.3.9.5 belong to one case.  1. Call CreateChild() to create an DHCP6 instance.  2. Create IaInfoEvent  3. Call Configure() to initialize the DHCP6 instance.  4. Call Start() to start S.A.R.R process.  5. Get the return status of Start(), it should be EFI\_SUCCESS  6. The CallbackContext is updated  Call GetModeData() to get the GetModeData  7. GetModeData.Ia.State should be Dhcp6Bound  8. IaInfoEvent should be signaled.  9. Call Stop() to stop all IP6 addresses of the configured IA and execute exchange process, including RELEASE- REPLY, the return status should be EFI\_SUCCESS |
| 5.24.3.10.4 | 0xd00b1578, 0x5f23, 0x4ab7, 0x99, 0x40, 0x98, 0x51, 0x8a, 0x30, 0x8c, 0x08 | IaInfoEvent should be signaled. | IaInfoEvent should be signaled. |
| 5.24.3.10.5 | 0xcfa8dc36, 0xc246, 0x45d7, 0x94, 0xf1, 0xc9, 0x18, 0x54, 0xd6, 0x38, 0xad | The state of IA should be Dhcp6Init. | The state of IA should be Dhcp6Init |

### Parse()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.24.3.11.1 | 0x15a7d1de, 0x4bf6, 0x4507, 0xa3, 0xe2, 0xa1, 0xa4, 0x2e, 0xdd, 0x43, 0x23 | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_INVALID\_PARAMETER when the Packet is NULL. | Call Parse() when the Packet is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.11.2 | 0x28a7d965, 0x82bf, 0x49c6, 0xb1, 0xd8, 0x56, 0x08, 0x37, 0x0b, 0xdd, 0x62 | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_INVALID\_PARAMETER when the Packet is not well-formed(length is too small). | Call Parse() when the Packet is not well-formed(length is too small), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.11.3 | 0x2228cc36, 0xa56b, 0x4aa8, 0xa2, 0x15, 0x06, 0x01, 0xce, 0xfe, 0x00, 0x94 | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_INVALID\_PARAMETER when the OptionCount is not zero and PacketOptionList is NULL. | Call Parse() when the OptionCount is not zero and PacketOptionList is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.11.4 | 0x444b0ef0, 0x0297, 0x4805, 0x8b, 0x2a, 0xc4, 0xa2, 0xf8, 0x82, 0xac, 0x2c | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_INVALID\_PARAMETER when the OptionCount is NULL. | Call Parse() when the OptionCount is NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.24.3.11.5 | 0x49182e78, 0x34dc, 0x4450, 0xb6, 0x2c, 0xfe, 0x28, 0x33, 0x51, 0xc1, 0x96 | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_BUFFER\_TOO\_SMALL when the OptionCount is NULL. | Call Parse() when OptionCount is smaller than the number of option that were found in the Packet, The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.24.3.11.6 | 0x43dcf866, 0x9f05, 0x47d5, 0x92, 0xa1, 0x1e, 0x6f, 0x26, 0xf4, 0x1f, 0x61 | OptionCount should be update to the right number of option that is found in the packet. | OptionCount should be update to the right number of option that is found in the packet. |
| 5.24.3.11.7 | 0xacfb1bb7, 0x7b28, 0x4c35, 0xbd, 0x9f, 0x7e, 0x89, 0xa1, 0x9e, 0x54, 0xe2 | EFI\_ DHCP6 PROTOCOL.Parse() - Parse()returns EFI\_SUCCESS with the valid parameters. | Call Parse() with the valid parameters, The return status should be EFI\_SUCCESS. |
| 5.24.3.11.8 | 0xbb477381, 0x7731, 0x4259, 0x87, 0x01, 0xca, 0x1f, 0x71, 0xd6, 0xf9, 0x7e | The OpCode should be retrieved correctly. | The OpCode should be retrieved correctly. |

# Network Protocols TCP, IP and Configuration

## EFI\_TCP4\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_TCP4\_PROTOCOL Section.

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.1.1 | 0xf7c924b2, 0xaaa6, 0x4729, 0xb1, 0xd0, 0x71, 0xf8, 0xed, 0xc8, 0x81, 0x8f | EFI\_TCP4\_PROTOCOL.GetModeData() – invokes GetModeData() with a Tcp4State value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with a Tcp4Statevalue of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.2 | 0xd39219b6, 0xa262, 0x4797, 0xac, 0x44, 0x35, 0xe5, 0x46, 0xc0, 0xe9, 0xc8 | EFI\_TCP4\_PROTOCOL.GetModeData() – invokes GetModeData() with a Tcp4ConfigData value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with a Tcp4ConfigData value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.3 | 0x7be1ddb5, 0xf3bf, 0x4eb3, 0x87, 0x52, 0x9a, 0xf6, 0x91, 0x6c, 0x51, 0xc5 | EFI\_TCP4\_PROTOCOL.GetModeData() – invokes GetModeData() with a Ip4ModeData value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with a Ip4ModeData value ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.4 | 0x6255190b, 0x3eb5, 0x40e9, 0xbd, 0x24, 0x26, 0x85, 0xfc, 0x87, 0xab, 0x29 | EFI\_TCP4\_PROTOCOL.GetModeData() – invokes GetModeData() with a *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with a *MnpConfigData* value ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.5 | 0x62f96356, 0x53d3, 0x4fdd, 0xb1, 0x36, 0x12, 0x53, 0xc2, 0xb0, 0x14, 0x8e | EFI\_TCP4\_PROTOCOL.GetModeData() – invokes GetModeData() with a *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3.Call EFI\_TCP4\_PROTOCOL.GetModeData() with a *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.6 | 0xf753264f, 0x22d0, 0x4e19, 0x81, 0x81, 0xf3, 0x4d, 0xd9, 0xf6, 0xdb, 0x59 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4State andTcp4ConfigDatavalue of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3.Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4State andTcp4ConfigDatavalue ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.7 | 0x0848d02d, 0x3463, 0x4f06, 0xb1, 0x6e, 0xce, 0xd1, 0x32, 0x3b, 0x53, 0xd2 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4StateandIp4ModeDatavalue of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3.Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4Stateand Ip4ModeDatavalue ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.8 | 0xa92b1577, 0x6d14, 0x4d77, 0x9f, 0x5b, 0x85, 0xba, 0x55, 0xf8, 0x1d, 0x52 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4State and*MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3.Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4State and*MnpConfigData*value ofNULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.9 | 0x31388819, 0x2579, 0x414e, 0x89, 0x0f, 0xfe, 0xc9, 0xbe, 0x08, 0x8c, 0x37 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4State and*SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4State and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.10 | 0xec2502c3, 0xdf73, 0x4bff, 0xa4, 0xac, 0xaf, 0x5e, 0x77, 0x3d, 0xbf, 0xa1 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4ConfigData andIp4ModeData value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4ConfigData and Ip4ModeData value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.11 | 0x32100ad2, 0xbc14, 0x426b, 0x86, 0xee, 0x0e, 0xc1, 0x8e, 0xb3, 0x11, 0xb2 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4ConfigData and*MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4ConfigData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.12 | 0x3ae2f864, 0x8963, 0x48ca, 0xbc, 0xa5, 0x01, 0x0d, 0xdf, 0x13, 0x9e, 0xb1 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Tcp4ConfigData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Tcp4ConfigData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.13 | 0xc72c71bf, 0x781f, 0x4a08, 0xac, 0xa1, 0xb0, 0x1f, 0xbc, 0x79, 0x91, 0x60 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Ip4ModeData and *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Ip4ModeData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.14 | 0x86fb248c, 0x3238, 0x411e, 0xa6, 0xa5, 0x41, 0x1c, 0x21, 0x42, 0x82, 0xc4 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the Ip4ModeData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the Ip4ModeData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.15 | 0xdddaf809, 0xa972, 0x4376, 0xb2, 0xdb, 0x1a, 0x35, 0x14, 0xcc, 0x88, 0x0a | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with both the *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with both the *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.16 | 0xf6873b19, 0xbdef, 0x4bac, 0x93, 0x4d, 0x55, 0xe0, 0x87, 0x06, 0x67, 0x2e | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData and Ip4ModeData value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData and Ip4ModeData value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.17 | 0x8b5d7aa1, 0x9838, 0x4b5a, 0x88, 0x37, 0xa7, 0xd1, 0x93, 0x5f, 0x8e, 0x46 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData and *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.18 | 0x064d8786,0x876c, 0x46a2, 0x84, 0xa7, 0x1a, 0x69, 0x8a, 0x59, 0x65, 0xb0 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.19 | 0xb98bb8a0, 0xf8bd, 0x405d, 0x99, 0x6c, 0x52, 0x47, 0x3c, 0x20, 0x43, 0x38 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Ip4ModeData and *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData()GetModeData() with the Tcp4State, Ip4ModeData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.20 | 0x23fa07b0, 0xcd96, 0x490b, 0xa6, 0xf6, 0xe6, 0x5d, 0x8d, 0x89, 0x28, 0xc6 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Ip4ModeData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Ip4ModeData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.21 | 0xbfa282e9, 0x6393, 0x428f, 0x8f, 0xe1, 0x6d, 0xf2, 0xca, 0xfc, 0x9b, 0x84 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.22 | 0x245ea469, 0x0422, 0x45fa, 0x97, 0x4b, 0x0b, 0x45, 0xc2, 0xf8, 0x70, 0x27 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4ConfigData, Ip4ModeData and *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4ConfigData, Ip4ModeData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.23 | 0x70445b77, 0x59ec, 0x4fd1, 0xba, 0x2b, 0x9a, 0xcd, 0x7e, 0x0f, 0x78, 0x83 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4ConfigData, Ip4ModeData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4ConfigData, Ip4ModeData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.24 | 0xfa72381d, 0x5c30, 0x4dd1, 0xba, 0xf4, 0xff, 0xca, 0x30, 0x0a, 0x2f, 0x15 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4ConfigData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4ConfigData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.25 | 0xad6d2b6f, 0x8e2f, 0x49ed, 0xa1, 0xd8, 0x3b, 0x33, 0x69, 0x04, 0x2c, 0x2e | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.26 | 0x7d6ef330, 0x3522, 0x434d, 0x9f, 0xf7, 0x34, 0x84, 0xe4, 0x0d, 0x1f, 0xc5 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4ConfigData,Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4ConfigData,Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.27 | 0x1f83096c, 0x6342, 0x4f1a, 0xa1, 0x22, 0xe3, 0x1e, 0xd5, 0x63, 0x36, 0x53 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State,Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State,Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.28 | 0xe7f67d55, 0x5bb8, 0x400c, 0x99, 0xfc, 0x53, 0x0e, 0x5d, 0xc0, 0x1f, 0x51 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.29 | 0xa72e1aec, 0x5502, 0x434c, 0xb8, 0xed, 0x68, 0x0b, 0x54, 0xb2, 0xa8, 0x8e | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData, Ip4ModeData and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData, Ip4ModeData and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.30 | 0x59e6caf6, 0x0db0, 0x45f9, 0x91, 0x50, 0xca, 0xdb, 0x1c, 0xae, 0x9b, 0xc2 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with the Tcp4State, Tcp4ConfigData, Ip4ModeData and *MnpConfigData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with the Tcp4State, Tcp4ConfigData, Ip4ModeData and *MnpConfigData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.31 | 0x3fd1ebb6, 0x3edd, 0x4a61, 0x98, 0x8e, 0xfc, 0x92, 0xbd, 0xef, 0x8d, 0xf0 | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with all the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with all the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.32 | 0x53417686, 0xcf3b, 0x4dc5, 0x9d, 0x7b, 0x83, 0xad, 0x7c, 0x96, 0x3e, 0x0f | EFI\_TCP4\_PROTOCOL.GetModeData() **–** invokes GetModeData()with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.33 | 0x05f9a5f1, 0x445d, 0x46d2, 0xb8, 0x82, 0xf0, 0xe2, 0x34, 0x72, 0xca, 0x48 | EFI\_TCP4\_PROTOCOL.GetModeData() **–**invokes GetModeData()to correctly get the Tcp4ConfigData.TypeOfService. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to open an active connection,then receive the packet.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.34 | 0x529c2a7a, 0xf533, 0x4777, 0xa3, 0x7d, 0x09, 0x6f, 0x0c, 0x52, 0x99, 0xa7 | EFI\_TCP4\_PROTOCOL.GetModeData() **–**invokes GetModeData()to correctly get the Tcp4ConfigData and TimeToLive. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to open an active connection,then receive the packet.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.35 | 0xe6bc773d, 0xf461, 0x4f0f, 0x97, 0xed, 0x78, 0x69, 0x7f, 0x0b, 0x81, 0xcb | EFI\_TCP4\_PROTOCOL.GetModeData() **–**invokes GetModeData()to correctly get the Tcp4ConfigData and AccessPoint. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to open an active connection,then receive the packet.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.1.36 | 0x42f51ebd, 0x24d2, 0x42af, 0xb9, 0xad, 0x7e, 0xb2, 0xfe, 0x2a, 0x18, 0x65 | EFI\_TCP4\_PROTOCOL.GetModeData() **–**invokes GetModeData()to correctly get the Tcp4ConfigData and AccessPoint. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to open an active connection,then receive the packet.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() with none of the optional parameters Tcp4State, Tcp4ConfigData, Ip4ModeData, *MnpConfigData* and *SnpModeData* value of NULL. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.2.1 | 0x64729d75, 0x1007, 0x4b20, 0x9b, 0x78, 0x59, 0xc4, 0xc7, 0x02, 0xec, 0x9e | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure()when using a default address, and configuration has not finished yet. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure()when using a default address, and configuration (through  DHCP, BOOTP, RARP, etc.) has not finished yet. The return status should be **EFI\_NO\_MAPPING**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.2 | 0xe8cef00f, 0x0796, 0x4b1c, 0xbd, 0x09, 0x2c, 0x86, 0xdb, 0x4d, 0xba, 0x44 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure()with a *TcpConfigData->AccessPoint.*StationAddress value of an invalid unicast IPv4 address when *TcpConfigData->AccessPoint.UseDefaultAddress*is **FALSE**. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call **Tcp.**Configure()with a *TcpConfigData->AccessPoint.*StationAddressvalue of an invalid unicast IPv4 address when  *TcpConfigData->AccessPoint.UseDefaultAddress*is **FALSE**. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.3 | 0x6aaabbca, 0xb7d3, 0x49a1, 0x8f, 0x11, 0x4a, 0x82, 0x3f, 0x2e, 0xd9, 0x00 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure() with a *TcpConfigData->AccessPoint.*SubnetMask value of an invalid IPv4 address mask when *TcpConfigData->AccessPoint.UseDefaultAddress* is **FALSE**. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call **Tcp.**Configure()with a *TcpConfigData->AccessPoint.*SubnetMaskvalue of an invalid IPv4 address mask when*TcpConfigData->AccessPoint.UseDefaultAddress*is **FALSE**. The subnet mask must be contiguous. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.4 | 0xa176de8a, 0xd68d, 0x4529, 0x97, 0xb5, 0xcf, 0x13, 0xa7, 0xe3, 0x33, 0xc0 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure() with a *TcpConfigData->AccessPoint. RemoteAddress* value of an invalid unicast IPv4 address. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure()with a *TcpConfigData->AccessPoint. RemoteAddress*value of an invalid unicast IPv4 address. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.5 | 0xf3f1b054, 0xd497 ,0x4e1a, 0xa4, 0x67, 0x9c, 0x23, 0xab, 0xbb, 0x43, 0x08 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure() when a same access point has been configured in other TCP instance previously. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() when a same access point has been configured in other TCP instance previously. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.6 | 0x6fd9c85c, 0x7cc5, 0x480f, 0xa9, 0x14, 0x8f, 0xbd, 0x0d, 0x30, 0xba, 0x15 | EFI\_TCP4\_PROTOCOL. Configure() **–** invokes Configure() with a *TcpConfigData->AccessPoint.RemoteAddress* value of 0 when *TcpConfigData->AccessPoint.ActiveFlag*is **TRUE**. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call **Tcp.**Configure() with a *TcpConfigData->AccessPoint.RemoteAddress* value of 0 when *TcpConfigData->AccessPoint.ActiveFlag*is **TRUE**.  The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.7 | 0x0782f91f, 0x5553, 0x4854, 0x92, 0xbe, 0xb5, 0x25, 0x79, 0x0b, 0x42, 0x79 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure() with a *TcpConfigData->AccessPoint.RemotePort* value of 0 when *TcpConfigData->AccessPoint.ActiveFlag*is **TRUE**.. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() with *TcpConfigData->AccessPoint.RemotePort* is 0 when *TcpConfigData->AccessPoint.ActiveFlag*is **TRUE**.  The return status should be EFI\_INVALID\_PARAMETER.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.8 | 0x21e9706f, 0xf449, 0x4c3c, 0x95, 0x6e, 0xf4, 0x28, 0xdd, 0x22, 0x5a, 0xb9 | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure() with the TCP instance configured without calling Configure() with NULL to reset it. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure()to configure the new Tcp4 instance.  3. Call EFI\_TCP4\_PROTOCOL.Configure()to configure the Tcp4 instance again without calling Configure() with NULL to reset it. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.2.9 | 0xa1e6077c, 0x035e, 0x4684, 0x81, 0xe2, 0x99, 0xb2, 0x44, 0x4e, 0x0b, 0x9d | EFI\_TCP4\_PROTOCOL.Configure() **–** invokes Configure()when one or more of the control options are not supported in the implementation. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure()when one or more of the control options are not supported in the implementation. The return status should be **EFI\_UNSUPPORTED**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Connect()

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| Number | GUID | Assertion | Test Description |
| 5.25.1.4.1 | 0x0dc45007, 0xff6e, 0x41da, 0x81, 0x05, 0x55, 0x2d, 0x88, 0xe8, 0x09, 0x14 | EFI\_TCP4\_PROTOCOL.Connect() **–** invokes Connect()when the instance has not been configured. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Connect()when the instance has not been configured. The return status should be **EFI\_NOT\_STARTED**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.4.2 | 0xa00efef2, 0xd596, 0x4332, 0xa1, 0x9b, 0x38, 0x0a, 0xe0, 0xd7, 0x23, 0xe0 | EFI\_TCP4\_PROTOCOL.Connect() **–** invokes Connect()when the instance is not configured as an active one. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as not an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to open a connection when the instance is not configured as an active one. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.4.3 | 0xe204e699, 0x7941, 0x4d65, 0x8b, 0x2e, 0xf2, 0xbe, 0xd3, 0x6c, 0xcf, 0x7e | EFI\_TCP4\_PROTOCOL.Connect() – invokes Connect() when the instance is not in Tcp4StateClosed state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()configure the instance againwhen it is not in Tcp4State**Closed** state. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.4.4 | 0x3011f8f5, 0x6ccf, 0x46f4, 0xb9, 0x9a, 0x09, 0xd0, 0xf3, 0xde, 0x3a, 0x12 | EFI\_TCP4\_PROTOCOL.Connect() **–** invokes Connect()with a ConnectionToken value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()with a ConnectionToken value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.4.5 | 0x513b33c4, 0x4df0, 0x449e, 0xb8, 0xf5, 0xd6, 0x4e, 0x30, 0x27, 0x0e, 0xa4 | EFI\_TCP4\_PROTOCOL.Connect() **–** invokes Connect() with a ConnectionToken->CompletionToken.Event value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect()with a ConnectionToken->CompletionToken.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.4.6 | 0x672d833 2, 0xa9a0, 0x4111, 0xa2,0x95, 0x10,0xfe, 0x88,0x17, 0x86,0x04 | EFI\_TCP4\_PROTOCOL.Connect() – Connect()  must return EFI\_CONNECTION\_REFUSED when the instance is  in *SYN-RCVD* state & receive a *RST* | 1. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new  Tcp4 child.  2. Call  EFI\_TCP4\_PROTOCOL.Configure()  to configure the new instance.  3. Call  EFI\_TCP4\_PROTOCOL.Connect()  Receive SYN & Send a SYN to put TCP state machine in SYN-RCVD state.  4. Send a RST & check Connection Token state to be changed to **EFI\_CONNECTION\_REFUSED**  4. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()to destroy the created Tcp4 child and clean up the environment. |

### Accept()

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| Number | GUID | Assertion | Test Description |
| 5.25.1.5.1 | 0x81d93128, 0xfcda, 0x49fa, 0x87, 0xea, 0xd4, 0x8e, 0x83, 0x1a, 0x6e, 0x8b | EFI\_TCP4\_PROTOCOL.Accept() **–** invokes Accept()when the instance has not been configured. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Accept()when the instance has not been configured. The return status should be **EFI\_NOT\_STARTED**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.2 | 0x9f46e8f3, 0xc4e0, 0x4027, 0x88, 0x09, 0x6b, 0xc4, 0xc6, 0x5d, 0xca, 0xf5 | EFI\_TCP4\_PROTOCOL.Accept() **–** invokes Accept()when the instance is not a passive one. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()when the instance is not a passive one. The return status should be  **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.3 | 0xd59b4f29, 0x874c, 0x4282, 0xac, 0x7d, 0x3f, 0xf6, 0x8d, 0x52, 0x54, 0xe8 | EFI\_TCP4\_PROTOCOL.Accept() – invokes Accept() when the instance is not in Tcp4StateListen state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept() to initiate an asynchronous accept request to wait for an incoming connection.  4.Call EFI\_TCP4\_PROTOCOL.GetModeData() to change the instance state to Tcp4StateEstablished.  5. Call EFI\_TCP4\_PROTOCOL.Accept()when the instance is not in Tcp4State**Listen** state. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.4 | 0x85f6ab8a, 0x9374, 0x4afe, 0x85, 0x76, 0x5e, 0xa4, 0x44, 0x57, 0x87, 0x31 | EFI\_TCP4\_PROTOCOL.Accept() **–** invokes Accept()when the same listen token has already existed in the listen token queue of this TCP instance. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept() to initiate an asynchronous accept request to wait for an incoming connection.  4. Call EFI\_TCP4\_PROTOCOL.Accept()again when the same listen token has already existed in the listening token queue of this TCP instance. The return status should be **EFI\_ACCESS\_DENIED**.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.5 | 0x26f62b3c, 0xb67a, 0x4f2a, 0x86, 0x8f, 0x65, 0x30, 0xf6, 0x5e, 0xe3, 0x1b | EFI\_TCP4\_PROTOCOL.Accept() – invokes Accept() with a ListenToken value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()with a ListenTokenListenToken value of NULL. The return status should be EFI\_INVALID\_PARAMETEREFI\_INVALID\_PARAMETER.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.6 | 0x4fbd5006, 0x0d81, 0x40d0, 0xb8, 0xff, 0xca, 0x77, 0x03, 0x80, 0x34, 0xb6 | EFI\_TCP4\_PROTOCOL.Accept() **–** invokes Accept()with a ListentToken->CompletionToken.Event value ofNULL**.** | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()with a ListentToken->CompletionToken.Event value ofNULL**.** The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.7 | 0x0df289ca, 0xfc53, 0x4fc2, 0x92, 0xb3, 0xb4, 0x3a, 0xcf, 0x3c, 0x50, 0x34 | EFI\_TCP4\_PROTOCOL.Accept() **–** invokes Accept()to listen on the passive instance to accept an incoming connection request. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()to listen on the passive instance to accept an incoming connection request. The return status should be EFI\_SUCCESS.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.5.8 | 0x71f6d2e2, 0x9d2a, 0x435e, 0x83,0x0e, 0x63,0x9f, 0x1f,0xe7, 0x31,0x95 | EFI\_TCP4\_PROTOCOL.Accept() –Call Accept()to listen on the passive instance to  accept an incoming connection request. If received a RST, parent TCP State should Still be LISTEN. | 1. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create a new Tcp4 child.  2. Call  EFI\_TCP4\_PROTOCOL.Configure()to  configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()  to listen on the passive instance to accept  an incoming connection request.  4.Send a RST to Host and Call GetModeData() to get Parent state. The state should be LISTEN  5. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()to destroy the  created Tcp4 child and clean up the  environment. |
| 5.25.1.5.9 | 0x0b1d8b5c, 0xc111, 0x4548, 0xac,0x9e, 0x3c,0xc2, 0x85,0xaa, 0x0d,0xab | EFI\_TCP4\_PROTOCOL.Accept()–Call Accept()  to listen on the passive instance to  accept an incoming connection request. Must return EFI\_SUCCESS after a successful passive mode connection | 1. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create a new  Tcp4 child.  2. Call  EFI\_TCP4\_PROTOCOL.Configure()to  configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()to listen on the passive instance to accept  an incoming connection request.  4.Connect & check return status should be EFI\_SUCCESS.  5. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the  created Tcp4 child and clean up the  environment. |
| 5.25.1.5.10 | 0xbef6d443,0xbece, 0x4315, 0x84,0x57, 0x90,0xe4, 0xb1,0xc4, 0x34,0x0a | EFI\_TCP4\_PROTOCOL.Accept()–Call Accept()to listen on the passive instance to  accept an incoming connection request. New created connection state should be ESTABLISED after a successful passive mode connection | 1. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild()to create a new  Tcp4 child.  2. Call  EFI\_TCP4\_PROTOCOL.Configure() to  configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept()to listen on the passive instance to accept  an incoming connection request.  4.Connect & Call GetModeData() check new created connection status should be ESTABLISED.  5. Call  EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()to destroy the  created Tcp4 child and clean up the environment. |

### Transmit()

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| Number | GUID | Assertion | Test Description |
| 5.25.1.6.1 | 0xe268c41a, 0x3749, 0x4e6c, 0x95, 0xdc, 0x11, 0x6c, 0x4a, 0x57, 0x93, 0x40 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() when the instance has not been configured. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Transmit() when the instance has not been configured. The return status should be **EFI\_NOT\_STARTED**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.2 | 0xf05cb723, 0x7194, 0x45f9, 0xae, 0x3d, 0x52, 0x9b, 0xb3, 0x63, 0xde, 0x19 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() to transmit a packet with a Token value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.3 | 0xaaba9e1f, 0xdc0c, 0x4320, 0x8a, 0x01, 0x51, 0xc0, 0x07, 0x22, 0xfb, 0x73 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() to transmit a packet with a Token->CompletionToken.Event value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with a Token->CompletionToken.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.4 | 0x96eb6c53, 0x68bc, 0x4a3b, 0xa4, 0x07, 0x96, 0xbc, 0x97, 0xac, 0x8e, 0x1e | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit()Transmit() to transmit a packet with a Token->Packet.TxDatavalue of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with a Token->Packet.TxDatavalue of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.5 | 0xc0bce6b7, 0xcd60, 0x484a, 0xb3, 0x37, 0xf5, 0xb4, 0xfe, 0x99, 0x30, 0xb2 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() to transmit a packet with a Token*->Packet.FragmentCount*value of 0**.** | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with a Token*->Packet.FragmentCount*value of 0**.** The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.6 | 0xc00b7871, 0xa4ac, 0x4bfd, 0x81, 0xda, 0x78, 0x52, 0xc0, 0xc0, 0x54, 0x65 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() to transmit a packet with a Token*->Packet.DataLength* value other than equal to the sum of fragment lengths. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with a Token*->Packet.DataLength* value other than equal to the sum of fragment lengths. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.7 | 0x7e824bb2, 0xb6cd, 0x49b6, 0x9f, 0x1b, 0xe3, 0x60, 0x02, 0x7d, 0xd7, 0x5f | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() when a transmit completion token with the same Token->CompletionToken.Event which was already in the transmission queue. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() when a transmit completion token with the same Token->CompletionToken.Event in step 4 which was already in the transmission queue. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.8 | 0x97d1f634, 0x39aa, 0x44a3, 0xb4, 0xc8, 0x22, 0xa4, 0x17, 0x2b, 0x9a, 0x12 | EFI\_TCP4\_PROTOCOL.Transmit() – invokes Transmit() when the current instance is in Tcp4StateClosed state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. OS send RST to let EUT enter Tcp4StateClosed state.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() when the current instance is in Tcp4State**Closed** state. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.9 | 0x42145b1a, 0xdd0c, 0x40f8, 0x8f, 0x9a, 0x4c, 0xfc, 0xb6, 0xde, 0x88, 0x2e | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() when the current instance is a passive one and it is in Tcp4State**Listen** state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Transmit() when the current instance is a passive one and it is in Tcp4State**Listen** state. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.10 | 0xb1618c99, 0xc9c4, 0x4b90, 0x86, 0x4a, 0x8f, 0xa3, 0x32, 0xfd, 0x13, 0xe6 | EFI\_TCP4\_PROTOCOL.Transmit() **–** invokes Transmit() when user has called Close() to disconnect this connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() the disconnect the connection opened in step 3.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet when the connection was disconnected in step 4. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.11 | 0xb5b0f9ab, 0x04f3, 0x4269, 0x96, 0xa6, 0x40, 0xf5, 0x48, 0xa0, 0x9b, 0x7e | EFI\_TCP4\_PROTOCOL.Transmit() **–** Tests that the [EUT] correctly handles FIN segment during data transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet and call ReceiveTcpPacket to receive the packet. In addition, send a responding packet with FIN, ACK segment to end one side of the connection.  6. call ReceiveTcpPacket to receive the packet, and send the ack packet.  7. call ReceiveTcpPacket to receive the packet, and send the ack packet for the second time.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.12 | 0x19052fce, 0x5744, 0x470f, 0x8f, 0xc0, 0xc3, 0x84, 0xcc, 0x88, 0x57, 0x1d | EFI\_TCP4\_PROTOCOL.Transmit() **–**Checks the validity of [PSH] bit during data transimission, by sending 16 bytes data segment to [EUT], with [ENTS] default MSS = 536. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet and call ReceiveTcpPacket to receive the packet. In addition, send a responding packet.  5. Check the Token*.Status*.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.13 | 0x7740ac88, 0x4cf3, 0x4943, 0x9b, 0xf9, 0xec, 0xc4, 0x6a, 0x58, 0xcc, 0x90 | EFI\_TCP4\_PROTOCOL.Transmit() **–**Checks the validity of [PSH] bit during data transimission, by sending 1024 bytes data segment to [EUT], with [ENTS] default MSS = 536. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet and call ReceiveTcpPacket to receive the packet. In addition, send a responding packet.  5. Check the Token*.Status.*  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.14 | 0xc6e11d01, 0x485b, 0x4585, 0x9a, 0x2e, 0xcf, 0x43, 0xac, 0x94, 0x2e, 0x1a | EFI\_TCP4\_PROTOCOL.Transmit() **–**Transmits two fragments. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet and call ReceiveTcpPacket to receive the packet. In addition, send a responding packet.  5. Check the Token*.Status*.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.6.15 | 0xa5f63716, 0xd4a2, 0x44dc, 0x93, 0x2a, 0xd8, 0xdf, 0x33, 0xd2, 0xa1, 0x65 | EFI\_TCP4\_PROTOCOL.Transmit() **–**Transmits more fragments. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet and call ReceiveTcpPacket to receive the packet. In addition, send a responding packet.  5. Check the Token*.Status*.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Receive()

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| Number | GUID | Assertion | Test Description |
| 5.25.1.7.1 | 0xe28b3623, 0xc8ba, 0x431a, 0x91, 0xcd, 0xe2, 0xc5, 0x60, 0x36, 0xaa, 0x80 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() when the instance has not been configured. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Receive() when the instance has not been configured.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.2 | 0x484c93a6, 0x93ba, 0x429f, 0x9e, 0x63, 0x0a, 0x7d, 0x5c, 0x19, 0xf5, 0xc7 | EFI\_TCP4\_PROTOCOL.Receive – invokes Receive() with a Token value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.3 | 0xbe0ff6c1, 0x26a0, 0x4c3f, 0x88, 0xc7, 0xcc, 0xfc, 0x9f, 0xc8, 0xbe, 0x28 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() with a Token->CompletionToken.Event value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() with a Token->CompletionToken.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.4 | 0xd0d81b11, 0x23dc, 0x41ac, 0x8c, 0xec, 0xdd, 0x3c, 0x0f, 0x9f, 0x25, 0xef | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() with a Token*->Packet.RxData*value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() with a Token*->Packet.RxData*value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.5 | 0x6d723765, 0x1345, 0x45ad, 0xb3, 0x57, 0xf0, 0xbc, 0xa1, 0x4c, 0x0c, 0x8f | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() with a Token->Packet.RxData->DataLengthvalue of 0. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() with a Token->Packet.RxData->DataLengthvalue of 0. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.6 | 0x1aed8f61, 0xf658, 0x4abb, 0xac, 0x90, 0x04, 0x74, 0x2c, 0x46, 0x87, 0x57 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() with a Token*->Packet.RxData->DataLength*is not the sum of all FragmentBuffer length in FragmentTable. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() with a Token*->Packet.RxData->DataLength*value other than the sum of all FragmentBuffer length in FragmentTable. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.7 | 0x2ac8bc18, 0x6c65, 0x4b0d, 0xaf, 0xf1, 0x4f, 0xb5, 0x2e, 0x63, 0xc8, 0x4f | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() when the receive completion token with the same Token->CompletionToken.Event was already in the receive queue. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.  5. Call EFI\_TCP4\_PROTOCOL.Receive() again when the receive completion token with the same Token->CompletionToken.Event was already in the receive queue. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.8 | 0x77f0240a, 0x16a4, 0x471a, 0x95, 0x52, 0xf6, 0x58, 0xf9, 0xbb, 0x11, 0xb1 | EFI\_TCP4\_PROTOCOL.Receive – invokes Receive() when the current instance is in Tcp4StateClosed state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. OS send RST segment to let EUT enter Tcp4State**Closed** state.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet when the instance is in Tcp4State**Closed** state**.** Thereturn status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.9 | 0x276a8e6d, 0xf79a, 0x4cc5, 0xba, 0xcb, 0x99, 0x48, 0x38, 0x59, 0xde, 0xfb | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() when the current instance is a passive one and it is in  Tcp4StateListen state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Accept() to accept a connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet when the instance is a passive one and it is in Tcp4State**Listen** state. Thereturn status should be **EFI\_ACCESS\_DENIED**.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.10 | 0xdde96586, 0xd067, 0x4f04, 0xa0, 0xd9, 0xbd, 0x94, 0x0e, 0x30, 0x97, 0x90 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() when user has called Close() to disconnect this connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() the disconnect the connection opened in step 3.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet when the connection was disconnected in step 4. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.20 | 0xc527d95b, 0xbf72, 0x4c94, 0xa8, 0xcc, 0x60, 0x8c, 0x47, 0x04, 0x85, 0x07 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() when the communication peer has closed the connection and there is no any buffered data in the receive buffer of this instance. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Handles the three-way handshake.  5. Configure the OS side to initiate the connection closing.  6. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.  7. Clean up the environment on EUT side. |
| 5.25.1.7.21 | 0xc9109f21, 0xd490, 0x4382, 0xbb, 0x22, 0x12, 0xfd, 0x81, 0x67, 0x14, 0xec | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() fails when connection is reseted by the communication peer**.** | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Handles the three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.  6. Configure the OS side to reset the connection.  7. Clean up the environment on EUT side. |
| 5.25.1.7.11 | 0x36f08e10, 0xbf24, 0x4a97, 0x83, 0x42, 0x99, 0x32, 0x33, 0xff, 0xbe, 0x18 | EFI\_TCP4\_PROTOCOL.Receive – invokes Receive() to receive a packet. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet and then check the Token*.Status* to verify if the data has been transmitted successfully. The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.12 | 0xda1653b3, 0xcf85, 0x4152, 0x88, 0x30, 0xd4, 0xbf, 0x54, 0x17, 0x6a, 0x22 | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() to receive a packet with two fragment data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet with two fragment data,and then check the Token*.Status* to verify if the data has been transmitted successfully. The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.13 | 0xd40ff5f0, 0xcb1d, 0x41cf, 0x8e, 0xab, 0x3f, 0xce, 0xa8, 0x93, 0x3f, 0x4f | EFI\_TCP4\_PROTOCOL.Receive **–** invokes Receive() to receive a packet with ten fragment data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet with ten fragment data,and then check the Token*.Status* to verify if the data has been transmitted successfully. The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.14 | 0xf1974d5d, 0x5860, 0x4519, 0x8b, 0x8f, 0x78, 0xce, 0x0a, 0xad, 0xbb, 0xec | EFI\_TCP4\_PROTOCOL.Receive **–** Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(no overlaps). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.15 | 0xc9d79086, 0x5eb8, 0x4c76, 0xa4, 0xc4, 0xf1, 0xfe, 0x78, 0x6f, 0xc0, 0x31 | EFI\_TCP4\_PROTOCOL.Receive **–**Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(the second head overlaps the first tail). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.16 | 0x3c0cc77e, 0xfb9b, 0x4b24, 0x85, 0xd0, 0xaf, 0x3f, 0x39, 0xc8, 0xfd, 0xb7 | EFI\_TCP4\_PROTOCOL.Receive **–**Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(the second segment is included in the middle of the first one). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.17 | 0x5252cae8, 0xb23b, 0x456e, 0x97, 0xdf, 0x1c, 0x01, 0xdd, 0xc4, 0xcd, 0x05 | EFI\_TCP4\_PROTOCOL.Receive **–**Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(the third segment is included in the head of the second one). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.18 | 0x8a11bbca, 0xe267, 0x4221, 0xa5, 0x50, 0x33, 0x62, 0x33, 0x88, 0xeb, 0x06 | EFI\_TCP4\_PROTOCOL.Receive **–**Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(the third segment is included in the middle of the second one). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.7.19 | 0x794eff7b, 0xb88f, 0x4f67, 0x9d, 0xa1, 0xd5, 0x0e, 0xa6, 0xbc, 0x5c, 0x37 | EFI\_TCP4\_PROTOCOL.Receive **–**Checks if EFI TCP4 could correctly handle the current segment overlaps with previous segment(the first and the second segment is joined by the third one). | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet.The return status should be EFI\_SUCCESS.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Close()

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| Number | GUID | Assertion | Test Description |
| 5.25.1.8.1 | 0xc92fad2d, 0x446d, 0x43d7, 0xaf, 0xbe, 0x81, 0xce, 0x03, 0xd4, 0xe8, 0x12 | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() when the instance has not been configured. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Close() to close a connection when the instance has not been configured. The return status should be **EFI\_NOT\_STARTED**.  3. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.2 | 0x82827716, 0xb622, 0x4527, 0xb8, 0x9e, 0xa5, 0x30, 0x59, 0xce, 0xc9, 0xec | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() when Configure() has been called with *TcpConfigData* set to NULLand this function has not returned. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() with *TcpConfigData* set to NULL.  3. Call EFI\_TCP4\_PROTOCOL.Close() when the Configure() function has not returned. The return status should be **EFI\_ACCESS\_DENIED**.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.3 | 0x9f19e873, 0x71a5, 0x4350, 0xa6, 0xb5, 0xa9, 0x96, 0x8c, 0x64, 0xe6, 0xde | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() when the previous Close() call on this instance has not finished. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() to disconnect the connection opened in step 3.  5. Call EFI\_TCP4\_PROTOCOL.Close() when the previous Close() call on this instance has not finished. The return status should be **EFI\_ACCESS\_DENIED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.4 | 0xa9472aa1, 0xfff1, 0x4130, 0x90, 0xc9, 0xf8, 0x87, 0x69, 0x8f, 0x8b, 0xc1 | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() with a CloseToken value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() with a CloseToken value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.5 | 0x09caa34e, 0xdf4f, 0x4dcf, 0xbe, 0x5b, 0x7b, 0xe3, 0xf3, 0x68, 0x90, 0xc0 | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() with a CloseToken->CompletionToken.Event value of NULL. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() with aCloseToken->CompletionToken.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.6 | 0x3756329a, 0x21c3, 0x41c6, 0xa1, 0x03, 0x15, 0x9a, 0x57, 0x93, 0x8e, 0x9f | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() as function test. After user called Configure() with NULL without close stopping, the *Close*Token*.Completion*Token*.Status* should be **EFI\_ABORTED**. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() to disconnect the connection opened in step 3. The return status should be EFI\_SUCCESS.  5. Call EFI\_TCP4\_PROTOCOL.Configure() with NULL without close stopping, then verify the *Close*Token*.Completion*Token*.Status*tobe **EFI\_ABORTED**.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.8.7 | 0x499852f9, 0x49c2, 0x4168, 0x8f, 0x90, 0xab, 0x97, 0x0f, 0x06, 0x53, 0x0b | EFI\_TCP4\_PROTOCOL.Close **–** invokes Close() as function test. Abort the TCP connection on close instead of the standard TCP close process by setting the *AbortOnClose* to **TRUE**. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection.  4. Call EFI\_TCP4\_PROTOCOL.Close() to disconnect the connection opened in step 3 with *AbortOnClose*set to **TRUE**. The return status should be EFI\_SUCCESS. Then verify Token*.Status* has been updated to **EFI\_ABORTED**.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### CnntClosing

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| Number | GUID | Assertion | Test Description |
| 5.25.1.13.1 | 0xc9fa5b59, 0x7a1c, 0x4b2b, 0x9b, 0xce, 0x6b, 0xad, 0x38, 0x12, 0x2b, 0x0d | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the closing connection when it initiates the closing. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow, then check the Token*.Status* to verify the connection has been closed.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.2 | 0x8ae1e58b, 0xcd65, 0x4fb0, 0xba, 0x12, 0x43, 0x95, 0xef, 0xab, 0x9c, 0xd1 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the closing connection when [OS] initiates the closing. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Configure the [OS] to initiate the connection closing.  5. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow, then check the Token*.Status* to verify the connection has been closed.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.3 | 0x8b1bcbd7, 0x3db6, 0x46ec, 0x8b, 0xf0, 0x84, 0xb4, 0xb9, 0x0f, 0xb8, 0x95 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the simultaneous closing connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow, then check the Token*.Status* to verify the connection has been closed.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.4 | 0xebc0e165, 0x3146, 0x4fa1, 0x9a, 0xd8, 0x6d, 0x56, 0xdf, 0xb0, 0x9f, 0xd6 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the reception of normal data segments after having already received partner's FIN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Configure the [OS] to initiate the connection closing. Then configure the [OS] to send data segments to the [EUT].  5. Call Tcp.GetModeData(), and there is a expectation that EUT should return to CLOSE state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.5 | 0x9530e11a, 0x4d42, 0x4c45, 0x9e, 0xe9, 0x30, 0x82, 0xfc, 0xc9, 0x0f, 0x97 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly handle the reception of unacceptable data segments after having already received partner's FIN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Configure the [OS] to initiate the connection closing. Then configure the [OS] to send data segments to the [EUT].  5. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow, then check the Token*.Status* to verify the connection has been closed.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.6 | 0x8cb38a66, 0xfb72, 0x4dce, 0x94, 0x8b, 0x3e, 0x8f, 0xae, 0x66, 0x6f, 0x98 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly perform the retransmission of FIN segment during the connection closing process. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow. EUT should timeout 3 times and follow the sequence: ,6,12 ...then check the Token*.Status* to verify the connection has been closed.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.7 | 0xc9ef7a67, 0xc2a7, 0x40b4, 0xa9, 0x31, 0xba, 0x7a, 0x83, 0x16, 0x53, 0x15 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the half-close of the communication peer. If your peer still wants to send data after sending out **FIN**, EUT should ignore the data and interact with the peer correctly. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. OS get the transmitted data packet and respond with **FIN**, **ACK** segment to end one side of the connection.  6. Expand the receive window together with data in the segment, EUT should ignore the data and interact with the peer correctly.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.8 | 0xc4e81c62, 0xe709, 0x4096, 0xbb, 0xfb, 0x59, 0x99, 0x07, 0xaf, 0x89, 0x82 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly support partner's half-close. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Configure the [OS] to initiate the connection closing. Then Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. OS get the transmitted data packet and check the Token*.Status* to verify the data has been sent out.  6. Call EFI\_TCP4\_PROTOCOL.Close() to close the connection, then check the Token*.Status* to verify the connection has been closed.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.9 | 0x37b8e036, 0x3ff9, 0x4401, 0x81, 0x76, 0xa5, 0x70, 0xd9, 0x16, 0xa9, 0x4e | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly wait a **2xMSL** timeout period while it has initiated the closing of a connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  5. Call EFI\_TCP4\_PROTOCOL.Connect() to reopen the connection when [EUT] is still in **TIME-WAIT** state. The return status should be **EFI\_ACCESS\_DENIED**.  6. Check the Token*.Status* to verify the connection has been closed.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.10 | 0x2c9f0ffe, 0xf355, 0x4a2f, 0xb6, 0xa2, 0xbf, 0x84, 0x6c, 0xe8, 0x33, 0x2f | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle a valid SYN segment while it is in **TIME-WAIT** state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  5. Send a **SYN** segment with a larger sequence number than the previous connection contained. If the **SYN** is not in the window, an **ACK** should be sent out.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.11 | 0xaaf0c2ad, 0x5433, 0x46cf, 0xa4, 0xd9, 0xc3, 0xea, 0x65, 0xe1, 0x38, 0xfc | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the buffered receive data when application already performed active close. The buffered data should be removed and **RST** segment should be sent out. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake. Configure the [OS] to send data segments to the [EUT].  4. Call EFI\_TCP4\_PROTOCOL.Close() to close the connection. The [EUT] should send out a RST segment.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.12 | 0x7996049d, 0xc63f, 0x4bb4, 0x96, 0xa2, 0xb1, 0x90, 0xe7, 0x35, 0x8c, 0x3c | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the send buffered data when application has already performed active close. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open an active connection, and then handles the three-way handshake.  4. Create event and configuration for transmit and close interface invoking.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Then [OS] get the transmitted data packet.  6. Call EFI\_TCP4\_PROTOCOL.Close() to close the connection. Then configure the [OS] to interact data transmission with the [EUT].  The last segment should have the **FIN** flag set.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.13 | 0xa740c41c, 0xa9b1, 0x4194, 0x8a, 0xf5, 0x6c, 0x92, 0xd9, 0x20, 0xc7, 0x78 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle and receive the data segment in **<SYN>** and **<FIN, ACK>** segments, receive all the data (throw down a receive token) after data transmission finished. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Configure OS to send data together with FIN flag set. Then Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data sent with the **SYN** and **<FIN, ACK>** segment.  Check the received segment data length.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.13.14 | 0xd012d6bb, 0x9dac, 0x4e3b, 0xa5, 0x54, 0xf6, 0xe9, 0xf5, 0x77, 0x22, 0xb4 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle and receive the data segment in **<SYN>** and **<FIN, ACK>** segments, and receive all the data (throw down a receive token) before data transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data sent with the **SYN** and **<FIN, ACK>** segment. Then configure OS to send data together with FIN flag set. Check the received segment data length.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### CnntOpening

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| Number | GUID | Assertion | Test Description |
| 5.25.1.14.1 | 0x156e08bb, 0x21c4, 0x48a0, 0xbe, 0xc0, 0x8d, 0x0c, 0x17, 0x7b, 0x90, 0xf2 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly receive and handle the SYN segment with data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data sent with the **SYN** segment. Then check the received segment data length.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.2 | 0xd7814ee7, 0x2cc3, 0x4cc6, 0xb4, 0x3c , 0x54, 0x7e, 0x1f, 0x73, 0xc3, 0x12 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through active open. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.3 | 0xeac7fe49, 0x5202, 0x457f, 0x9e, 0x77, 0x49, 0xe5, 0x77, 0xa1, 0x4b, 0x4e | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through active open. This connection should not affect any previously established connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the active TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child for the second connection..  5. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the second instance as an active one  6. Call EFI\_TCP4\_PROTOCOL.Connect() for the second active TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.4 | 0xc5678e42, 0x6d91, 0x41c1, 0x96, 0x2d, 0xb6, 0x7b, 0xaa, 0x72, 0xf8, 0x21 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through passive open with unspecified address/port pair. This connection should not affect any previously established connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify if the connection has been established.  4. Try to establish TCP connection with unspecified address/port pair.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.5 | 0x3131d110, 0x7545, 0x46c5, 0x91, 0xd1, 0x87, 0x01, 0xd3, 0x04, 0x7f, 0xcf | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through passive open with specified address/port pair. This connection should not affect any previously established connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive TCP instance, then handles the three-way handshake. Check the Token*.Status* to verify if the connection has been established.  4. Try to establish TCP connection with unspecified address/port pair.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.6 | 0x165ad06c, 0xf630, 0x4516, 0x95, 0xba, 0x90, 0x3f, 0xd8, 0xa2, 0x4d, 0xe4 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through simultaneous open. It performs the following interactions:  A ------<SYN>------> B  A <-----<SYN>------- B  A --<SYN, ACK>--> B  A <-----<ACK>------- B | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the active TCP instance, then handle the three-way handshake. Check the Token*.Status* to verify if the connection has been established.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.7 | 0x2328abeb, 0x2dca, 0x4960, 0xa0, 0x93, 0x42, 0x94, 0xc8, 0x8c, 0x3d, 0x51 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through simultaneous open. This connection should not affect any previously established connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake and check the Token*.Status* to verify the connection has been established.  4. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child for the second connection.  5. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the second instance as an active one.  6. Call EFI\_TCP4\_PROTOCOL.Connect() for the second instance, then handle the three-way handshake and check the Token*.Status* to verify if the connection has been established.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.9 | 0xe39e864a, 0x347d, 0x4c08, 0xa7, 0xec, 0x0e, 0x55, 0x34, 0xe8, 0xa0, 0x20 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly time out when waiting a TCP connection to be established in SYN\_SENT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, and during 60 seconds, EUT should timeout following the sequence: 3, 6, 12, 24….  4. Check the Token*.Status* to verify the connection has been timeouted.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.10 | 0x697d126d, 0xd496, 0x448b, 0x85, 0x08, 0x60, 0x6d, 0xc1, 0xc6, 0x3f, 0x65 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly time out when waiting a TCP connection to be established in SYN\_SENT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, and during 60 seconds, EUT should timeout following the sequence: 3, 6, 12, 24….In addition, EUT should send out RST segment and return to CLOSED state.  4. Check the Token*.Status* to verify the connection has been timeouted.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.12 | 0xb22365c7, 0x6daa, 0x48e9, 0xa3, 0x7a, 0x1d, 0xe5, 0x47, 0xf4, 0x04, 0x4e | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through simultaneous open. It performs the following interactions:  A ------<SYN>------> B  A <-----<SYN>------- B  A ----<SYN, ACK>---> B  A <---<SYN, ACK>---- B | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake.  4. Check the Token*.Status* to verify the connection has been established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.13 | 0x8e4d9bac, 0x42b6, 0x408f, 0xa2, 0x44, 0xd3, 0xfe, 0x9b, 0xdc, 0x0c, 0xc7 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly establish the TCP connection through simultaneous open. It performs the following interactions:  A ------<SYN>------> B  A <-----<SYN>------- B  A <---<SYN, ACK>---- B  A ----<SYN, ACK>---> B | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake.  4. Check the Token*.Status* to verify the connection has been established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.14 | 0x72d8a37d, 0x312e, 0x44ee, 0x86, 0xcb, 0xb5, 0x58, 0x5c, 0x63, 0x6d, 0x65 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly receive and handle the <SYN, ACK> segment with data, throw down receive token after data transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake.  4. Check the Token*.Status* to verify the connection has been established.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data sent with the SYN segment. Then check the segment data length.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.15 | 0xe0c87d8a, 0x81d4, 0x4634, 0xa2, 0x0a, 0xee, 0xba, 0xdc, 0x44, 0x96, 0xe6 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly receive and handle the <SYN, ACK> segment with data, throw down receive token before data transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data sent with the SYN segment.  4. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake.  5. Check the Token*.Status* to verify the connection has been established.  6. Get the received segment datalength to check the correction.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.16 | 0x13f5c5e1, 0xd4dc, 0x437d, 0xac, 0xa2, 0x93, 0x1a, 0x8d, 0x85, 0xe0, 0xd3 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the flag combination: ACK, FIN through active open. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the new instance, then handle the three-way handshake. In addition, EUT should ignore this unexpected segment and retransmit the SYN segment.  4. Check the Token*.Status* to verify the connection has been established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.17 | 0x656575ec, 0x018b, 0x475a, 0x80, 0xa0, 0xff, 0x32, 0xef, 0x50, 0x31, 0x74 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the flag combination: FIN, ACK through passive open. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the new instance, then handle the three-way handshake. In addition, the data sent together with the FIN,ACK segment should be processed.  4. Check the Token*.Status* to verify the connection has been established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.18 | 0xcaba9876, 0xc926, 0x42b3, 0xaf, 0x99, 0xb5, 0x7d, 0x71, 0x83, 0x62, 0x20 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly handle the flag combination: SYN, FIN, ACK through passive open. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the new instance, then handle the three-way handshake.  4. Handle the normal three-way handshake. Then check the Token*.Status* to verify the connection has been established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.14.19 | 0xcd97a722, 0xc8fe, 0x4584, 0xb3, 0x9c, 0x65, 0x9b, 0xbb, 0x2c, 0x5a, 0x6f | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that can correctly refuse the attempted connections from broadcast and multicast address. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the new instance, then handle the three-way handshake.  4. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### CongestionCtrl

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| Number | GUID | Assertion | Test Description |
| 5.25.1.15.1 | 0xb0cdf9b2, 0x0cc0, 0x4e99, 0x96, 0x83, 0xde, 0xf3, 0x96, 0xc1, 0xc6, 0xa7 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly perform the slow start at the beginning of the connection transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. OS get the transmitted data packet and interact with EUT to expand the cwnd.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.2 | 0x05d19fac, 0x66e6, 0x4f41, 0xba, 0x70, 0xff, 0x3e, 0x48, 0x7f, 0x4d, 0x4a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly perform the slow start and congestion avoidance algorithms when data segment timeout causes congestion. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. OS gets the transmitted data segments of the fist stage, and check the token status of transmit interface, then begin the second stage data transmission.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments as the second stage.  7. Wait for data retransmission and send back the ACK to all the transmitted data segments. In addition, EUT should enter slow start.  8. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.4 | 0xc12b24da, 0xa3c5, 0x4820, 0x81, 0x98, 0x6e, 0x34, 0xad, 0x28, 0xfc, 0xaf | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly perform the slow start and congestion avoidance algorithms when **SYN** segment timeout causes congestion. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept() to for the instance. 4. Handle the three-way handshake. Configure the [OS] to ignore the first **SYN** segment and wait for the *ConnectionTimeout* seconds. When received the second **SYN** segment, make the [OS] send back the **SYN**, **ACK** segment.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  6. OS get the transmitted data packet and interact with EUT to expand the cwnd. In addition, check the token status of transmit interface.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.5 | 0xf5c35856, 0x3c84, 0x40ce, 0xba, 0xf4, 0x91, 0x57, 0x7e, 0xfa, 0x44, 0x98 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly performs the fast retransmit and fast recovery algorithms receiving 3 or above duplicated acknowledgements. When an ACK arrives that acknowledges new data, this ACK is Full acknowledgements. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. OS get the transmitted data segments of the first stage, and check the token status of transmit interface, then begin the second stage data transmission.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet as the second stage.  6. The cwnd should be expanded to 11\*SMSS after the 1st stage data transmission. The second stage of data transmission includes 8192 (16\*MSS) bytes data. Configure the OS to generate consecutive duplicate ACKs.  7. Configure the OS to acknowledge the last data segment and EUT will end the fast recovery and enter the congestion avoidance again.  8. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.6 | 0x0df29ac1, 0x5b58, 0x49cc, 0x95, 0x31, 0xce, 0xce, 0xb4, 0x49, 0xb5, 0x3a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly generate duplicated acknowledgements when it received disordering segments. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Configure the OS to send consecutive data segments to the EUT, drop one segment in the middle and EUT should generate duplicated ACKs as the result of receiving every data segments.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.7 | 0x3a4fb624, 0x8b05, 0x46ce, 0x97, 0xd7, 0x0f, 0xc9, 0x1e, 0x5d, 0x37, 0x6a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly performs the fast retransmit and fast recovery algorithms receiving 3 or above duplicated acknowledgements. After exiting the fast recovery, [EUT] should enter congestion avoidance. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments of the first stage.  5. OS get the transmitted data segments of the fist stage, check the token status of transmit interface. Then begin the second stage data transmission.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments of the second stage.  7. The cwnd should be expanded to 11\*SMSS after the 1st stage data transmission. The second stage of data transmission includes 8192 (16\*MSS) bytes data. Configure the OS to generate consecutive duplicate ACKs.  8. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments of the third stage. The third stage of data transmission should perform congestion avoidance.  9. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.15.8 | 0xa4d6bd97, 0x6d30, 0x4fec, 0x8b, 0x50, 0xcf, 0xac, 0xb1, 0x7e, 0x9e, 0x0a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] that correctly performs the NewReno modification to TCP's fast recovery algorithm. After the first fast recovery, when an ACK arrives that acknowledges new data, this ACK is partial acknowledgements. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments of the first stage.  5. OS get the transmitted data segments of the fist stage, check the token status of transmit interface. Then begin the second stage data transmission.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments of the second stage.  7. The cwnd should be expanded to 11\*SMSS after the 1st stage data transmission. The second stage of data transmission includes 8192 (16\*MSS) bytes data. Configure the OS to generate consecutive duplicate ACKs.  8. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### NagleSWSA

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| Number | GUID | Assertion | Test Description |
| 5.25.1.16.1 | 0xceef47a7, 0xf194, 0x4200, 0x9a, 0xbc, 0xe2, 0x9d, 0xfe, 0x80, 0xaa, 0x49 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly disables the Nagle Algorithm. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit another small segment.  6. OS gets the first transmitted data packet, and the 2nd segment should be sent out immediately.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.2 | 0x3906f7fa, 0xbe7b, 0x435a, 0xb6, 0x78, 0x1d, 0x5b, 0xba, 0xe5, 0x51, 0x4a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly disables the Nagle Algorithm. When retransmission happens, the accumulated small segments should be sent out together. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit another small segment.  6. As Nagle is disabled, the two segments should be sent out immediately. In addition, they should be sent out separately during retransmission.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.3 | 0xa528b7a1, 0x23cb, 0x4601, 0xb2, 0x74, 0xd7, 0x0b, 0xcc, 0x17, 0x5e, 0x42 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the small segments in accord with Nagle algorithm. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and enable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit three small segment.  5. OS get the first transmitted data segment and send back ACK segment. As Nagle is enabled, the last two segments should be sent out together.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.4 | 0x0d5581c0, 0x6903, 0x4387, 0xaf, 0xf7, 0xe3, 0x2c, 0xac, 0x17, 0xee, 0x33 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the small segments in accord with Nagle algorithm. When retransmission happens, the accumulated small segments should be sent out together. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and enable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit three small segment.  5. OS get the first transmitted data segment and as Nagle is enabled, the last two segments should be sent out together.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.5 | 0xabf756ac, 0x54a7, 0x492c, 0xae, 0xa6, 0x6d, 0x46, 0xd7, 0x44, 0xb8, 0x72 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the bulk data flow, the [EUT] should not respond with an acknowledgement segment for each of the received segments. In a stream of full-sized segments there should be an ACK for at least every second segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive instance. Then handle the three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send 10 full-sized data segments. There should be at least an ACK for every second segment.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.6 | 0x94c3ee05, 0x142e, 0x4f2e, 0x8a, 0x9a, 0x8f, 0x05, 0x25, 0xbb, 0xb4, 0x83 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the bulk data flow, the [EUT] should not respond with an acknowledgement segment for each of the received segments. A TCP should implement a delayed ACK, but an ACK should not be excessively delayed. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive instance. Then handle the three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. EUT should delay ACK the data segment, but the delay MUST be less than 0.5 second.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.7 | 0x81d74381, 0xb0df, 0x4ef3, 0x8a, 0x1c, 0xdc, 0x7b, 0xe9, 0x60, 0xc6, 0x02 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the bulk data flow, the [EUT] should not respond with an acknowledgement segment for each of the received segments. In a stream of single-byte segments there should be an ACK for at least every second segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive instance. Then handle the three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send 20 single-byte data segments. There should be at least an ACK for every second segment.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.8 | 0xd7c7813e, 0x4624, 0x4f11, 0xb3, 0x65, 0x45, 0x6e, 0x00, 0x30, 0x30, 0xe2 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly avoids the Silly Window Syndrome as the TCP receiver. The receiver should not advertise a larger window until the window can be increased at least one full-sized segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as a passive one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Accept() for the passive instance. Then handle the three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send 4 data segment to fill the receive buffer.  5. Call Receive interface to get one full-sized data.  6. Get the Window expansion segment. Then send another 1024-bytes data to refill the EUT receive buffer.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.9 | 0xf853dee2, 0xa900, 0x417b, 0xb5, 0xce, 0x80, 0x86, 0x55, 0x17, 0xab, 0x57 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly avoids the Silly Window Syndrome as the TCP sender. The sender should not transmit unless everything can be sent out and no need to wait ACK. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and enable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the active instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. OS gets the EUT transmitted data segment. In addition, EUT should send out all the left data segments.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.10 | 0x93015811, 0x2c00, 0x4834, 0x83, 0x17, 0x7b, 0xbf, 0x7f, 0x1a, 0xcb, 0x52 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly avoids the Silly Window Syndrome as the TCP receiver. The sender should not transmit unless everything can be sent out and Nagle algorithm is disabled. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the active instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. OS gets the EUT transmitted data segment. In addition, configure the OS to acknowledge the second segment and advertise enough window to let EUT transmit all the left data segments.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.11 | 0xfa149507, 0x1607, 0x44da, 0xb2, 0xae, 0x5f, 0xd3, 0x51, 0x7d, 0x82, 0xba | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly avoids the Silly Window Syndrome as the TCP receiver. The sender should not transmit unless a full-sized segment can be sent. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the active instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. EUT should set persist timer, configure OS to increase the window size to exceed 512 bytes before the persist timer times out. In addition, repeat the steps before finishing the data transmission.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.16.12 | 0xceb5c9e5, 0xebce, 0x4486, 0xb5, 0xc5, 0x06, 0xa6, 0x0c, 0x36, 0x5e, 0xa6 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly avoids the Silly Window Syndrome as the TCP receiver. The sender should not transmit unless at least one-half of the Max Window that receive ever advertised. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one, and disable the Nagle control option.  3. Call EFI\_TCP4\_PROTOCOL.Connect() for the active instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a small segment.  5. EUT should set persist timer, configure OS to increase the window size by 256 octets consecutively. Make sure the windows size exceed one-half of the Max Window that receive ever advertised before persist timer times out.  6. Increase the windows size step by step, when it accesses the left data size, EUT should send out the left buffered data at one time.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### UrgHandling

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| Number | GUID | Assertion | Test Description |
| 5.25.1.12.1 | 0x355d3648, 0x8375, 0x4b16, 0x94, 0xc4, 0x19, 0xe1, 0xbc, 0x87, 0xfc, 0x8b | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly uses the urgent pointer to denote the last urgent octet of urgent data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments.  5. Get the transmitted data segment and check the urgent pointer, it should point to the sequence number of the last octet. Then check the token status of transmit interface.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.2 | 0x03663fa9, 0x0a34, 0x43a5, 0x84, 0x5b, 0x2c, 0x36, 0x7f, 0x7e, 0xb6, 0xd8 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly uses the urgent pointer to denote the last urgent octet of urgent data. The urgent data exceeds the maximum number of urgent pointer. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments with the length 65536.  5. Get the transmitted data segment and check the urgent pointer.  6. The urgent pointer will rollback but the EUT should maintain the correct value of the urgent pointer. After sending out the first data segment, EUT should send the second data segment with urgent pointer 65024(65536 – 512).  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.3 | 0xfce0e13a, 0x35df, 0x4713, 0xaf, 0xb8, 0x4d, 0x1e, 0xcc, 0xa5, 0x82, 0x9b | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly uses the urgent pointer to denote the last urgent octet of urgent data. The urgent pointer rollbacks for two times. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit data segments with the length 131401.  5. OS get the transmitted data packet and interact with EUT to expand the cwnd.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.4 | 0x75f47641, 0x2982, 0x4d51, 0x95, 0x3b, 0x4b, 0x65, 0x91, 0x73, 0x5e, 0x76 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives urgent data segments of updated and variable lengths. OS sends some urgent data between normal data transmission. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Configure the OS to send normal data including urgent data segments.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the normal data and get the received segment data length to check the correction.  6. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the first section of urgent data. Get the received segment data length to check the correction.  7. Send the remained urgent data and normal data.  8. Call EFI\_TCP4\_PROTOCOL.Receive()to receive the second section of urgent data and the remained normal data. Check the data length.  9. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.5 | 0xd0f54967, 0xaa9b, 0x4017, 0x87, 0x87, 0x24, 0xfb, 0x34, 0x9d, 0xe4, 0x51 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives urgent data segments of updated and variable lengths. OS sends some urgent data in the SYN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the normal data and get the received segment data length to check the correction.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.6 | 0x4cbb57e5, 0xe348, 0x4340, 0x81, 0x9e, 0xed, 0x61, 0x5a, 0xc2, 0x1a, 0x35 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives urgent data segments of updated and variable lengths. The urgent pointer just points to the sequence of FIN flag. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Configure the OS to send normal data including urgent data segments.  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data segments, and check the data length.  6. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the urgent data segments, and check the data length.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.7 | 0x6145a7f3, 0xbb3d, 0x48e8, 0xab, 0xdf, 0x90, 0xc9, 0x87, 0x82, 0xdc, 0x25 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives urgent data segments of updated and variable lengths. The urgent pointer exceeds the sequence of FIN flag. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Configure the OS to send normal data including urgent data segments, and make the urgent pointer exceed the sequence if FIN flag..  5. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the data segments, and check the data length.  6. Call EFI\_TCP4\_PROTOCOL.Receive() to receive the urgent data segments, and check the data length.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.8 | 0x73cf4c9a, 0x8c1d, 0x4b7f, 0x94, 0x7c, 0x7f, 0x74, 0x06, 0xf5, 0x10, 0x1d | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the urgent data transmission when communication peer's receive window is 0. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. After OS got the transmitted data packet, Make the [OS] send an acknowledge segment with a 0 window. Then check whether EUT can still send out data segment or not.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.12.9 | 0x6019f57b, 0xd99f, 0x47b4, 0x94, 0x4a, 0x86, 0x80, 0x3e, 0x55, 0x63, 0x54 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the urgent data transmission when communication peer's receive window is 0. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. After OS got the transmitted data packet, Make the [OS] send an acknowledge segment with a 0 window.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit an urgent packet. Then check whether EUT can still send out data segment or not.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### RstHandling

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| Number | GUID | Assertion | Test Description |
| 5.25.1.17.1 | 0x1dd96986, 0x44c7, 0x4981, 0xba, 0x01, 0x14, 0x73, 0xff, 0x82, 0xb2, 0xed | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <CLOSED> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  5. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate RST generation in <CLOSED> state.  6. In <CLOSED> state, check OS send SYN, and EUT respond with RST.  7. In <CLOSED> state, check OS send FIN, and EUT respond with RST.  8. In <CLOSED> state, check OS send URG|ACK, EUT respond with RST.  9. In <CLOSED> state, check OS send RST|ACK, and EUT respond with Nothing.  10. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.2 | 0x554f2d12, 0xfa71, 0x48eb, 0x96, 0x02, 0xff, 0x5c, 0xfb, 0x8d, 0x45, 0xe6 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <ESTABLISHED> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate RST generation in <ESTABLISHED> state.  5. Instruct OS send out un-acceptable ACK, and expect receive ACK which indicate the expected next sequence number.  6. Verify <EUT> send out ACK, and the recvd ACK.ack\_id indicating correct seq\_id.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.3 | 0x12dea7e9, 0x1773, 0x4adb, 0x97, 0x27, 0xe8, 0xc3, 0xcf, 0xfb, 0xb9, 0x7b | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <CLOSE-WAIT> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Change the state from ESTABLISEHD to CLOSE\_WAIT, and call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it.  5. Verify <EUT> send out ACK, and the recvd ACK.ack\_id indicating correct seq\_id. Then send RST to disconnect the session  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.4 | 0xebf00938, 0xb335, 0x4a33, 0xa2, 0x7b, 0x4d, 0x54, 0xf6, 0x42, 0x72, 0x99 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <LAST-ACK> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Instruct EUT enter LAST\_ACK state:  OS --> EUT: FIN  EUT --> OS: ACK  EUT --> OS: FIN  Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  5. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it has enter LAST\_WAIT state.  6. Verify whether EUT correctly send out RST in LAST\_ACK state.  7. Verify does connection remains in the same states after received any unacceptable segment.  8. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.5 | 0x21941c4e, 0xb4e3, 0x422b, 0x81, 0x58, 0xef, 0xcd, 0x28, 0xb0, 0xee, 0xef | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <FIN\_WAIT\_1> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Instruct EUT from ESTABLISHED to LAST\_ACK state: Call EFI\_TCP4\_PROTOCOL.Close() interface to do a graceful close working flow. Then call EFI\_TCP4\_PROTOCOL.GetModeData() to validate enter FIN\_WAIT\_1 state.  5. Verify whether EUT correctly send out RST in FIN\_WAIT\_1 state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.6 | 0xee1c295d, 0x13e1, 0x4bc3, 0x94, 0x4b, 0xb5, 0x2e, 0xaf, 0x48, 0xb2, 0x5f | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <FIN\_WAIT\_2> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Instruct EUT from ESTABLISHED to LAST\_ACK state: Call EFI\_TCP4\_PROTOCOL.Close() interface to do a graceful close working flow, then OS --> EUT: ACK. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate enter FIN\_WAIT\_1 state.  5. Verify whether EUT correctly send out RST in FIN\_WAIT\_1 state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.7 | 0x4fac9b90, 0xf3c4, 0x4779, 0xab, 0x3f, 0x32, 0xe8, 0xd9, 0x9b, 0x8b, 0x09 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <CLOSING> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Instruct EUT enter LAST\_ACK state:  (1) EUT --> OS: FIN  Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  (2) OS --> EUT: FIN  (3) EUT --> OS: ACK  (4) Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in CLOSING state.  5. Verify whether EUT correctly send out RST in CLOSING state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.8 | 0xfa9a7729, 0xc10b, 0x4233, 0xb8, 0xe9, 0xeb, 0x8a, 0xf6, 0x65, 0x85, 0x75 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the reset segment while in <TIME\_WAIT> state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Instruct EUT enter LAST\_ACK state:  (1) EUT --> OS: FIN  Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow.  (2) EUT --> OS: FIN  (3) OS --> EUT: FIN|ACK  (4) Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in TIME\_WAIT state.  5. Verify whether EUT correctly send out RST in TIME\_WAIT state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.9 | 0xd6646a78, 0x5508, 0x4643, 0x9d, 0x9b, 0x0c, 0xca, 0x22, 0x22, 0x0a, 0xc6 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly send out the empty Acknowledge segment after received data segment with unacceptable Acknowledge. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configured the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to open a new connection for the new instance. Then handle the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in <ESTABLISHED> state.  5. Validate RST generation in <ESTABLISHED> state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.10 | 0xc0b6a498, 0x1cbd, 0x4df0, 0x97, 0x71, 0xd1, 0x95, 0x14, 0xec, 0x74, 0xf2 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in LISTEN state - <EUT> should ignore the reset segment and remain in LISTEN state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in LISTEN state.  4. Instruct <OS> send a RST segment, and expect behavior: no response from EUT.  5. Instruct <OS> send a SYN segment, and receive SYN|ACK from Ack.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.11 | 0xe48e5518, 0xaf29, 0x4e2b, 0xb9, 0xba, 0xfe, 0xfc, 0x0a, 0x37, 0x19, 0x56 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in SYN\_RCVD state - Previous state is LISTEN and it returns to LISTEN state | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Instruct <OS> send a SYN segment, and expect behavior: receive SYN|ACK. Then receive the packet.  4. Instruct <OS> send a valid RST segment,  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in LISTEN state.  5. Re-initialize the connection, and let it enter SYN\_RCVD state.  6. Instruct <OS> send a SYN segment, and expect behavior: receive SYN|ACK. Then receive the packet.  7. Instruct <OS> send a valid RST segment,  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in LISTEN state.  8. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in LISTEN state.  9. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.13 | 0x386fc38f, 0x8f4d, 0x4c34, 0x85, 0x68, 0x62, 0x71, 0x51, 0x0c, 0x35, 0xf5 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in SYN\_SENT state - return to CLOSED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to initialize connection.  4. <EUT> --> <OS>: SYN, then call EFI\_TCP4\_PROTOCOL.**GetModeCall()** to validate it is in SYN\_SENT state.  5. Instruct <OS> send a valid RST segment, and its sequence number is one-byte less than window boundary. Expect that on receiving a valid RST, the connection returned to CLOSED state.  6. OS --> EUT: SYNC, and expect receive RST, which indicates that EUT is CLOSED state.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.14 | 0xb886e8c2, 0xf6e7, 0x40e3, 0xbf, 0xc8, 0x78, 0xc3, 0x91, 0x91, 0x8d, 0xae | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in ESTABLISHED state - return to CLOSED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to initialize connection.  4. <EUT> --> <OS>: SYN  <OS> --> <EUT>: SYN|ACK  <EUT> --> <OS>: ACK  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in ESTABLISHED state.  5. Instruct <OS> send a valid RST segment, and its sequence number is one-byte less than window boundary. Expect that on receiving a valid RST, the connection returned to CLOSED state.  6. OS --> EUT: SYNC, and expect receive RST, which indicates that EUT is CLOSED state.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.15 | 0x1a49bc31, 0xad75, 0x4165, 0xaf, 0xff, 0xae, 0xf0, 0x1d, 0x1a, 0x7b, 0x29 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in FIN\_WAIT\_1 state - return to CLOSED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to initialize connection.  4. <EUT> --> <OS>: SYN  <OS> --> <EUT>: SYN|ACK  <EUT> --> <OS>: ACK  Call EFI\_TCP4\_PROTOCOL.Close() to make EUT enter FIN\_WAIT\_1.  <EUT> --> <OS>: FIN  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in FIN\_WAIT\_1 state.  5. Instruct <OS> send a valid RST segment, and its sequence number is at window boundary. Expect that on receiving a valid RST, the connection returned to CLOSED state.  6. OS --> EUT: SYNC, and expect receive RST, which indicates that EUT is CLOSED state.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.16 | 0xe88fa39a, 0xfbc5, 0x4366, 0x9c, 0x68, 0x48, 0x99, 0x78, 0xd4, 0x0e, 0x23 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly handles the reception of a RST segment in FIN\_WAIT\_2 state - return to CLOSED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to initialize connection.  4. <EUT> --> <OS>: SYN  <OS> --> <EUT>: SYN|ACK  <EUT> --> <OS>: ACK  Call EFI\_TCP4\_PROTOCOL.Close() to make EUT enter FIN\_WAIT\_1.  <EUT> --> <OS>: FIN  <OS> --> <EUT>: ACK  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in FIN\_WAIT\_2 state.  5. Instruct <OS> send a valid RST segment, and its sequence number is what is expected. Expect that on receiving a valid RST, the connection returned to CLOSED state.  6. OS --> EUT: SYNC, and expect receive RST, which indicates that EUT is CLOSED state.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.17 | 0x600a697d, 0x6250, 0x49a2, 0x97, 0xac, 0xa3, 0xc7, 0x28, 0x20, 0x3f, 0x9d | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in SYN\_SENT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect() to initialize connection.  4. <EUT> --> <OS>: SYN, then call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in SYN\_SENT state.  5. Instruct <OS> send a invalid RST segment, and RST.ack doesn't ack the SYN. Then call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is still in SYNC\_SENT state.  6. OS --> EUT: SYNC  EUT --> OS: SYNC\_ACK  EUT --> OS: RST, and validate the RST.seq be equal to received ACK.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.18 | 0xa9631841, 0x2e5e, 0x49cb, 0xb9, 0xeb, 0x9a, 0xba, 0x04, 0xaf, 0xa3, 0x5f | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in LISTEN state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.GetModeData()to validate it is in LISTEN state.  4. Instruct <OS> send a invalid RST segment, RST.Seq not in the window. In addition, expect that no packet send out from EUT.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.19 | 0x4226ee2f, 0xd8f2, 0x46e2, 0x8f, 0xaf, 0x1a, 0x00, 0x42, 0xf6, 0x7e, 0x29 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in LISTEN state. |  |
| 5.25.1.17.20 | 0xdf8dc924, 0xa0a4, 0x4520, 0x9d, 0x07, 0x59, 0xae, 0x21, 0x8b, 0xb4, 0x53 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in ESTABLISHED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in ESTABLISHED state.  4. Instruct <OS> send a invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection will still in ESTABLISHED state.  5. OS --> EUT: SYNC, and expect:  EUT --> OS: SYNC\_ACK  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.21 | 0x17f9536e, 0xa472, 0x4b33, 0x9e, 0x2c, 0x30, 0xb1, 0x8d, 0x82, 0x49, 0x44 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in FIN\_WAIT\_1 state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to make EUT enter FIN\_WAIT\_1. Then call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it.  5. Instruct <OS> send a invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in FIN\_WAIT\_1 state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.22 | 0xe99b76fc, 0x1f57, 0x4f68, 0x8b, 0x16, 0x4e, 0xf8, 0x1a, 0xa7, 0xc6, 0x01 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in FIN\_WAIT\_2 state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. **Call** EFI\_TCP4\_PROTOCOL.Close() to make EUT enter FIN\_WAIT\_1. Then OS --> EUT: ACK, and call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it enter in FIN\_WAIT\_2 state.  5. Instruct <OS> send a invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in FIN\_WAIT\_2 state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.23 | 0xc7f281cf, 0x5ff7, 0x475e, 0xab, 0x0e, 0x8e, 0x13, 0x76, 0xb4, 0x46, 0xa6 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in CLOSE\_WAIT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. <OS> --> <EUT>: FIN  <EUT> --> <OS>: ACK  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate it is in CLOSE\_WAIT state.  5. Instruct <OS> send a invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in CLOSE\_WAIT state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.24 | 0xeea6dd88, 0x1df4, 0x438e, 0xa5, 0x2b, 0xee, 0x9f, 0xc5, 0xb2, 0xd6, 0xf7 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in CLOSEING state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to close the connection; <EUT> --> <OS>: FIN; <OS> --> <EUT>: FIN. Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate enter CLOSEING state.  5. Instruct <OS> send an invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in CLOSEING state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.25 | 0xb316e0cc, 0x260e, 0x4d24, 0xa5, 0xee, 0xf4, 0xae, 0x34, 0x30, 0xa9, 0x52 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in TIME\_WAIT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to close the connection;  <EUT> --> <OS>: FIN;  <OS> --> <EUT>: FIN.  <EUT> --> <OS>: ACK;  <OS> --> <EUT>: ACK;  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate enter TIME\_WAIT state.  5. Instruct <OS> send an invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in TIME\_WAIT state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.17.26 | 0x9a8293c3, 0x3d43, 0x4cfd, 0xb3, 0x73, 0xb1, 0xca, 0x0d, 0xef, 0x91, 0x66 | EFI\_TCP4\_PROTOCOL **–** Tests that the <EUT> correctly validate the rcvd RST segment while in LAST\_LACK state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()to initialize connection. Then Handle three-way handshake.  4. <OS> --> <EUT>: FIN;  <EUT> --> <OS>: ACK;  Call EFI\_TCP4\_PROTOCOL.Close() to close the connection;  <EUT> --> <OS>: FIN  Call EFI\_TCP4\_PROTOCOL.GetModeData() to validate enter LAST\_LACK state.  5. Instruct <OS> send an invalid RST segment, RST.ack doesn't ack the SYN. In addition, the connection is still in LAST\_LACK state.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### WinFlowCtrl

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.18.1 | 0xe107339e, 0xed3b, 0x44fa, 0xa9, 0x18, 0x83, 0xf0, 0x10, 0x0e, 0x70, 0x14 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives the segment that has the advertised receive window open right-edge and close left-edge. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  5. After OS got the transmitted data packet, configure the [OS] to send back ACK segment to acknowledge the first segment and keep the advertised window to be 1536 octets.  6. Configure the [OS] to finish the data interaction with [EUT].  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.2 | 0x823c66d7, 0x2787, 0x400d, 0x8f, 0x62, 0x69, 0xdd, 0x3b, 0x21, 0x1f, 0x58 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives the segment that has the advertised receive window open right-edge and keep left-edge. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 3072.  5. After OS got the transmitted data packet, configure the [OS] to send back ACK segment to acknowledge the first segment and change the advertised window to be 1024 octets.  6. Acknowledge the SYN segment sent from the [EUT] and change the advertised window to be 1536 octets.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.3 | 0x530d5e6d, 0x928e, 0x42c3, 0xa4, 0x6e, 0x74, 0x93, 0xc0, 0xac, 0xca, 0xbf | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives the segment that has the advertised receive window open right-edge and include the duplicated ACKs. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. After OS got the transmitted data packet, configure the [OS] to send back an ACK segment to acknowledge the SYN segment sent by the [EUT].  6. Change the advertised window to be 2048 octets and capture the responded segments.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.4 | 0x1a697687, 0x3deb, 0x4b7b, 0x89, 0x6f, 0x78, 0x35, 0x95, 0x1b, 0x7a, 0xe9 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly transmits the advertised window size of data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 1024.  5. After OS got the transmitted data packet, configure the [OS] to send back ACK segment to acknowledge the first segment and keep the advertised window to be 2048 octets.  6. Configure the [OS] to finish the data interaction with [EUT].  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.5 | 0xbc12abb0, 0xf022, 0x4705, 0x9d, 0x12, 0x32, 0x78, 0xaa, 0x89, 0x80, 0xb8 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the bulk data flow, the [EUT] should not respond with an acknowledgement segment for each of the received segments. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Make the [OS] send ten full-sized and consecutive segments and capture the responded segments. The [EUT] should not respond with an acknowledgement segment for each of the received segments. There should be an acknowledgement segment for at least every second segment.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.6 | 0x0541c800, 0x7639, 0x46f5, 0x90, 0x1a, 0x20, 0x7c, 0xc3, 0x11, 0x44, 0xc9 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles a link partner's shrinking window with right-edge shrinking and left-edge closing - test Right Edge Shrinks with Left Edge Closes. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 1024.  5. After OS got the transmitted data packet, configure the [OS] to send back an ACK segment to acknowledge the data segments and change the advertised window to be 1024 octets and capture the responded segments.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.7 | 0x613c599e, 0x26e8, 0x4d39, 0x96, 0xe1, 0x2d, 0x30, 0xd6, 0xbe, 0x20, 0xf7 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles a link partner's shrinking window with right-edge shrinking and left-edge closing - test Right Edge Shrinks with Left Edge Keeps. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. After OS got the transmitted data packet, configure the [OS] to send back an ACK segment to acknowledge the SYN sent by the [EUT] and change the advertised window to be 2048 octets and capture the responded segments.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.8 | 0xbbb555fc, 0x8a4d, 0x41eb, 0xaf, 0x1d, 0x8c, 0xc9, 0x87, 0xb4, 0x46, 0x45 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles a link partner's shrinking window with right-edge shrinking and left-edge closing - test Right Edge Shrinks with Duplicated ACK. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. After OS got the transmitted data packet, configure the [OS] to send back an ACK segment to acknowledge the SYN sent by the [EUT] and change the advertised window to be 2048 octets and capture the responded segments. In addition, window update segment including duplicated ACKs should be discarded  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.9 | 0x5b42c4d0, 0xaf0c, 0x4ae9, 0x9f, 0xfc, 0xb4, 0xf8, 0x3f, 0xcd, 0x4d, 0x73 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles a link partner's shrinking window when the data retransmission happens. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. When capturing the retransmitted A segment, configure the [OS] to send back ACK segments and capture the responded segments separately. The ACK is to acknowledge the A segment and change the advertised window to be 1536 octets.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.10 | 0xf3a8f990, 0x0f1f, 0x408f, 0xad, 0x66, 0x2c, 0x98, 0x1f, 0xc1, 0x65, 0x34 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives data segments while its partner's advertised window is 0. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. After OS got the transmitted data packet, make the [OS] send an acknowledge segment with a 0 window. Then validate EUT send out the ACK segment correctly.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.11 | 0xce6f5d62, 0x0c72, 0x412d, 0x9a, 0xf4, 0xc8, 0xcc, 0x96, 0x8d, 0xe3, 0x42 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly probes a partner's advertised 0 window. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet with the length 5120.  5. After OS got the transmitted data packet, make the [OS] send an acknowledge segment with a 0 window, and in current implementation, the 0 window probing segment contains no data. Then validate EUT send out the ACK segment correctly.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.18.12 | 0x0165a4f8, 0x5976, 0x4051, 0xa2, 0x73, 0x9e, 0xa1, 0x62, 0xe5, 0xc9, 0xac | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly probes a partner's advertised 0 window, when partner advertises non-0 window, EUT can send out left data segments correctly. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send tcp segment with different length payloads. Then validate EUT process and respond correctly.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Options

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.19.1 | 0x1f1c574b, 0xd5b8, 0x4111, 0x90, 0x14, 0xf6, 0x50, 0x04, 0x3c, 0x8a, 0x71 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly ignores the unsupported options as long as the option has a valid length field. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send different unsupported options' tcp segments.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.2 | 0x5be584cc, 0x39e0, 0x4bcf, 0xaf, 0x69, 0xda, 0x64, 0xff, 0xfa, 0x9a, 0x02 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles End-of-Options option. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  4. Configure the [OS] to send tcp segment with CombinedOptions containing End-of-Options option.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.3 | 0xbfc4a76f, 0x19ad, 0x4f34, 0x97, 0x51, 0x07, 0xd3, 0xd5, 0xe4, 0x92, 0x0a | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles End-of-Options option. There are more options behind the End-of-Options option. These options should be ignored. | 1. Build combined options field as No-Option No-Option No-Option End-of-Options Option MSS10-Option (this option should be ignored).  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.4 | 0xbc3c725e, 0x8784, 0x4559, 0x81, 0x91, 0x60, 0x66, 0x93, 0xb0, 0x9a, 0xd1 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles No-Operation option, segment with the No-Operation option between multiple options but not coinciding with the word boundary. | 1. Build combined options field as the No-Operation option between multiple options but not coinciding with the word boundary.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Then check OS get the transmitted data packet.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.5 | 0x957bd7ef, 0x6a40, 0x46e2, 0xbd, 0x62, 0x9b, 0xa2, 0x39, 0x35, 0xe2, 0x96 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles No-Operation option, segment with the No-Operation option between multiple options at the word boundary. | 1. Build combined options field as the No-Operation option between multiple options at the word boundary.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Then check OS get the transmitted data packet.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.6 | 0xd4f6ab22, 0x5d0a, 0x4f9e, 0xa5, 0xce, 0x80, 0x94, 0xf2, 0x42, 0xc2, 0xd0 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles No-Operation option, segment with the No-Operation option between multiple options but not coinciding with the word boundary. one item of the same option is split in different words. | 1. Build combined options field as the No-Operation option between multiple options at the word boundary, one item of the same option is split in different words.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake. Make [EUT] enter ESTABLISHED state through passive connection open.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Then check OS get the transmitted data packet.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.7 | 0xee9c7ea4, 0x3bec, 0x4de0, 0x84, 0x65, 0xcb, 0x18, 0x21, 0x4e, 0x3b, 0x01 | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality - Tests that the [EUT] correctly transmits MSS option in <SYN> segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance.  4. Handle three-way handshake and check EUT send out SYN segment with MSS correctly.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.8 | 0xd69abe03, 0xdbb5, 0x473f, 0x91, 0x59, 0xf3, 0x43, 0xe7, 0xf0, 0x04, 0xe8 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly receives MSS option in <SYN> segment, and then replies to transmit MSS option in <SYN, ACK> segment correctly. | 1. Build TCP segment with MSS OPTION, here MSS = 256.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  5. Handle three-way handshake and Check the Token*.Status* to verify the Accept connection has been completed.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.9 | 0x98e61624, 0x7c30, 0x4d11, 0x8b, 0xf0, 0x45, 0x4e, 0xd8, 0x0b, 0x21, 0xc0 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly adheres to the MSS of the connection. [EUT] will automatically divide up transmitting data segment if its size is larger than [OS] announced MSS value. | 1. Build TCP segment with MSS OPTION, here MSS = 100.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.**Connect ()** for the new instance. Then handle three-way handshake.  5. [OS] send SYN & ACK segment with MSS option and receive ACK segment.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.10 | 0x50efbcf2, 0xabe6, 0x4cfa, 0x94, 0xc7, 0x78, 0x86, 0xe9, 0x38, 0xd8, 0x59 | EFI\_TCP4\_PROTOCOL **–** Tests that when [EUT] received <SYN> segment without MSS option, [EUT] could take [OS]'s MSS as RFC default value 536. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handle three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  5. [OS] sends data to [EUT]: Create a data segment to be transmitted, with size larger than RFC\_TCP\_DEF\_MSS.  6. Call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.11 | 0xab7715ef, 0x8d1f, 0x4b68, 0xb8, 0x66, 0xb3, 0x8d, 0x84, 0x71, 0x98, 0x71 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly transmit and receive the MSS option in segments without the SYN flag set high. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  4. Handle three-way handshake. Send segment with another MSS in non-SYN segment. The [EUT] should ignore the MSS option in non-SYN segments.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.12 | 0xa0845af3, 0x382f, 0x4ab9, 0x8d, 0xe0, 0xe6, 0xc3, 0x0c, 0xcd, 0x95, 0xd0 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the reception of MSS option with invalid option value. Let MSS = 0. Value 0 should be ignored and replaced with 64 (EFI\_TCP\_MIN\_MSS). | 1. Build TCP MSS option, MSS = 0, invalid value.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance.Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.13 | 0xa7d40772, 0xc53a, 0x44f6, 0x98, 0x1e, 0xbf, 0x9f, 0xa6, 0xcf, 0x56, 0x5b | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the reception of MSS option with invalid option value. Let MSS > 1460. [EUT] should ignore MSS larger than 1460 and replace it with 1460. | 1. Build TCP MSS option, MSS = 2048, invalid value, larger than 1460(Maximum MSS).  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance.Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.14 | 0x1b50447f, 0x868c, 0x4ea4, 0x93, 0xc0, 0xcb, 0x00, 0x73, 0x31, 0x52, 0xcf | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the reception of segments with unaligned MSS option. Format 1. | 1. Create unaligned MSS option with format 1.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Handle three-way handshake.  5. [OS] send SYN & ACK segment with MSS option. Then call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token**.Status** to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.15 | 0x3973bbb2, 0xe1c5, 0x40ea, 0x8e, 0x50, 0xdb, 0x53, 0x8e, 0xc1, 0x42, 0xa9 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the reception of segments with unaligned MSS option. Format 2. | 1. Create unaligned MSS option with format 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Handle three-way handshake.  5. [OS] send SYN & ACK segment with MSS option. Then call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token**.Status** to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.16 | 0xb74382c6, 0x37dc, 0x4151, 0x9d, 0xe3, 0xd4, 0x98, 0x8e, 0x4c, 0xd8, 0xcd | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handle the reception of segments with unaligned MSS option. Format 3. | 1. Create unaligned MSS option with format 3.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Handle three-way handshake.  5. [OS] send SYN & ACK segment with MSS option. Then call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token**.Status** to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.17 | 0x53cd1a49, 0xaa07, 0x4bf8, 0x95, 0x45, 0xa4, 0xd3, 0x83, 0x6c, 0x4f, 0xb4 | EFI\_TCP4\_PROTOCOL **–** Tests that when [EUT] received <SYN> segment without MSS option, [EUT] could take [OS]'s MSS as RFC default value 536. With unaligned window scale option as format 2. | 1. Create TCP option. Windows Scale: shift.cnt = 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.18 | 0x454d5884, 0xf7e1, 0x43a8, 0x97, 0xab, 0x48, 0xbb, 0xd2, 0x22, 0xa6, 0x5b | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly turns window scale option on. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.19 | 0xc8d0492a, 0x79e8, 0x411c, 0x91, 0x42, 0x08, 0x2e, 0x7a, 0x81, 0xbb, 0x86 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly ignores a Window scale option in a segment without SYN bit set. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Then create another TCP option with another Windows Scale Value which will be sent in <ACK> Segment.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.20 | 0x691e1119, 0xe737, 0x4560, 0x96, 0x33, 0xb7, 0x57, 0xd6, 0x2e, 0x22, 0xde | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly interacts with the partner that doesn’t support window scaling option. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handle three-way handshake.  4. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive() to receive a packet. In addition, check the Token*.Status* to verify the data has been transmitted successfully.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.21 | 0xca16dc5d, 0x5720, 0x45d0, 0xa2, 0xe4, 0x19, 0x98, 0xc2, 0xa8, 0x5f, 0x5c | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the segment with window scaling shift count exceeding 14. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Calculate [OS] MAX acceptable window. . In addition, set window scale with 16.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.22 | 0xade14e0f, 0xa957, 0x4489, 0x83, 0xf8, 0xdb, 0x9f, 0x69, 0x1d, 0xfc, 0x18 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned window scale option. Format 1. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. In addition, set window scale with 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.23 | 0x90cc4928, 0xd470, 0x491d, 0xaf, 0xa8, 0x9d, 0x86, 0x07, 0xb7, 0xf3, 0x15 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned window scale option. Format 2. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. In addition, set window scale with 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.24 | 0x5cd402e2, 0xe9d1, 0x40a7, 0x8a, 0xad, 0xe1, 0xc7, 0x89, 0x42, 0x52, 0x6b | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned window scale option. Format 3. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. In addition, set window scale with 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token*.Status* to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.25 | 0xe47378c6, 0x77d8, 0x4f08, 0xbb, 0x52, 0xe7, 0x6b, 0x14, 0xd9, 0x28, 0xd6 | EFI\_TCP4\_PROTOCOL **–** test when [OS]'s scaled window size larger than [OS]'s MSS, here, (256<<2) > 800, [EUT] could correctly send segment data with length small than MSS. With unaligned window scale option as format 2. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. In addition, set window scale with 2.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Check the Token**.Status** to verify the data has been transmitted successfully.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.26 | 0x82aacaa9, 0xa48e, 0x47c2, 0xb8, 0xa8, 0x88, 0xd3, 0x18, 0xf1, 0xd4, 0xe1 | EFI\_TCP4\_PROTOCOL **–** test TCP could disable timestamp option, when received <SYN> segment without timestamp while received data segment contain it. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Timestamps: TSval = 0, TSecr = 0.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive()to receive a packet.  6. OS get the ACK segment and check the Token**.Status** to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.27 | 0xb0bf1171, 0x5e75, 0x42c4, 0x96, 0xed, 0x97, 0x21, 0xc6, 0x50, 0xe6, 0x87 | EFI\_TCP4\_PROTOCOL **–** test TCP could disable timestamp option, when it receives <SYN, ACK> segment without timestamp option. | 1. Build TCP Segment with MSS OPTION, MSS = 100.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  4. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Handle three-way handshake.  5. [OS] send SYN & ACK segment with MSS option and receive ACK segment.  6. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet. Then check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.28 | 0x6db78216, 0x1741, 0x4d22, 0x86, 0x2b, 0x1e, 0x37, 0x6f, 0x9f, 0xbe, 0xc9 | EFI\_TCP4\_PROTOCOL **–** test TCP could correctly recognize and deal with the timestamp option when it is used in TCP option. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Timestamps: TSval = 0, TSecr = 0.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive()to receive a packet.  6. OS get the ACK segment and check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.29 | 0x688adc05, 0x942e, 0x4150, 0xa1, 0x6f, 0xec, 0xce, 0x9c, 0x3b, 0x66, 0x52 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned Timestamp option. Format 1. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Timestamps: TSval = 0, TSecr = 0.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive()to receive a packet.  6. OS get the ACK segment and check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.30 | 0x98e5cf1f, 0x72ce, 0x4be6, 0x99, 0x95, 0x05, 0x43, 0xcd, 0x6c, 0x82, 0x93 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned Timestamp option. Format 2. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Timestamps: TSval = 0, TSecr = 0.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive()to receive a packet.  6. OS get the ACK segment and check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.19.31 | 0x2f71233b, 0xeeaf, 0x4dc5, 0xb3, 0xdd, 0x35, 0x9f, 0xd6, 0xa6, 0xa2, 0x42 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly handles the reception of segments with unaligned Timestamp option. Format 3. | 1. Create TCP option. MSS = L\_MSS, Windows Scale: shift.cnt = 2. Timestamps: TSval = 0, TSecr = 0.  2. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Handle three-way handshake.  5. OS send DATA & ACK segment, then call EFI\_TCP4\_PROTOCOL.Receive()to receive a packet.  6. OS get the ACK segment and check the Token*.Status* to verify the data has been transmitted successfully.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### Others

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.20.1 | 0xe78b5efa, 0xb455, 0x464e, 0xa2, 0x5f, 0xda, 0xf5, 0x3a, 0x14, 0x2c, 0x09 | EFI\_TCP4\_PROTOCOL **–**Tests that the [EUT] can correctly handle SYN flood. [EUT] should NOT send out <RST> segment to reset incomplete connection queue when ConnectionTimeout (SYN time) haven't reached. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  4. Send <SYN> flood, and wait to SYN timeout (ConncetionTimeout), then [EUT] send out <RST> segment to reset the incomplete connection.  5. Handles the three-way handshake. OS gets the <SYN, ACK> segment and then sends <ACK> segment.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.2 | 0x0c2a1607, 0xdff9, 0x4794, 0xb8, 0xca, 0x04, 0x28, 0x6a, 0xdf, 0xa8, 0x46 | EFI\_TCP4\_PROTOCOL **–**Tests that the [EUT] can correctly handle SYN flood. [EUT] accepts one or more connection request, thus making MaxSynBacklog NOT full. Accept following incoming <SYN> segment when MaxSynBacklog is NOT full. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  4. Send <SYN> flood.  5. Handles the three-way handshake. OS gets the <SYN, ACK> segment and then sends <ACK> segment.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.3 | 0xb8b111f9, 0xb3b7, 0x496b, 0x82, 0x5d, 0xaa, 0x9a, 0xd8, 0x59, 0x6c, 0x6e | EFI\_TCP4\_PROTOCOL **–**Tests that the [EUT] can correctly handle SYN flood. [EUT] should NOT send out <RST> segment to reset incomplete connection queue when ConnectionTimeout (SYN time) haven't reached. Discard following incoming <SYN> segment when MaxSynBacklog is full. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  4. Send <SYN> flood, and send <SYN> segment to [EUT] when MaxSynBacklog is full.  5. Handles the three-way handshake. OS gets the <SYN, ACK> segment.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.4 | 0x111f5b8e, 0xf762, 0x4eaf, 0x93, 0xb9, 0xe0, 0x97, 0xcb, 0x5b, 0xcd, 0x3f | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] can correctly handle attack-Self consume attack. | 1. Initialization of TCB related on OS side. Make the protocol address the same as [EUT], in order to attack.  2.Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  5. Send <SYN> flood.  6. Handles the three-way handshake. OS gets the <SYN, ACK> segment and sends <ACK> segment  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.5 | 0x8d7dd35a, 0x05f1, 0x495d, 0x8e, 0xed, 0x7e, 0x54, 0x70, 0x20, 0xd7, 0x67 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] can correctly handle attack-Self consume attack with SYN flood. | 1. Initialization of TCB related on OS side. Make the protocol address the same as [EUT], in order to attack.  2.Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  3. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  4. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance.  5. Handles the three-way handshake. OS gets the <SYN, ACK> segment and sends <ACK> segment  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.6 | 0xef277abd, 0xfe01, 0x4bbb, 0x91, 0x0d, 0xaa, 0xbb, 0x9f, 0x64, 0x68, 0xf4 | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-Configure OS to send junky data after <FIN,ACK> segment, EUT should reset the connection. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handles the three-way handshake.  5. OS sends <FIN, ACK> segment and receives <ACK> segment.  6. OS sends DATA & ACK segment and then receives <RST, ACK> segment.  7. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.7 | 0xa1c11437, 0xbe91, 0x4857, 0x9e, 0xbc, 0x99, 0xfc, 0x3a, 0x3f, 0xba, 0x98 | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-In CLOSE\_WAIT state, configure OS to send FIN to EUT. This FIN should not be duplicated of the last FIN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  5. OS gets <SYN, ACK> segment and sends <ACK> segment. Then check the Token*.Status* to verify the EFI\_TCP4\_PROTOCOL.Accept() has completed.  6. OS sends <FIN, ACK> segment and receives <ACK> segment.  7. Calling EFI\_TCP4\_PROTOCOL.GetModeData(),now EUT is in CLOSE\_WAIT state.  8. OS sends <FIN, ACK> segment and receives <ACK> segment.  9. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.8 | 0xeb18fb2d, 0x2306, 0x41bc, 0x9d, 0x68, 0x10, 0x87, 0x8f, 0xf3, 0xe5, 0xef | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-In LAST\_ACK state, configure OS to send FIN to EUT. This FIN should not be duplicated of the last FIN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  5. OS gets <SYN, ACK> segment and sends <ACK> segment. Then check the Token*.Status* to verify the EFI\_TCP4\_PROTOCOL.Accept()has completed.  6. OS sends <FIN, ACK> segment and receives <ACK> segment.  7. Calling EFI\_TCP4\_PROTOCOL.GetModeData()**,** now EUT is in CLOSE\_WAIT state.  8. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow. Then call EFI\_TCP4\_PROTOCOL.GetModeData(), now EUT in LAST\_ACK state.  9. OS sends <FIN, ACK> segment and receives <ACK> segment.  10. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.9 | 0x968f5b4d, 0x4801, 0x487f, 0x81, 0xc1, 0xa6, 0x16, 0x91, 0x44, 0x47, 0x72 | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-In TIME\_WAIT state, configure OS to send FIN to EUT. This FIN should not be duplicated of the last FIN segment. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Close() to do a graceful close working flow. Then call EFI\_TCP4\_PROTOCOL.GetModeData(), now EUT in FIN\_WAIT\_1 state.  5. OS sends <FIN, ACK> segment and receives <ACK> segment. Calling EFI\_TCP4\_PROTOCOL.GetModeData(), and now EUT is in TIME\_WAIT state. Then OS sends <FIN> segment.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.10 | 0x127d1f26, 0x9f39, 0x435c, 0x80, 0x34, 0x6b, 0x1c, 0xc9, 0x5e, 0x85, 0x3b | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-Configure EUT to send data in no-ESTABLISHED state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet, without connection established.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.20.11 | 0x2d2065ef, 0x7e6a, 0x419a, 0x84, 0x30, 0x2c, 0x1d, 0xbf, 0xf7, 0x0c, 0xac | EFI\_TCP4\_PROTOCOL **–** Tests that the functionality-Configure EUT to send data in CLOSE\_WAIT state. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake. In addition, check the Token*.Status* to verify the EFI\_TCP4\_PROTOCOL.Accept() has completed.  4. OS sends <FIN, ACK> segment and receives <ACK> segment. Then call EFI\_TCP4\_PROTOCOL.GetModeData(), now EUT is in CLOSE\_WAIT state.  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to transmit a packet.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### KeepAliveTimer

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.21.1 | 0xece1fc13, 0x84f5, 0x413a, 0x90, 0xcb, 0x53, 0xfd, 0x45, 0x3a, 0x8d, 0x07 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly responds to the keep-alive segment which without garbage data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  4. Check [EUT] correctly responds to the keep-alive segment which without one garbage data.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.21.2 | 0x54e62a42, 0x25bb, 0x45c6, 0x90, 0x42, 0x93, 0x96, 0x8d, 0xab, 0xfc, 0x2c | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly responds to the keep-alive segment which with garbage data. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake.  4. Check [EUT] keeps connection when not all keep-alive probes were acknowledged.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### RetransmissiomTimer

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.22.1 | 0x64785c77, 0x4352, 0x4da5, 0xb0, 0xe8, 0x85, 0x0d, 0xdc, 0x5f, 0x32, 0x48 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly retransmit with the method of exponential back off. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.**Trasmit()** to make [EUT] send segment to [OS].  5. Call EFI\_TCP4\_PROTOCOL.Transmit() to check [EUT] correctly retransmit.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.22.2 | 0xf2474612, 0x61e6, 0x4bb9, 0x85, 0x7c, 0xb7, 0x00, 0x97, 0x05, 0x00, 0xdf | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly close connection when retransmission timer time out. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.**Trasmit()** to make [EUT] send segment to [OS].  5. Check [EUT] correctly performs retransmission timer.  6. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### HrdFormatACK

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.23.1 | 0xb550f0a9, 0x302a, 0x445a, 0x9b, 0xbf, 0xdb, 0xd3, 0x93, 0x9a, 0xec, 0x79 | EFI\_TCP4\_PROTOCOL **–**Tests that the [EUT] correctly generates the ACK numbers, and properly roll over the numbers. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Send Segment with seq 4294967294 to see EUTS whether return rollover ack.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |
| 5.25.1.23.2 | 0xced29cf0, 0xbfa9, 0x4b92, 0xb9, 0xe9, 0xdc, 0x3e, 0xc9, 0xea, 0x6a, 0x53 | EFI\_TCP4\_PROTOCOL **–**Tests that the [EUT] correctly generates the ACK numbers, and properly roll over the numbers. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake. Check the Token**.Status** to verify the connection has been established.  4. Send Segment with seq 4294967294 to see EUTS whether return rollover ack.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### HrdFormatCheckSum

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.24.1 | 0xeb8958d6, 0x9fac, 0x4c35, 0xa1, 0x66, 0xf2, 0x35, 0x1f, 0x43, 0x61, 0xb7 | EFI\_TCP4\_PROTOCOL **–**Test the [EUT]’s capability on generating a correct checksum field and discarding segments with invalid checksum. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as a passive one.  3. Call EFI\_TCP4\_PROTOCOL.Accept()for the new instance. Then handles the three-way handshake. Check the Token*.Status* to verify the connection has been established.  4. Send Segment with error CheckSum to see if EUTS discard this packet.  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

### PersistTimer

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.1.25.1 | 0xb498bbfe, 0xd47e, 0x4c9e, 0xb9, 0x80, 0x8f, 0x83, 0xc7, 0x33, 0xc6, 0x26 | EFI\_TCP4\_PROTOCOL **–** Tests that the [EUT] correctly performs persist timer with the method of exponential back off. | 1. Call EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Tcp4 child.  2. Call EFI\_TCP4\_PROTOCOL.Configure() to configure the new instance as an active one.  3. Call EFI\_TCP4\_PROTOCOL.Connect()for the new instance. Then handles the three-way handshake.  4. Call EFI\_TCP4\_PROTOCOL.**Trasmit()** to make [EUT] send segment to [OS].  5. Call **EFI\_TCP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created Tcp4 child and clean up the environment. |

## 

## EFI\_IP4\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IP4\_PROTOCOL Section.

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.2.1.1 | 0xac92ef07, 0xd325, 0x4e3a, 0xad, 0x81, 0x46, 0x46, 0x3c, 0xb4, 0x0f, 0xa8 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data when the Ip4 child has not been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.GetModeData() to get all mode data when the Ip4 child has not been configured. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.2 | 0x5abf337a, 0xfb74, 0x4812, 0x8c, 0xa3, 0x95, 0xb8, 0xbb, 0xed, 0x0b, 0xac | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Ip4 mode data when the IP4 child has not been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Ip4 mode data when the Ip4 child has not been configured. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.3 | 0x459937fd, 0x462d, 0x4b1f, 0x85, 0x78, 0x01, 0x78, 0xac, 0xcf, 0x2a, 0x2e | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Mnp mode data when the IP4 child has not been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Mnp mode data when the Ip4 child has not been configured. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.4 | 0x96463508, 0xc867, 0x410d, 0xab, 0x41, 0xc4, 0x3b, 0x54, 0x46, 0xe2, 0x53 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Snp mode data when the IP4 child has not been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Snp mode data when the Ip4 child has not been configured. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.5 | 0x1b1253d6, 0xfb71, 0x4672, 0x84, 0xfa, 0xb4, 0x0a, 0x20, 0xb1, 0xc0, 0xae | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data when the IP4 child has been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get all mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.6 | 0xa27e3c75, 0xf51a, 0x4c22, 0x8c, 0x64, 0xb4, 0x52, 0xb9, 0xc6, 0xd6, 0xc6 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Ip4 mode data when the IP4 child has been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Ip4 mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.7 | 0x0fa93b62, 0x3d3b, 0x40df, 0x8d, 0xea, 0x3f, 0x1e, 0x8e, 0xa2, 0x82, 0x1a | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Mnp mode data when the IP4 child has been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Mnp mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.8 | 0xefce9133, 0x49e6, 0x426c, 0x92, 0x38, 0x2a, 0x09, 0xda, 0x74, 0x30, 0x2d | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get Snp mode data when the IP4 child has been configured. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get Snp mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.9 | 0x6cbce077, 0x33b8, 0x4a73, 0x9e, 0x5a, 0x03, 0x41, 0xa9, 0xee, 0x44, 0xd4 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data and check the *IcmpTypeList* data item. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get all mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS. Then check the *IcmpTypeCount* and *IcmpTypeList* data item.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.10 | 0x1fb8e582, 0x98c9, 0x461a, 0xbf, 0x26, 0xaf, 0x34, 0x6b, 0x1d, 0x23, 0xe0 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data and check the *RouteTable*data item. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get all mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS. Then check the *RouteCount*and *RouteTable*data item.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.11 | 0x4f38bf49, 0x2be4, 0x489c, 0xac, 0xb9, 0x70, 0x3e, 0xb1, 0xe3, 0x5b, 0x3b | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to get all mode data and check the *GroupTable*data item. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Groups() to add a group address.  3. Call EFI\_IP4\_PROTOCOL.GetModeData() to get all mode data when the Ip4 child has been configured. The return status should be EFI\_SUCCESS. Then check the *GroupCount*and *GroupTable*data item.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.1.12 | 0x3e8d5ff2, 0x5bec, 0x4e2d, 0xa6, 0x60, 0xe8, 0xfb, 0xe9, 0x8f, 0xb8, 0x49 | EFI\_IP4\_PROTOCOL.GetModeData() - invokes GetModeData() to check the instance status when Configure() has been called with an Ip4ModeData value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.GetModeData()and then check the IsStarted and IsConfigured item in Ip4ModeData.  4. Call EFI\_IP4\_PROTOCOL.Configure() with an Ip4ModeData value of NULL.  5. Call EFI\_IP4\_PROTOCOL.GetModeData(). The return status should be EFI\_SUCCESS. Then check the IsStarted and IsConfigured item in Ip4ModeData  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.2.2.1 | 0xf2e2bfe9, 0xe95d, 0x4c25, 0xa7, 0x0a, 0x59, 0x9c, 0xb7, 0x22, 0xcb, 0xde | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() with an StationAddressvalue of not an unicast IPv4 address. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance with an StationAddressvalue of not an unicast IPv4 address. The return status should be EFI\_INVALID\_PARAMETER.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.2 | 0x1c90fd78, 0x789d, 0x4710, 0x9b, 0x12, 0x27, 0xea, 0x09, 0xee, 0x99, 0x8b | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() with an SubnetMaskvalue of an invalid IPv4 subnet mask. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance with an SubnetMaskvalue of an invalid IPv4 address. The return status should be EFI\_INVALID\_PARAMETER.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.3 | 0x85e8e030, 0xf54a, 0x464c, 0x8e, 0xc7, 0xc8, 0xfb, 0x8f, 0x1a, 0x9b, 0xd1 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() to change the StationAddress when the instance has been configured before. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Configure() again when the StationAddress has been changed. The return status should be **EFI\_ALREADY\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.4 | 0x62f11c24, 0xe8ff, 0x4687, 0x80, 0x3f, 0x40, 0x3f, 0x0f, 0x87, 0x0c, 0x8b | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() to change the SubnetMaskwhen the instance has been configured before. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Configure() again when the SubnetMaskhas been changed. The return status should be **EFI\_ALREADY\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.5 | 0xdddcb20e, 0x00a4, 0x4001, 0x85, 0x08, 0x60, 0x77, 0x3c, 0xfa, 0xba, 0xb8 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() and call Transmit() and Receive() to check its function. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Transmit() to transmit a packet and check it is successful.  4. Call EFI\_IP4\_PROTOCOL.Receive() to receive the packet and check it is successful.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.6 | 0xdf081df1, 0x845a, 0x4ffe, 0x9a, 0xa3, 0x78, 0xc3, 0x77, 0xa1, 0x35, 0xc0 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() and call Receive() to receive a packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Receive() to receive the packet and check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.7 | 0xedcd4582, 0x9349, 0x4f56, 0x9b, 0xac, 0x54, 0xe9, 0x2d, 0x6b, 0x27, 0xb4 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() and call Receive() to receive a packet from different RemoteEther and RemoteIp. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Receive() to receive the packet from different *RemoteEther* and *RemoteIp*. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.8 | 0x90b93642, 0x81b3, 0x4d15, 0x9e, 0xbf, 0xdf, 0xc3, 0xaf, 0x70, 0xe1, 0xc6 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() and call Transmit() to transmit a packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Transmit() to transmit the packet and check it is successful.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.2.9 | 0x171c383a, 0x613b, 0x4d85, 0x9c, 0xd4, 0x85, 0x57, 0x59, 0x4f, 0xb5, 0x67 | EFI\_IP4\_PROTOCOL.Configure() - invokes Configure() and call Transmit()andReceive() to check its function after call Configure() with an IpConfigData value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Configure() with an IpConfigData value of NULL. The return status should be EFI\_SUCCESS. Then call EFI\_IP4\_PROTOCOL.Transmit() and EFI\_IP4\_PROTOCOL.Receive()**,** the return status should be EFI\_NOT\_STARTED.  4. Call EFI\_IP4\_PROTOCOL.Configure() to configure the instance again. The return status should be EFI\_SUCCESS. Then call EFI\_IP4\_PROTOCOL.Transmit() and EFI\_IP4\_PROTOCOL.Receive()**,** the return status should be EFI\_SUCCESS.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Groups()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.3.1 | 0x360e7f0a, 0x635d, 0x4660, 0x95, 0x9c, 0x69, 0xa5, 0x39, 0x3c, 0x8d, 0x83 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() with a JoinFlag value of TRUE and a GroupAddress value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() with a *JoinFlag* value of **TRUE** and a *GroupAddress* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.2 | 0x3ac80863, 0x67f2, 0x4554, 0x88, 0x72, 0xcd, 0x92, 0x98, 0xa1, 0xda, 0xac | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() with a GroupAddress value other than NULL and a *\**GroupAddressvalue of an invalid multicast IPv4 address. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() with a *GroupAddress* value other than NULL and a *\*GroupAddress*value of an invalid multicast IPv4 address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.3 | 0x9634a43a, 0x41bc, 0x49f9, 0x80, 0x1c, 0x0e, 0xc1, 0x8b, 0xe1, 0x5c, 0x04 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() to join a group address when it has already in the group table. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Groups() to join the group address again when it has already joined in step 3. The return status should be **EFI\_ALREADY\_STARTED**.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.4 | 0x4a2e6bd5, 0x2d4b, 0x4d81, 0xb5, 0x4b, 0x86, 0xc0, 0x03, 0x25, 0x9e, 0xf4 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() to leave a group address which is not in the group table. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Groups() to leave the group address joined in step 3. The return status should be EFI\_SUCCESS.  5. Call EFI\_IP4\_PROTOCOL.Groups() to leave the group address again joined in step 3. The return status should be **EFI\_NOT\_FOUND**.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.5 | 0x1cc6a89f, 0xf635, 0x4aa6, 0xb2, 0x18, 0xfa, 0xc4, 0x7f, 0x7b, 0x83, 0x7c | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Configure() again with an IpConfigData value of NULL.  4. Call EFI\_IP4\_PROTOCOL.Groups() with the a *JoinFlag* value of **TRUE** or **FALSE**. The return status should be **EFI\_NOT\_STARTED**.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.6 | 0x6138d5ae, 0x78b8, 0x43fa, 0x9a, 0x8c, 0x03, 0xb1, 0x87, 0x6d, 0x93, 0x15 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() to join a group address and call Receive() to check that it is successful. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.**Receice()** to receive a packet from the group IP and check that it is successful.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.7 | 0x340a0020, 0x26ae, 0x4268, 0x87, 0x12, 0xe4, 0x58, 0x2d, 0x3e, 0x36, 0xe7 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() to join two group address and call Receive() after leaving a group address from the group table. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() to join two group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Groups() to leave a group address from the group table.  5. Call EFI\_IP4\_PROTOCOL.**Receice()** to receive a packet from the group IP and check that it is successful.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.3.8 | 0x3234871f, 0x9682, 0x4bbd, 0x85, 0x56, 0x4a, 0x17, 0xa9, 0x74, 0xdf, 0xb7 | EFI\_IP4\_PROTOCOL.Groups() - invokes Groups() to leave all group address and call Receive() to check that it is successful. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Groups() to join two group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.**Receice()** to receive a packet from the group IP and check it can not receive the packet.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Routes()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.4.1 | 0x9fa3288c, 0x1caa, 0x4174, 0xbc, 0x81, 0x84, 0x52, 0x16, 0x6f, 0x09, 0x58 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of FALSE and a SubnetAddress value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of FALSE and a SubnetAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.2 | 0x6ed77fe8, 0xb20a, 0x417c, 0xb7, 0x64, 0x69, 0x36, 0x70, 0x74, 0xdf, 0x49 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of FALSE and a SubnetMask value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of FALSE and a SubnetMask value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.3 | 0x0ca07e01, 0xecf0, 0x4726, 0x8b, 0xb0, 0xb8, 0xd6, 0xde, 0xa2, 0x69, 0x77 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of FALSE and a GatewayAddress value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of FALSE and a GatewayAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.4 | 0xe7ba143d, 0xb80c, 0x411b, 0xa7, 0xf7, 0x60, 0xa2, 0xb5, 0x10, 0xc7, 0x3d | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of TRUE and a SubnetAddress value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of TRUE and a SubnetAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.5 | 0xf66dd341, 0xae38, 0x464e, 0x81, 0x22, 0x7f, 0xcb, 0xa4, 0x99, 0x1d, 0x31 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of TRUE and a SubnetMask value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of TRUE and a SubnetMask value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.6 | 0x713db4d5, 0x4e17, 0x487a, 0x83, 0x62, 0xe1, 0x18, 0x8b, 0x9f, 0x5e, 0x61 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a DeleteRoute value of TRUE and a GatewayAddress value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a DeleteRoute value of TRUE and a GatewayAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.7 | 0xea35d39b, 0x7350, 0x427c, 0x8c, 0x04, 0x69, 0x0a, 0x75, 0x42, 0x75, 0x70 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a \*SubnetMask value of an invalid subnet mask. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a *\**SubnetMask value of an invalid subnet mask. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.8 | 0xe02b9e49, 0x3889, 0x4183, 0xac, 0x91, 0xb7, 0x4a, 0x63, 0xb5, 0xcf, 0x8f | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a \*GatewayAddress value of an invalid unicast IPv4 address. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a *\**GatewayAddress value of an invalid unicast IPv4 address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.9 | 0x5a3132ea, 0x658e, 0x4bfb, 0xa3, 0xd2, 0x49, 0xeb, 0x6e, 0x88, 0xdf, 0xed | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() when the route has already been defined in the routing table (when DeleteRoute is FALSE). | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() to add a route into the routing table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Routes() to add the route again when it has already been defined in the routing table. The return status should be EFI\_ACCESS\_DENIED.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.10 | 0x5f228ffc, 0xfc1c, 0x43f6, 0x99, 0x14, 0x26, 0xcd, 0xcb, 0xee, 0x24, 0x97 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() to delete a route which is not in the routing table. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_PROTOCOL.Routes() to add a route into the routing table. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Routes() to delete the route added in step 3. The return status should be EFI\_SUCCESS.  5. Call EFI\_IP4\_PROTOCOL.Routes() to delete the route again while it is not in the routing table. The return status should be EFI\_NOT\_FOUND.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.11 | 0x3c71e7d7, 0xe61e, 0x4973, 0x90, 0xff, 0x36, 0x5b, 0xe5, 0xa7, 0x92, 0xb4 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() to add a route when using the default address and configuration has not finished yet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() to add a route into the routing table when using the default address and configuration has not finished yet. The return status should be EFI\_NO\_MAPPING.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.12 | 0xba7d5323, 0x36e4, 0x4b1a, 0x9e, 0x74, 0xdf, 0xe6, 0xd3, 0x30, 0xe5, 0xc5 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() delete a route when using the default address and configuration has not finished yet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() to delete a route into the routing table when using the default address and configuration has not finished yet. The return status should be EFI\_NO\_MAPPING.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.19 | 0xa51618f2, 0xe542, 0x4498, 0x82, 0xab, 0xc9, 0x9d, 0xc8, 0x61, 0x7f, 0xd0 | EFI\_IP4\_PROTOCOL.Routes() - Invoke Routes() when the driver instance has not been started. The return status should be EFI\_NOT\_STARTED. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Routes() to add a route into the routing table when the instance has not been started. The return status should be EFI\_NOT\_STARTED.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.13 | 0xf3239a4b, 0x29c1, 0x461e, 0xbf, 0x54, 0x96, 0x5d, 0xd9, 0x2e, 0x69, 0xb5 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a SubnetAddress value of "0.0.0.0",a SubnetMask value of "0.0.0.0" and a GatewayAddress value of "172.16.210.162". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "0.0.0.0",a SubnetMask value of "0.0.0.0" and a GatewayAddress value of "172.16.210.162". The return status should be EFI\_SUCCESS.  4. Call Ip.Transmit() to check the packet.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.14 | 0x7b17e47c, 0x0f7c, 0x4351, 0xa8, 0xfa, 0xf6, 0xf5, 0x9d, 0x03, 0x54, 0x93 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a SubnetAddress value of "172.16.210.0",a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "0.0.0.0". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "172.16.210.0",a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "0.0.0.0". The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Transmit() to check the packet.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.15 | 0x52762945, 0x2148, 0x48c9, 0x82, 0xea, 0xac, 0x78, 0xf3, 0x7c, 0xb7, 0x23 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() with a SubnetAddress value of "172.16.220.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "172.16.210.162". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "172.16.220.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "172.16.210.162". The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Transmit() to check the packet.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.16 | 0x91439045, 0x15f1, 0x4a25, 0x83, 0x0e, 0x4d, 0x0a, 0x2b, 0x2c, 0x13, 0x0a | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() to delete the route with a SubnetAddress value of "0.0.0.0", a SubnetMask value of "0.0.0.0" and a GatewayAddress value of "172.16.210.162". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "0.0.0.0", a SubnetMask value of "0.0.0.0" and a GatewayAddress value of "172.16.210.162". The return status should be EFI\_SUCCESS.  4. Call Ip.Routes() to delete the route added in step 3.  5. Call EFI\_IP4\_PROTOCOL.Transmit() to check the packet.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.17 | 0x3f884c4d, 0xcfd5, 0x49b8, 0x8f, 0x08, 0xfb, 0xb7, 0xb7, 0x44, 0x1e, 0xed | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() to delete the route with a SubnetAddress value of "172.16.210.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "0.0.0.0". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "172.16.210.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "0.0.0.0". The return status should be EFI\_SUCCESS.  4. Call Ip.Routes() to delete the route added in step 3.  5. Call EFI\_IP4\_PROTOCOL.Transmit() to check the packet.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.4.18 | 0x4745ddac, 0x9429, 0x4159, 0xbc, 0x13, 0x85, 0xf8, 0xd6, 0xe5, 0x23, 0x13 | EFI\_IP4\_PROTOCOL.Routes() - invokes Routes() to delete the route with a SubnetAddress value of "172.16.220.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "172.16.210.162". Then call Transmit() to check it. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Routes() with a SubnetAddress value of "172.16.220.0", a SubnetMask value of "255.255.255.0" and a GatewayAddress value of "172.16.210.162". The return status should be EFI\_SUCCESS.  4. Call Ip.Routes() to delete the route added in step 3.  5. Call EFI\_IP4\_PROTOCOL.Transmit() to check the packet.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Transmit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.2.5.1 | 0x47ba87f8, 0x188e, 0x4b41, 0x8d, 0x53, 0xa9, 0x08, 0x87, 0x73, 0x15, 0x6b | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit() with a Tokenvalue ofNULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.2 | 0x5701c82b, 0x64bf, 0x415e, 0x9f, 0x0f, 0x46, 0x23, 0x7b, 0x01, 0x91, 0xdf | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Event value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.3 | 0x44454955, 0x744c, 0x4648, 0xab, 0x05, 0x74, 0xac, 0x73, 0x0f, 0x9a, 0xa2 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxDatavalue ofNULL**.** | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxDatavalue ofNULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.4 | 0xf8e8550e, 0x46ff, 0x4e49, 0x81, 0xe5, 0xf7, 0x06, 0x5a, 0xd4, 0x84, 0xf9 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token*.Packet.OptionsLength* value other than 0 and a  Token.Packet.OptionsBuffer value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token*.Packet.OptionsLength* value other than 0 and a  Token*.Packet.OptionsBuffer* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.5 | 0x9edbcb93, 0xa28b, 0x40ed, 0x90, 0xfa, 0xa1, 0x7d, 0x41, 0xed, 0x93, 0x7d | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token*.Packet.FragmentCount*value of 0. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit() with a Token.Packet.FragmentCount value of 0. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.6 | 0x2ff682e3, 0x0b85, 0x4755, 0xaf, 0x58, 0x16, 0x57, 0x81, 0x23, 0x83, 0x2f | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with one or more of the Token.Packet.TxData*.*FragmentTable*[].FragmentLength* fields is 0. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with one or more of the Token.Packet.TxData*.*FragmentTable*[].FragmentLength* fields is 0. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.7 | 0x199e798a, 0x2f1a, 0x49ac, 0x81, 0x05, 0x91, 0xef, 0xc1, 0x24, 0x5b, 0xae | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with one or more of the Token.Packet.TxData*.*FragmentTable*[].FragmentBuffer*fields is NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with one or more of the Token.Packet.TxData*.*FragmentTable*[].FragmentBuffer*fields is NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.8 | 0x9bb3fb85, 0xbdfd, 0x4b0f, 0x95, 0x4c, 0x6a, 0x21, 0xbb, 0xff, 0x93, 0x7f | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*TotalDataLength value of 0. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*TotalDataLengthvalue of 0. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.9 | 0xff0221ac, 0x7a1c, 0x40e7, 0xbf, 0xea, 0xb2, 0xde, 0x89, 0xb2, 0xbf, 0x76 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*TotalDataLength not equal to the sum of fragment lengths. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*TotalDataLength not equal to the sum of fragment lengths. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.10 | 0xa22a64e0, 0xd98c, 0x49af, 0x98, 0xe1, 0x0d, 0x30, 0x93, 0x29, 0x7d, 0x34 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. (Set *SourceAddress* as "172.16.210.101" and GatewayAddress "172.16.210.255"). The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.11 | 0x2b27d386, 0xab2a, 0x4882, 0xa7, 0xf8, 0x71, 0xc0, 0xb6, 0x9c, 0xf9, 0x88 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. (Set *SourceAddress* as "172.16.210.101" and GatewayAddress "172.16.210.254"). The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.12 | 0x0251b68d, 0x32fe, 0x4b0e, 0xad, 0xe9, 0xc8, 0x45, 0x71, 0xd4, 0xfe, 0xec | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. (Set *SourceAddress* as "172.16.210.101" and GatewayAddress "240.0.0.2"). The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.13 | 0x3e687a19, 0x7b23, 0x45b7, 0x8f, 0x81, 0x0b, 0x1c, 0x28, 0xd5, 0x2a, 0x26 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()with a Token.Packet.TxData*.*OverrideData*.*GatewayAddressin the override data structure value of an invalid unicast IPv4 address if OverrideData is not NULL. (Set *SourceAddress* as "172.16.210.101" and GatewayAddress "255.255.255.255"). The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.14 | 0x00e45a87, 0xa739, 0x43af, 0xa7, 0x9f, 0x8d, 0xc7, 0xd3, 0x14, 0xab, 0x20 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit()when the IP header in FragmentTable is not a well-formed header when RawData is TRUE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when the IP header in FragmentTable is not a well-formed header when *RawData* is **TRUE**. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.15 | 0x4fc5e7c5, 0xdb04, 0x4d15, 0x94, 0xa4, 0x2d, 0xba, 0xac, 0x60, 0xbd, 0xbc | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit()when Token.Packet.TxData*.*TotalDataLength is not equal to the sum of fragment lengths. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when Token.Packet.TxData*.*TotalDataLength is not equal to the sum of fragment lengths.(set Token.Packet.TxData*.*TotalDataLengthas 1). The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.16 | 0x5264d068, 0xe5a1, 0x41eb, 0x9d, 0x1e, 0xf8, 0xff, 0x20, 0x37, 0x77, 0x3a | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() when the length of the IPv4 header + option length + total data length is greater than the maximum packet size and DoNotFragment is TRUE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when the length of the IPv4 header + option length + total data length is greater than the maximum packet size and *DoNotFragment* is **TRUE**. The return status should be **EFI\_BAD\_BUFFER\_SIZE**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.17 | 0x383b9eb0, 0xb83a, 0x447d, 0x85, 0xcc, 0xd5, 0x2d, 0x49, 0xe5, 0x34, 0x8d | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() when the length of the IPv4 header + option length + total data length is greater than MTU. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when the length of the IPv4 header + option length + total data length is greater than MTU. The return status should be **EFI\_BAD\_BUFFER\_SIZE**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.18 | 0x0ca2174b, 0x3731, 0x469f, 0x98, 0x2f, 0xb3, 0x45, 0xd8, 0xad, 0x7b, 0x4a | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() when the transmit completion token with the same Token.Event was already in the transmit queue. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet.  4. Call EFI\_IP4\_PROTOCOL.Transmit()with the same Token in step 2. The return status should be **EFI\_ACCESS\_DENIED**.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.31 | 0x45b5cb36, 0xf07a, 0x493c, 0xac, 0xee, 0x49, 0x91, 0x66, 0x6f, 0x0f, 0x00 | EFI\_IP4\_PROTOCOL.Transmit() - invoke Transmit() when the length of the IPv4 header + option length + total data length is greater than MTU.The return status shoule be EFI\_BAD\_BUFFER\_SIZE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  4. Call EFI\_IP4\_PROTOCOL.Transmit()when the length of the IPv4 header + option length + total data length is greater than MTU. The return status shoule be **EFI\_BAD\_BUFFER\_SIZE**.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.19 | 0x394621bf, 0xe45c, 0x4dc7, 0x8c, 0x59, 0xa4, 0xb6, 0x25, 0xb0, 0x72, 0x4f | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() when there is no route found to destination address. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Configure the IpConfigData *.*StationAddressnot same as TxData.DestinationAddress.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when there is no route found to destination address. The return status should be **EFI\_NOT\_FOUND**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.20 | 0xb0e8dd55, 0x8e92, 0x4d9c, 0xba, 0x2d, 0x95, 0xcf, 0x35, 0x75, 0x71, 0x0b | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Then call EFI\_IP4\_PROTOCOL.Configure()again with aIpConfigData value of NULL**.**  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet. The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.32 | 0x3f38c35e, 0x92b8, 0x4e20, 0xaa, 0x23, 0x4b, 0xd9, 0xf6, 0xb3, 0x57, 0x7a | EFI\_IP4\_PROTOCOL.Transmit() - invoke Transmit() when the instance has not been started.The return status should be EFI\_NOT\_STARTED. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()when the instance has not been started.The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.21 | 0xac9ddcc1, 0xa095, 0x474b, 0x84, 0x06, 0x10, 0x37, 0xa4, 0x77, 0xe2, 0x24 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit an unicast packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit an unicast packet. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.22 | 0x3abee622, 0x0543, 0x46c6, 0xad, 0xfa, 0x97, 0x3a, 0x89, 0x6c, 0xbb, 0xdc | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a multicast packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a multicast packet. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.23 | 0xcc0ad3d9, 0xf1cd, 0x47e3, 0x81, 0x1d, 0xcb, 0x7a, 0x4e, 0x33, 0xd0, 0xfe | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a broadcast packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a broadcast packet. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.24 | 0x0979fc12, 0x53a1, 0x4cfb, 0x8c, 0xd7, 0xdf, 0xef, 0xb2, 0xc3, 0x76, 0x94 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet using OverrideData. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Set IpConfigData *.*StationAddress "172.16.210.102” and IpConfigData *.*SubnetMask "255.255.255.0".  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet when set OverrideData*.SourceAddress* "172.16.210.101" and OverrideData*.*GatewayAddress "0.0.0.0". The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.25 | 0x3b0ae017, 0xcb82, 0x4f94, 0xb3, 0x17, 0xf7, 0x1d, 0x25, 0xe0, 0x33, 0xed | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with TxData.OptionsLengthset as 4. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet with *TxData.OptionsLength*set as 4. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.26 | 0x2e24f6c8, 0x9fbf, 0x4fc3, 0xbb, 0x92, 0x1d, 0xd6, 0xab, 0xfa, 0xbd, 0x6f | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with TxData.OptionsLengthset as 40 and initialize TxData.OptionsBuffer. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet with *TxData.OptionsLength*set as 40 and initialize *TxData.OptionsBuffer*. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.27 | 0x1da54ed7, 0x24d1, 0x4a19, 0xad, 0x19, 0x43, 0x89, 0x40, 0xd2, 0x73, 0xd2 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with TxData.FragmentCountset as 4 and IpConfigData .DoNotFragment set as TRUE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet with *TxData.FragmentCount*set as 4 and IpConfigData *.DoNotFragment* set as **TRUE**. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.28 | 0xbd451149, 0xc815, 0x4454, 0xb5, 0xf1, 0x8e, 0x14, 0x47, 0x6f, 0x91, 0x17 | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with TxData.FragmentCountset as 4 and IpConfigData .DoNotFragment set as FALSE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit 45 packets with *TxData.FragmentCount*set as 4 and IpConfigData *.DoNotFragment* set as **FALSE**. The return status should be EFI\_SUCCESS. Then check the captured packets number.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.29 | 0x298bc2eb, 0xa07b, 0x4e66, 0xba, 0xef, 0x2d, 0x03, 0x11, 0x72, 0xd4, 0xcb | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with TxData.DestinationAddress set as "172.16.210.255" and FragmentTable.FragmentBuffer filled with char data. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet with *TxData.DestinationAddress* set as "172.16.210.255" and FragmentTable*.FragmentBuffer*filled with char data. The return status should be EFI\_SUCCESS. Then check packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.5.30 | 0x538a9496, 0x49a0, 0x4fe9, 0xa9, 0xe3, 0x0b, 0x20, 0x3f, 0xef, 0x03, 0xbb | EFI\_IP4\_PROTOCOL.Transmit() - invokes Transmit() to transmit a packet with FragmentTable.FragmentBufferfilled with UNIT8 data and FragmentTable.FragmentBuffer initialized. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Transmit()to transmit a packet when FragmentTable*.FragmentBuffer*filled with UNIT8 data and FragmentTable*.FragmentBuffer* initialized. The return status should be EFI\_SUCCESS. Then check packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Receive()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.6.1 | 0x31ee7913, 0x8cdf, 0x47dd , 0xa7, 0x29, 0xc9, 0x70, 0x51, 0xfc, 0x25, 0xfe | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive() with a Token value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Receive()to receive a packet with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.2 | 0x2ca314a9, 0x1afe, 0x40a3, 0xa4, 0x91, 0xc3, 0xe7, 0x2b, 0x02, 0x33, 0x7d | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive() with a Token.Event value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Receive()to receive a packet with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.3 | 0x4bb1005a, 0x5268, 0x4abf, 0x81, 0x34, 0x6d, 0x37, 0x0c, 0xde, 0x8e, 0x01 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()with the token that has already been placed in the receive queue. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance.  3. Call EFI\_IP4\_PROTOCOL.Receive() to receive a packet.  4. Call EFI\_IP4\_PROTOCOL.Receive()to receive a packet with the same Token.Event used in step 3. The return status should be **EFI\_ACCESS\_DENIED**.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.4 | 0xb9a3d3cd, 0xe982, 0x4268, 0xa7, 0x2a, 0xc3, 0xe5, 0xe8, 0xb6, 0xac, 0xa0 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Then call EFI\_IP4\_PROTOCOL.Configure()again withTokenisNULL**.**  3. Call EFI\_IP4\_PROTOCOL.Receive()to receive a packet. The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.5 | 0xf9658b87, 0x2377, 0x4fa2, 0xbe, 0x2a, 0x9c, 0x8d, 0x4b, 0x7e, 0xec, 0xe1 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()when an ICMP error packet was received. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create (from IP head) and send an ICMP error packet, and Call EFI\_IP4\_PROTOCOL.Receive()to receive the packet. The return status should be EFI\_SUCCESS. Then check the packet field.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.6 | 0x134d695e, 0x6ea0, 0x46df, 0x8d, 0xbb, 0x62, 0x63, 0xf7, 0x1b, 0x29, 0x1a | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()when an ICMP error packet was received. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create (from IP payload) and send an ICMP error packet, and Call EFI\_IP4\_PROTOCOL.Receive()to receive the packet. The return status should be EFI\_SUCCESS. Then check the packet field.  6. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.7 | 0x4aed29df, 0x95c0, 0x42b0, 0xaa, 0x65, 0xff, 0x72, 0xf1, 0x6d, 0x22, 0x4a | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive() to receive an ip packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create an ip packet and call EFI\_IP4\_PROTOCOL.Receive()to receive the packet. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.8 | 0x47cb6918, 0xd454, 0x42f5, 0xa2, 0xab, 0x8e, 0xa5, 0x47, 0x3c, 0x6a, 0xab | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()to receive an ethernet packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create an ethernet packet and call EFI\_IP4\_PROTOCOL.Receive()to receive the packet. The return status should be EFI\_SUCCESS. Then check the field of the packet.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.9 | 0xb2a56bae, 0x716d, 0x48b1, 0x9e, 0xc0, 0xd6, 0xbe, 0xed, 0xb2, 0x0e, 0xe2 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive() to receive 4 ip packets. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create 4 ip packets and call EFI\_IP4\_PROTOCOL.Receive()to receive the packets. The return status should be EFI\_SUCCESS. Then check the packets field and count.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.10 | 0x452c7b90, 0xc99f, 0x4106, 0xbe, 0xce, 0x2d, 0xcd, 0x53, 0x50, 0x73, 0xd4 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()to receive 45 ip packets. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Create 45 ip packets and call EFI\_IP4\_PROTOCOL.Receive()to receive the packets. The return status should be EFI\_SUCCESS. Then check the packet field and count.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.11 | 0x5f497c40, 0xa1d3, 0x4223, 0xbc, 0x33, 0x4c, 0x8d, 0x96, 0x7d, 0xfc, 0xf7 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()to receive a broadcast ip packet. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.** SetIpConfigData .AcceptBroadcastisTRUE**.**  3. Create an ip packet and set RemoteEther FF:FF:FF:FF:FF:FF. call EFI\_IP4\_PROTOCOL.Receive()to receive the broadcast packet. The return status should be EFI\_SUCCESS. Then check the packet field.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.6.12 | 0x4be19438, 0xc5d8, 0x4af4, 0xaf, 0x0f, 0x8e, 0xc7, 0x49, 0x67, 0x2b, 0x40 | EFI\_IP4\_PROTOCOL.Receive() - invokes Receive()to receive an unformatted packet by set *RawData* with TRUE. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.** Set*RawData*with **TRUE.**  3. Create an ip packet and call EFI\_IP4\_PROTOCOL.Receive()to receive an unformatted packet. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Cancel()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.7.1 | 0x95d1ac2d, 0x4aaf, 0x4004, 0xb6, 0xa0, 0x8e, 0xec, 0x13, 0xd8, 0x31, 0xcc | EFI\_IP4\_PROTOCOL.Cancel() - invokes Cancel() when the asynchronous I/O request was not found in the transmit or receive queue. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Call EFI\_IP4\_PROTOCOL.Cancel() to abort an asynchronous transmit or receive request. The return status should be **EFI\_NOT\_FOUND**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.7.2 | 0xb41eab67, 0xc87c, 0x46a8, 0xae, 0x9d, 0x2c, 0xec, 0x34, 0xf7, 0x6d, 0x38 | EFI\_IP4\_PROTOCOL.Cancel() - invokes Cancel() with a Token value of NULL when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Then call EFI\_IP4\_PROTOCOL.Configure() again with Token NULL.  3. Call EFI\_IP4\_PROTOCOL.Cancel() to abort an asynchronous transmit or receive request with aTokenvalue of NULL. The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.7.3 | 0x22fa385b, 0xc124, 0x41cd, 0xa6, 0xd9, 0x74, 0xf7, 0xc7, 0x78, 0x10, 0x88 | EFI\_IP4\_PROTOCOL.Cancel() - invokes Cancel() when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance. Then call EFI\_IP4\_PROTOCOL.Configure() again with Token NULL.  3. Call EFI\_IP4\_PROTOCOL.Cancel() to abort an asynchronous transmit or receive request. The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.7.4 | 0xd5bd141b, 0x5ade, 0x4831, 0xaf, 0x3c, 0x15, 0x46, 0xcd, 0xf4, 0xbc, 0x41 | EFI\_IP4\_PROTOCOL.Cancel() - invokes Cancel() to abort a receive request. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Call EFI\_IP4\_PROTOCOL.Receive() to receive a packet. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Cancel() to abort the asynchronous receive request. The return status should be EFI\_SUCCESS. Then check the status.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.7.5 | 0xf689d953, 0x1270, 0x448e, 0x93, 0xb1, 0xc0, 0xa5, 0x19, 0x1d, 0x6e, 0x10 | EFI\_IP4\_PROTOCOL.Cancel() - invokes Cancel()with a Token value of NULL to abort all receive requests. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.**  3. Call EFI\_IP4\_PROTOCOL.Receive() twice to put two receive requests. The return status should be EFI\_SUCCESS.  4. Call EFI\_IP4\_PROTOCOL.Cancel()with a Token value of NULL to abort all asynchronous receive requests. The return status should be EFI\_SUCCESS. Then check the status.  5. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### Poll()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.8.1 | 0x1c22cb9a, 0x14c5, 0x41a9, 0xa2, 0x00, 0x9e, 0x89, 0x90, 0xc4, 0x1b, 0xb4 | EFI\_IP4\_PROTOCOL.Poll() - invokes **Poll()** when the instance has not been started. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_PROTOCOL.Configure() to configure the new instance**.** Then callEFI\_IP4\_PROTOCOL.Configure()again withIpConfigData NULL**.**  3. Call EFI\_IP4\_PROTOCOL.**Poll()** for incoming data packets and processes outgoing data packets. The return status should be **EFI\_NOT\_STARTED**.  4. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |

### CreateChild()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.9.1 | 0xafda2aee, 0x1e1d, 0x4212, 0x82, 0x0a, 0x49, 0x69, 0x96, 0x8c, 0x26, 0xea | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - invokes CreateChild() with a ChildHandle value of NULL. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child with a ChildHandlevalue ofNULL. the return status should be EFI\_INVALID\_PARAMETER.  2. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created Ip4 child and clean up the environment. |
| 5.25.2.9.2 | 0x110c0779, 0x61f0, 0x46a5, 0x94, 0xd8, 0xe5, 0xf9, 0xfc, 0x24, 0xea, 0xba | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – invokes CreateChild() to create several Ip4 childs. | Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create childs three times and then destroy them. |

### DestroyChild()

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| Number | GUID | Assertion | Test Description |
| 5.25.2.10.1 | 0x7b89cc20, 0x3546, 0x4d7d, 0xae, 0x4b, 0xd7, 0xa6, 0xac, 0x94, 0xe9, 0x6b | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - invokes DestroyChild() when the ChildHandle does not support the protocol that is removed. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() with the parameter ChildHandle that was created just now. the return status should be EFI\_SUCCESS.  3. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()with the parameter ChildHandle that was created just now. the return status should be **EFI\_UNSUPPORTED**. |
| 5.25.2.10.2 | 0x5e6fe618, 0x13a3, 0x4107, 0x8e, 0x1e, 0x35, 0xa8, 0x57, 0x84, 0x47, 0x12 | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - invokes DestroyChild() to destroy a NULL child. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new Ip4 child.  2. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() with the parameter ChildHandle isNULL.The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.2.10.3 | 0x08e3cc7b, 0x4441, 0x4bf3, 0xac, 0x61, 0xec, 0x2e, 0x63, 0x82, 0xb8, 0x17 | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - invokes DestroyChild() to destroy the inexistent child. | 1. Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the inexistent child. The return status should be EFI\_INVALID\_PARAMETER**.** |
| 5.25.2.10.4 | 0x1400e3f9, 0x9681, 0x4da0, 0xbc, 0x18, 0xde, 0xce, 0xa8, 0x2f, 0x65, 0xf4 | EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - to test the function of DestroyChild(). | Call EFI\_IP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly three created Ip4 childs. |

## EFI\_IP4\_CONFIG\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IP4\_CONFIG\_PROTOCOL Section.

### Start()

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| Number | GUID | Assertion | Test Description |
| 5.25.3.1.1 | 0x5e97a936, 0xe3df, 0x4755, 0xa8, 0x33, 0x42, 0x4c, 0xd0, 0xd3, 0x38, 0xda | EFI\_IP4\_CONFIG\_PROTOCOL.Start() - invokes Start() when the parameter *DoneEvent* is NULL. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  2. Call EFI\_IP4\_CONFIG\_PROTOCOL**.Start()** to start the configuration process with a *DoneEvent* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  4. clean up the environment. |
| 5.25.3.1.2 | 0xe527172c, 0x26d9, 0x440a, 0x85, 0x4c, 0x15, 0x49, 0xfc, 0x6d, 0x5e, 0x49 | EFI\_IP4\_CONFIG\_PROTOCOL.Start() - invokes Start() when the parameter *ReconfigEvent* is NULL. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter DoneEvent.  2. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process with a *ReconfigEvent* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  3. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  4. clean up the environment. |
| 5.25.3.1.3 | 0xcd185521, 0xd395, 0x4be4, 0xbf, 0x0e, 0x21, 0x42, 0xc7, 0xb5, 0x1c, 0x78 | EFI\_IP4\_CONFIG\_PROTOCOL.Start() - invokes **Start()** when the configuration policy for the EFI IPv4 Protocol driver has already started. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process. The return status should be EFI\_SUCCESS.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process again. The return status should be **EFI\_ALREADY\_STARTED**.  5. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  6. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  7. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  8. clean up the environment. |
| 5.25.3.1.4 | 0x686babd0, 0x3be4, 0x4be1, 0x9a, 0xed, 0x38, 0x29, 0x83, 0x6a, 0xfc, 0x04 | EFI\_IP4\_CONFIG\_PROTOCOL.Start() - invokes Start() when the parameters *DoneEvent* and *ReconfigEvent* are not NULL. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process. The return status should be EFI\_SUCCESS.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  5. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  6. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  7. clean up the environment. |

### Stop()

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| Number | GUID | Assertion | Test Description |
| 5.25.3.2.1 | 0xc5c3a59b, 0x4963, 0x43d5, 0x87, 0xfb, 0xc3, 0x53, 0x4c, 0x94, 0x5b, 0x38 | EFI\_IP4\_CONFIG\_PROTOCOL.Stop() - invokes **Stop()** when the configuration process has not been started. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process. The return status should be EFI\_SUCCESS.  5. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process again. The return status should be **EFI\_NOT\_STARTED**.  6. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  7. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  8. clean up the environment. |
| 5.25.3.2.2 | 0x68d111a9, 0x35c6, 0x4e54, 0xaf, 0xae, 0x93, 0xc8, 0xe2, 0x95, 0xad, 0x3b | EFI\_IP4\_CONFIG\_PROTOCOL.Stop() - invokes **Stop()** to verify the configuration process. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process. The return status should be EFI\_SUCCESS.  5. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  6. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  7. clean up the environment. |

### GetData()

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| Number | GUID | Assertion | Test Description |
| 5.25.3.3.1 | 0xd21e8801, 0x7a1b, 0x4258, 0x84, 0xbe, 0x47, 0x68, 0xc0, 0x25, 0xe7, 0x1b | EFI\_IP4\_CONFIG\_PROTOCOL.GetData() - invokes **GetData()** when the configuration policy for the EFI IPv4 Protocol driver is not running. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  5. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  6. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  7. Call **EFI\_IP4\_CONFIG\_PROTOCOL.GetData()** to get configuration data when the driver is not running. The return status should be **EFI\_NOT\_STARTED**.  8. clean up the environment. |
| 5.25.3.3.2 | 0xb1b6d64a, 0xc963, 0x4d93, 0xaa, 0x56, 0xcd, 0xff, 0x2e, 0x09, 0x6a, 0x84 | EFI\_IP4\_CONFIG\_PROTOCOL.GetData() – invokes **GetData()** when EFI Ipv4 Protocol driver configuration is still running. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.GetData()** to get configuration data when the driver is still running. The return status should be **EFI\_NOT\_READY**.  5. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  6. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  7. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  8. clean up the environment. |
| 5.25.3.3.3 | 0x819d1861, 0xf092, 0x4c33, 0xbe, 0xf9, 0x8f, 0xf8, 0x8f, 0x05, 0xb2, 0xb3 | EFI\_IP4\_CONFIG\_PROTOCOL.GetData() – invokes **GetData()** when the parameter IpConfigData *Size* is smaller than the configuration data buffer. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.GetData()** to get configuration data with an IpConfigData *Size* value of 0. The return status should be **EFI\_BUFFER\_TOO\_SMALL**.  5. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  6. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  7. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  8. clean up the environment. |
| 5.25.3.3.4 | 0x1257612e, 0xe00c, 0x43d1, 0x97, 0xef, 0xfb, 0x60, 0x00, 0x30, 0x03, 0x1e | EFI\_IP4\_CONFIG\_PROTOCOL.GetData() – invokes GetData() when the parameter IpConfigData is NULL. | 1. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  3. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.GetData()** to get configuration data with an IpConfigData value of NULL. The return status should be **EFI\_BUFFER\_TOO\_SMALL**.  5. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  6. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  7. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  8. clean up the environment. |
| 5.25.3.3.5 | 0x30710a44, 0x79e9, 0x45fc, 0x97, 0x4e, 0x3f, 0x48, 0x36, 0xbe, 0x33, 0xc8 | EFI\_IP4\_CONFIG\_PROTOCOL.GetData() – Test the function of GetData(). | 1. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to make sure configuration policy for the EFI IPv4 protocol driver is not running.  2. Call **BS.CreateEvent()** to create a new Event for the parameter *DoneEvent*.  3. Call **BS.CreateEvent()** to create a new Event for the parameter *ReconfigEvent*.  4. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Start()** to start the configuration process.  5. Send DHCPOFFER packet to agent.  6. Capture and validate DHCPREQUEST packet.  7. Send DHCPACK packet to agent  8. Call **EFI\_IP4\_CONFIG\_PROTOCOL.GetData()** to get configuration data.  9. Call **EFI\_IP4\_CONFIG\_PROTOCOL.Stop()** to stop the configuration process.  10. Call **BS.CloseEvent()** to close the Event for the parameter *DoneEvent*.  11. Call **BS.CloseEvent()** to close the Event for the parameter *ReconfigEvent*.  12. clean up the environment. |

## EFI\_TCP6\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_TCP6\_PROTOCOL Section.

### CreateChild()/DestroyChild()

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| Number | GUID | Assertion | Test Description |
| 5.25.4.1.1 | 0xfca64cbc, 0xd99e, 0x42f0, 0x91, 0x23, 0x07, 0x76, 0xd7, 0x71,0x82, 0x9f | EFI\_TCP6\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_INVALID\_PARAMETER when ChildHandle isNULL. | Call CreateChild() when **ChildHandle** is **NULL**, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.1.2 | 0x991825b0, 0xd208, 0x429b, 0x98, 0xc9, 0x40, 0x46, 0xe5, 0x40, 0x00, 0x15 | EFI\_TCP6\_PROTOCOL.DestroyChild() - DestroyChild()returns EFI\_INVALID\_PARAMETER with ChildHandle beingNULL. | Call DestroyChild() when **ChildHandle** is **NULL**, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.1.3 | 0x7bfd1b83, 0x519b, 0x4bb4, 0x9a, 0x44, 0x12, 0x4a, 0xdc, 0x43, 0xdc, 0x56 | EFI\_TCP6\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with valid parameters. | 5.25.4.1.3 to 5.25.4.1.6 belong to one case.  1. Call CreateChild() with valid parameters to create child1, The return status should be EFI\_SUCCESS. |
| 5.25.4.1.4 | 0x2d22615b, 0x8e8b, 0x44d2, 0x95, 0x25, 0xcc, 0x5c, 0x7e, 0x8c, 0x84, 0x54 | EFI\_TCP6\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with valid parameters. | 2. Call CreateChild() with valid parameters to create child2, The return status should be EFI\_SUCCESS. |
| 5.25.4.1.5 | 0xd681c6b2, 0xa4d4, 0x4725, 0xab, 0xe5, 0xea, 0x5b, 0x03, 0x80, 0x76, 0xbf | EFI\_TCP6\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with valid parameters. | 3. Call DestroyChild() with valid parameters to destroy child1, The return status should be EFI\_SUCCESS. |
| 5.25.4.1.6 | 0x363eac60, 0x183a, 0x4b57, 0xae, 0x9e, 0x91, 0xcc, 0xf1, 0x95, 0x39, 0xfd | EFI\_TCP6\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with valid parameters. | 4. Call DestroyChild() with valid parameters to destroy child2, The return status should be EFI\_SUCCESS. |

### GetModeData()

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| Number | GUID | Assertion | Test Description |
| 5.25.4.2.1 | 0xd957c9de, 0x716a, 0x4f6e, 0xbe, 0x7c, 0x66, 0xc6, 0xe5, 0xa0, 0x2e, 0x09 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI NOT STARTED when the instance is not configured. | Call GetModeData() with valid parameters before the TCP instance is configured., the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.2.2 | 0x88a3650b, 0x3aa5, 0x4417, 0x97, 0x71, 0xef, 0xa4, 0xf6, 0xe5, 0x9a, 0x79 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 5.25.4.2.2 to 5.25.4.2.8 belong to one case.  1. Call GetModeData() with all no **NULL** input parameters, the return status should be EFI\_SUCCESS and the configured data should be correct. |
| 5.25.4.2.3 | 0x798259ad, 0xbc64, 0x4989, 0x9d, 0x8b, 0x82, 0x48, 0x01, 0x1a, 0x03, 0x06 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 2. Call GetModeData() with all **NULL** input parameters, the return status should be EFI\_SUCCESS. |
| 5.25.4.2.4 | 0xccb9b645, 0xf133, 0x4a2c, 0xbc, 0x72, 0xc1, 0xf1, 0xc8, 0x15, 0x05, 0xe5 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 3. Call GetModeData() when **TcpConnectionState** is **NULL**, the return status should be EFI\_SUCCESS. |
| 5.25.4.2.5 | 0xa9389312, 0x0007, 0x48ec, 0xab, 0x83, 0x26, 0x81, 0x1d, 0x0f, 0xa7, 0x97 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 4. Call GetModeData() when **TcpConfigData** is **NULL**, the return status should be EFI\_SUCCESS. |
| 5.25.4.2.6 | 0x8aa7bf92, 0xf01f, 0x4de8, 0x80, 0xab, 0x78, 0x9f, 0x4d, 0xaa, 0x16, 0x49 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 5. Call GetModeData() when **Ip6ModeData** is **NULL**, the return status should be EFI\_SUCCESS. |
| 5.25.4.2.7 | 0x92fcc066, 0xf41d, 0x4aad, 0xa6, 0x02, 0xf8, 0x4e, 0xde, 0x26, 0x15, 0x6d | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 6. Call GetModeData() when **MnpConfigData** is **NULL**, the return status should be EFI\_SUCCESS. |
| 5.25.4.2.8 | 0xb30b7510, 0x3055, 0x427d, 0x85, 0x4a, 0x79, 0xcd, 0xb1, 0xbb, 0xd2, 0x01 | EFI\_TCP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. | 7. Call GetModeData() when **SnpModeData** is **NULL**, the return status should be EFI\_SUCCESS. |

### Configure()

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| Number | GUID | Assertion | Test Description |
| 5.25.4.3.1 | 0xbebb71c0, 0xe62e, 0x400d, 0x9e, 0xaf, 0x3e, 0xbf, 0xb0, 0x23, 0xb2, 0xd6 | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_INVALID PARAMETERS when the station address is invalid. | Call Configure() when **StationAddress** is 2000::1(2000::1 is not configured for the testing environment), the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.3.2 | 0xabff27d2, 0x86ef, 0x4399, 0xbd, 0x90, 0x57, 0x8e, 0x8e, 0x08, 0x37, 0xb4 | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_INVALID PARAMETERS when the remote address is invalid. | Call Configure() when **RemoteAddress** is ff02::1(link local multicast address, not a valid unicast address), the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.3.3 | 0x1f16d3cc, 0x5ccf, 0x4177, 0x8b, 0xf2, 0x56, 0xde, 0x33, 0xe0, 0xd1, 0xf7 | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_INVALID PARAMETERS when the remote access point is invalid. | 5.25.4.3.3 to 5.25.4.3.4 belong to one case  1. Call Configure() when **RemoteAddress** is **::** and RemotePort is **8888**, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.3.4 | 0xae7a2155, 0x192e, 0x4bbb, 0x92, 0xc5, 0xad, 0x6d, 0x17, 0x57, 0xbc, 0xeb | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_INVALID PARAMETERS when the remote access point is invalid. | 2. Call Configure() when **RemoteAddress** is **2002::1** and RemotePort is **0**, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.3.5 | 0x3fea1f75, 0xce53, 0x4c85, 0xb8, 0xe5, 0x8e, 0x5a, 0x7c, 0x42, 0xeb, 0x64 | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_INVALID PARAMETERS when the access point has already been used by another instance. | 1. Create Child1 and call Configure() with valid parameters.  2. Create Child2 and call Configure() with the same access point. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.3.6 | 0xd8bc8edb, 0xfe65, 0x4457, 0xb5, 0x5a, 0xeb, 0xd4, 0xfa, 0xde, 0x7b, 0x7d | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_ACCESS DENIED when updating the configuration without reset. | 1. Call Configure() with valid parameters.  2. Call Configure() with valid parameters for the same instance. The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.3.7 | 0xad816e3d, 0xf3e6, 0x443b, 0xa1, 0x54, 0x08, 0x51, 0xa5, 0x64, 0x63, 0xb4 | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_SUCCESS with valid parameters. | 5.25.4.3.7 to 5.25.4.3.8 belong to one case  1. Call Configure() with valid parameters. The return status should be EFI\_SUCCESS. |
| 5.25.4.3.8 | 0x85d67600, 0xf53b, 0x4363, 0x98, 0x34, 0xb9, 0x21, 0xaa, 0xf8, 0x8f, 0x08 | The Configure() should correctly set the data as expected. | 2. Call GetModeData() and check whether the data is set as expected. |
| 5.25.4.3.9 | 0x51b04624, 0xaa43, 0x4424, 0xa9, 0xb4, 0xee, 0x2f, 0x26, 0x24, 0xf5, 0x2f | The Tcp instance should enter into Tcp\_Listen state after being configured. | 5.25.4.3.9 to 5.25.4.3.13 belong to one case  1. Call Configure() with valid parameters.  2. Call GetModeData() to examine whether the Tcp\_ConnectionState is Tcp\_Listen. |
| 5.25.4.3.10 | 0x3d93a121, 0xde18, 0x4496, 0x87, 0xc2, 0xb7, 0x83, 0x0a, 0x92, 0xee, 0x0e | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_SUCCESS with valid parameters. | 3. Call Configure() when TcpConfigData is NULL. The instance should be reset correctly. |
| 5.25.4.3.11 | 0x9f6ad319, 0x0b1c, 0x40a0, 0x91, 0xee, 0xf9, 0x4e, 0x1a, 0xff, 0x9e, 0x09 | The Tcp instance should enter into Tcp\_Closed state after being reset. Call GetModeData() and the return value should be EFI NOT STARTED | 4. Call GetModeData(). The return value should be EFI NOT STARTED. |
| 5.25.4.3.12 | 0xea63c75a, 0x839f, 0x47b4, 0xad, 0x6c, 0x6f, 0xcf, 0x5f, 0xfd, 0x97, 0xfc | EFI\_TCP6\_PROTOCOL.Configure() – Configure() returns EFI\_SUCCESS with valid parameters. | 5. Call Configure() with valid parameters. |
| 5.25.4.3.13 | 0x0275b281, 0xf70e, 0x478d, 0xa6, 0x20, 0xa3, 0x28, 0x52, 0x5a, 0xd8, 0x07 | The Configure() should correctly set the data as expected. | 6. Call GetModeData() and check whether the data is set as expected. |

### Connect()

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| Number | GUID | Assertion | Test Description |
| 5.25.4.4.1 | 0xa092e680, 0x27e9, 0x483b, 0xb3, 0xdb, 0x07, 0xb8, 0x69, 0x1a, 0xb7, 0xfc | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_NOT STARTED when the instance hasn’t been configured. | Call Connect()before the instance is configured, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.4.2 | 0x1e456f02, 0x7477, 0x4933, 0x84, 0xf9, 0x12, 0x9a, 0x8f, 0x64, 0x80, 0xa5 | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_INVALID PARAMETER when the token is NULL. | Call Connect()with the NULL token, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.4.3 | 0x3b5e2748, 0x1549, 0x465f, 0x98, 0x37, 0x67, 0xd9, 0x48, 0xdf, 0x50, 0x9f | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_INVALID PARAMETER when the token’s event is NULL. | Call Connect()when the token’s event is NULL, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.4.4 | 0x73f9316d, 0xbfcb, 0x4c3a, 0xbd, 0x75, 0x56, 0xb7, 0x03, 0x1d, 0x58, 0x30 | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_ACCESS DENIED when the instance is configured in passive mode. | 1. Call Configure()to configure the instance as passive mode.  2. Call Connect() with valid parameters, the return status should be **EFI\_ACCESS\_DENIED**. |
| 5.25.4.4.5 | 0xd15151a5, 0xf62b, 0x4203, 0x8e, 0x16, 0x47, 0x3b, 0x4a, 0x13, 0xd0, 0x89 | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_ACCESS DENIED when the instance is not in TCP\_CLOSED state. | 5.25.4.4.5 to 5.25.4.4.6 belong to one case  1. Call Configure()to configure the instance as active mode.  2. Call GetModeData() to check that the instance’s state should be TCP\_SYN\_SENT. |
| 5.25.4.4.6 | 0xf9de93e5, 0x4d4d, 0x45ab, 0x95, 0x0d, 0xc1, 0x53, 0x75, 0x51, 0xec, 0xb5 | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_ACCESS DENIED when the instance is not in TCP\_CLOSED state. | 3. Call Connect() when the instance’s state is not in TCP\_SYN\_SENT, The return status should be **EFI\_ACCESS\_DENIED**. |
| 5.25.4.4.7 | 0xfb14d45a, 0xa20d, 0x4c96, 0x94,0xc7, 0x86,0xc6, 0xc1,0x09, 0x9d,0xa4 | EFI\_TCP6\_PROTOCO  L.Connect() – Connect()  must return EFI\_CONNECTION\_REFUSED when the instance is  in SYN-RCVDstate & receive a RST | 1. Call  EFI\_TCP6\_SERVICE\_BINDING\_PROTO  COL.CreateChild() to create a new  Tcp6 child.  2. Call  EFI\_TCP6\_PROTOCOL.Configure()  to configure the new instance.  3. Call  EFI\_TCP6\_PROTOCOL.Connect()  Receive SYN & Send a SYN to put TCP state machine in SYN-RCVDstate.  4. Send a RST & check Connection Token state to be changed to EFI\_CONNECTION\_REFUSED  5. Call  EFI\_TCP6\_SERVICE\_BINDING\_PROTO  COL.DestroyChild() to destroy the created Tcp6 child and clean up the environment. |
| 5.25.4.4.8 | 0x3caf2371, 0x32e9, 0x4e29, 0x87, 0x64, 0x44, 0x12, 0x14, 0xcb, 0xa1, 0x63 | EFI\_TCP6\_PROTOCOL.Connect() - Connect()returns EFI\_SUCCESS with valid parameters. | 5.25.4.4.8 to 5.25.4.4.12 belong to one case  1. Call Connect() with valid parameters, the return status should be **EFI\_SUCCESS**. |
| 5.25.4.4.9 | 0xcd1704c9, 0xbabe, 0x4447, 0xaf, 0xda, 0xd2, 0x08, 0xc6, 0x9b, 0xd8, 0x8f | After the EFI\_TCP6\_PROTOCOL.Connect() is called, the EFI should send SYN packet successfully. | 2. Check whether the SYN packet is sent by SCT successfully. |
| 5.25.4.4.10 | 0x6e521181, 0x2a24, 0x4697, 0xbb, 0x83, 0x4b, 0xd9, 0xde, 0x5b, 0x89, 0xc0 | The TCP instance should acknowledge EMS’s SYN packet successfully. | 3. EMS send SYN packet to SCT side.  4. Check whether the ACK packet is sent by SCT successfully. |
| 5.25.4.4.11 | 0x1944bcf5, 0x9123, 0x469b, 0x86, 0xc2, 0x5c, 0x98, 0x7a, 0x39, 0xfe, 0x59 | The connection token’s event should be signaled successfully after 3-way handshakes are done. | 5. Check whether the token’s event is signaled after the 3-way handshake are done. |
| 5.25.4.4.12 | 0xcdae7179, 0xf66e, 0x4980, 0x9c, 0x08, 0x89, 0x0a, 0xe2, 0xcc, 0x4d, 0x46 | The connection token’s status should be modified to EFI\_SUCCESS after 3-way handshakes are done. | 6. Check whether the token’s status is modified as expected after the 3-way handshake are done. |

### Accept()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.4.5.1 | 0x30ec775a, 0xcefa, 0x4d56, 0x8c, 0x88, 0xa2, 0xdc, 0x75, 0x13, 0x56, 0x9c | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_NOT STARTED when the instance hasn’t been configured. | Call Accept()before the instance is configured, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.5.2 | 0x08809174, 0x9447, 0x4956, 0x93, 0x0d, 0xa7, 0xb2, 0xa7, 0x63, 0x80, 0x9f | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_ACCESS DENIED when the instance isn’t in passive mode. | Call Accept() with the instance in active mode, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.5.3 | 0x8f109af6, 0x55fe, 0x4f5c, 0x8b, 0x84, 0x22, 0xa8, 0x42, 0x4b, 0xc7, 0xf9 | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_ACCESS DENIED when the listen token has already been queued. | 1. Call Accept()with valid parameters.  2. Call Accept()with the same token again, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.5.4 | 0xfc47ef2f, 0xc11c, 0x488c, 0x88, 0x21, 0xc8, 0xef, 0x3e, 0x2f, 0x3e, 0x7e | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_INVALID PARAMETER when the listen token is NULL. | Call Accept() when the listen token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.5.5 | 0xf336471a, 0x6809, 0x4886, 0x95, 0x37, 0x2f, 0xf8, 0xb7, 0x5e, 0x5e, 0x8d | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_INVALID PARAMETER when the event in the listen token is NULL. | Call Accept() when the event in the listen token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.5.6 | 0x19464085, 0x7ccc, 0x42a8, 0xbd, 0x81, 0x8a, 0x21, 0x0a, 0xf4, 0x70, 0xcd | EFI\_TCP6\_PROTOCOL.Accept() - Accept()returns EFI\_SUCCESS with valid parameters. | 5.25.4.5.6 to 5.25.4.5.14 belong to one case  1. Call Accept() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.4.5.7 | 0x2953f594, 0x8f06, 0x42f6, 0x8e, 0x7b, 0xc7, 0x8f, 0xf5, 0xc2, 0x4e, 0xa9 | The TCP instance should acknowledge EMS’s SYN packet successfully. | 2. EMS sent SYN packet to SCT side.  3. Check whether SCT accepts the SYN packet and send back SYN to EMS. |
| 5.25.4.5.8 | 0x04df3e6d, 0x599b, 0x43df, 0xb9, 0xb4, 0xf4, 0xaf, 0xc8, 0x3f, 0x48, 0x49 | The listen token’s event should be signaled successfully after 3-way handshakes are done. | 4. Check whether the token’s event is signaled after the 3-way handshake are done. |
| 5.25.4.5.9 | 0x727bb534, 0xd41f, 0x4132, 0x88, 0xbb, 0x8e, 0x02, 0xc6, 0x84, 0x2c, 0xbf | The listen token’s status should be modified to EFI\_SUCCESS after 3-way handshakes are done. | 5. Check whether the token’s status is modified as expected after the 3-way handshake are done. |
| 5.25.4.5.10 | 0xf88ff924, 0xfb1c, 0x4252, 0x9a, 0xa9, 0x18, 0xff, 0x46, 0xae, 0x75, 0x90 | The child handle contained in the listen token should not be NULL. | 6. Check whether the child handle contained in the token is NULL. |
| 5.25.4.5.11 | 0x1bff0f74, 0x465c, 0x4e25, 0xa6, 0x80, 0x8d, 0x2d, 0x43, 0x52, 0x28, 0x4d | The child handle contained in the listen token should be in TCP\_ESTABLISHED state. | 7. Check whether the child handle contained in the token is in correct state. |
| 5.25.4.5.112 | 0x06850748, 0xc64f, 0x4d44, 0xba, 0x43, 0x4e, 0xfb, 0xde, 0x2d, 0x2c, 0x7d | The child handle contained in the listen token should share the same configuration with its parent handle | 8. Check whether the child handle contained in the token has the same configuration as its parent handle. |
| 5.25.4.5.113 | 0x7415d9d3, 0x054f, 0x4a18, 0xb8, 0xbf, 0x6f, 0x6a, 0xae, 0xf4, 0xbc, 0x3f | Data communication should be correct on the child handle – Return value should be correct. | 9. Receive() with valid parameters, The return status should be EFI\_SUCCESS.  10. Check whether the event is signaled and the status is modified correctly. |
| 5.25.4.5.114 | 0x72834f64, 0x41fe, 0x46ab, 0x8b, 0x39, 0x64, 0xe3, 0x9f, 0x28, 0x6f, 0x71 | Data communication should be correct on the child handle – Data content should be as expected. | 11. Check whether the data length and data content for the Receive()is correct. |

### Transmit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.4.6.1 | 0xef652675, 0x3d29, 0x4c9c, 0xbe, 0x90, 0xd3, 0xd6, 0x53, 0xac, 0x7b, 0x3c | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_NOT\_STARTED with the instance hasn’t been configured. | Call Transmit()before the instance is configured, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.6.2 | 0x31cbe783, 0xdea8, 0x4d05, 0x9b, 0x0b, 0xf0, 0x87, 0x5d, 0x3b, 0x07, 0x24 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_INVALID\_PARAMETER when the token is NULL. | Call Transmit() when the token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.6.3 | 0xcbb9c387, 0x96ef, 0x4834, 0xba, 0xeb, 0xe1, 0x9e, 0xca, 0x99, 0xae, 0xc7 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_INVALID PARAMETER when event in the token is NULL. | Call Transmit() when the event in token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.6.4 | 0xfdd4086f, 0xeffd, 0x4e7a, 0x93, 0xd2, 0x73, 0x74, 0x6d, 0x0f, 0x63, 0x18 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_INVALID PARAMETER when the TxData is NULL. | Call Transmit() when TxData is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.6.5 | 0xb3528e10, 0xd5ae, 0x4960, 0xb5, 0x03, 0xdd, 0x89, 0xd0, 0xf7, 0x6a, 0x09 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_INVALID PARAMETER when the FragmentCount is 0. | Call Transmit() when FragmentCount is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.6.6 | 0xa8598edc, 0x469c, 0x4803, 0xbd, 0xf4, 0x37, 0xbf, 0x06, 0x8f, 0x41, 0x87 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_INVALID PARAMETER when the data length is not equal to the sum of all fragment buffers’ length. | Call Transmit() when the data length is not equal to the sum of all fragment buffers’ length, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.6.7 | 0x6231d7c6, 0xf61c, 0x4d6b, 0x94, 0xc4, 0xc6, 0xfc, 0x73, 0x59, 0xb6, 0xe2 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_ACCESS\_DENIED when the event has already been queued. | 1. Call Transmit() with valid parameters to send a data packet larger than MSS. The packet will be segmented to several bulks.  2. No ACK will be sent by EMS for the first segment. Hence, the event for the transmit token will stay in the queue.  3. Call Transmit() with the same event and valid other parameters again, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.6.8 | 0x5172270a, 0xf411, 0x4197, 0xbd, 0x34, 0x82, 0xc5, 0xc0, 0xe9, 0xa7, 0xcf | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_ACCESS\_DENIED when the instance has not been connected in active mode. | Call Transmit() in active mode before the 3-way handshake establishes, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.6.9 | 0x13fa7b6c, 0xdc0f, 0x4f9e, 0xae, 0x4a, 0x9e, 0x3e, 0x11, 0x02, 0xe2, 0x98 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_ACCESS\_DENIED when the instance has not been accepted in passive mode. | Call Transmit() in passive mode before the 3-way handshake establishes, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.6.10 | 0x9192cade, 0x7b3d, 0x44bf, 0x8a, 0xe7, 0x36, 0x28, 0x89, 0xd8, 0x76, 0x23 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_ACCESS\_DENIED when the instance has been closed. | Call Transmit() with valid parameters when the instance has been closed, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.6.11 | 0x8652c924, 0xf3d0, 0x43cc, 0x8b, 0xda, 0x8c, 0xd7, 0x16, 0xdc, 0xb3, 0xa0 | EFI\_TCP6\_PROTOCOL.Transmit() - Transmit()returns EFI\_SUCCESS with valid parameters. | 5.25.4.6.11 to 5.26.4.6.15 belong to one case  1. Call Transmit() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.4.6.12 | 0x096d60c6, 0xf036, 0x46be, 0xb0, 0xb2, 0x95, 0x13, 0xcf, 0xf1, 0x80, 0x81 | The transmitted packet should be delivered to network after the Transmit()is called. | 2. Check whether EMS could receive the transmitted packets in time. |
| 5.25.4.6.13 | 0x0d441d88, 0xd3eb, 0x4b97, 0x9c, 0x3d, 0xc9, 0xbe, 0xec, 0x2d, 0xeb, 0xc5 | The token event should be signaled after the packet is sent. | 3. Check whether the token event is signaled. |
| 5.25.4.6.14 | 0x9b0d226f, 0x4bc4, 0x4e1c, 0xb7, 0x07, 0xa1, 0x8e, 0x3a, 0x7b, 0x30, 0xf6 | The token status should be changed to EFI\_SUCCESS after the packet is sent. | 4. Check whether the token status is changed to EFI\_SUCCESS. |
| 5.25.4.6.15 | 0xfaca42a2, 0xa769, 0x4af9, 0x90, 0xcb, 0xf0, 0xd0, 0x5f, 0xf0, 0x8e, 0x03 | The packet length and content for the transmission should be correct. | 5. Check whether the packet length and content is correct. |

### Receive()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.4.7.1 | 0xd54cf9ed, 0x80e9, 0x44c0, 0x81, 0x25, 0xa7, 0x85, 0x2b, 0xbf, 0xec, 0x83 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_NOT\_STARTED when the instance hasn’t been configured. | Call Receive()before the instance is configured, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.7.2 | 0xa682e94a, 0x5d64, 0x4646, 0x98, 0x8d, 0x1e, 0x7a, 0xb1, 0x68, 0x8d, 0xb1 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_INVALID\_PARAMETER when the token is NULL. | Call Receive() when the token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.7.3 | 0xad9f6b64, 0xd0a0, 0x4bef, 0xbe, 0xdb, 0xf0, 0x42, 0x9b, 0x00, 0xfd, 0x76 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_INVALID PARAMETER when event in the token is NULL. | Call Receive() when the event in token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.7.4 | 0xc9a6cae7, 0x6e5e, 0x4c04, 0x9b, 0x1e, 0x27, 0xf3, 0x61, 0x34, 0x83, 0x8a | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_INVALID PARAMETER when the RxData is NULL. | Call Receive() when RxData is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.7.5 | 0x0cb365ff, 0xf855, 0x4ef5, 0xb8, 0xe5, 0xef, 0x2b, 0xc2, 0xd4, 0x6a, 0x7d | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_INVALID PARAMETER when the FragmentCount is 0. | Call Receive() when FragmentCount is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.7.6 | 0x3ad62087, 0xfaf8, 0x4864, 0x9b, 0xd9, 0xad, 0xb1, 0x16, 0x6a, 0x54, 0x62 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_INVALID PARAMETER when the data length is not equal to the sum of all fragment buffers’ length. | Call Receive() when the data length is not equal to the sum of all fragment buffers’ length, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.7.7 | 0x4b325e98, 0x9ae8, 0x4a2b, 0x9e, 0x3e, 0x0a, 0xcf, 0x4a, 0x7e,0x69, 0x53 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_ACCESS\_DENIED when the event has already been queued. | 1. Call Receive() with valid parameters but no packet is sent from EMS. The receiving token will stay in the queue.  2. Call Receive() with the same event and other valid parameters again, The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.7.8 | 0xddef303a, 0x3180, 0x466f, 0x80, 0x55, 0x26, 0xa4, 0x2f, 0x12, 0x1b, 0x78 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_ACCESS\_DENIED when the instance has not been connected in active mode. | Call Receive() in active mode before the 3-way handshake establishes, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.7.9 | 0x59b5cc95, 0xb0e9, 0x4cd6, 0xb1, 0x1d, 0x74, 0xcc, 0x26, 0x72, 0x33, 0x67 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_ACCESS\_DENIED when the instance has not been accepted in passive mode. | Call Receive() in passive mode before the 3-way handshake establishes, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.7.10 | 0xd985c3a0, 0xb98c, 0x4ad9, 0xb9, 0x9c, 0x1c, 0x5c, 0xfc, 0x4b, 0xea, 0xad | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_ACCESS\_DENIED when the instance has been closed. | Call Receive() with valid parameters when the instance has been closed, The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.7.11 | 0xdcae30da, 0x090c, 0x441f, 0xbd, 0xa9, 0x02, 0x28, 0x4d, 0x2e, 0xab, 0xcb | EFI\_TCP6\_PROTOCO  L.Receive()– Receive() must return EFI\_CONNECTION\_FIN  .  When the communication peer has closed the connection and there is no any buffered data in the receive buffer of this instance | 1. Call  EFI\_TCP6\_SERVICE\_BINDING\_PROTO  COL.CreateChild()to create a new  Tcp6 child.  2. Call  EFI\_TCP6\_PROTOCOL.Configure()  to configure the new instance.  3. Call  EFI\_TCP6\_PROTOCOL.Connect()  & complete a 3-Way handshake    4. Send a FIN/ACK to close this connection  5.Call EFI\_TCP6\_SERVICE\_BINDING\_PROTO  COL.Receive()& check if its return status is EFI\_CONNECTION\_REFUSED  6. Call  EFI\_TCP6\_SERVICE\_BINDING\_PROTO  COL.DestroyChild() to destroy the created Tcp6 child and clean up the environment. |
| 5.25.4.7.12 | 0x2003bb96, 0xf32d, 0x48ca, 0x8e, 0x5a, 0x2c, 0x71, 0x6e, 0x95, 0x33, 0xf7 | EFI\_TCP6\_PROTOCOL.Receive() - Receive()returns EFI\_SUCCESS with valid parameters. | 5.25.4.7.12 to 5.26.4.7.15 belong to one case  1. Call Receive() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.4.7.13 | 0x5df1bf20, 0x8c5d, 0x4ef4, 0xb3, 0x70, 0xfd, 0x78, 0x14, 0xf2, 0x0a, 0x88 | The token event should be signaled after the packet is received. | 2. Check whether the token event is signaled. |
| 5.25.4.7.14 | 0xb65c6862, 0xebad, 0x4d51, 0xa1, 0xac, 0x73, 0xc0, 0x19, 0x24, 0x00, 0x8d | The token status should be changed to EFI\_SUCCESS after the packet is received. | 3. Check whether the token status is changed to EFI\_SUCCESS. |
| 5.25.4.7.15 | 0xfc18f3ec, 0xe779, 0x4730, 0x82, 0x24, 0xea, 0xdd, 0x9a, 0x4f, 0xd4, 0xf9 | The packet length and content for the received packet should be correct. | 4. Check whether the packet length and content is correct. |

### Close()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.4.8.1 | 0x97e34ed, 0x8b15, 0x479c, 0x9d, 0xa9, 0x57, 0x26, 0x58, 0x18, 0x72, 0x2d | EFI\_TCP6\_PROTOCOL.Close() - Close()returns EFI\_NOT\_STARTED with the instance hasn’t been configured. | Call Close()before the instance is configured, the return status should be EFI\_NOT\_STARTED. |
| 5.25.4.8.2 | 0x49ea02d4, 0x0022, 0x49c6, 0xac, 0x02, 0x3d, 0xe9, 0x96, 0x86, 0x48, 0xb9 | EFI\_TCP6\_PROTOCOL.Close() - Close()returns EFI\_INVALID\_PARAMETER when the token is NULL. | Call Close() when the token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.8.3 | 0x43dd8f75, 0x40d1, 0x4f54, 0x81, 0x5c, 0x81, 0x3e, 0xed, 0x71, 0x37, 0x89 | EFI\_TCP6\_PROTOCOL.Close() - Close()returns EFI\_INVALID PARAMETER when event in the token is NULL. | Call Close() when the event in token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.4.8.4 | 0xed7c5cd6, 0x0d5b, 0x4951,0xaa, 0x37, 0x96, 0xea, 0xe8, 0xa2, 0x7b, 0x89 | EFI\_TCP6\_PROTOCOL.Close() - Transmit()returns EFI\_ACCESS DENIED when the token event has already been used. | 1. Call Close() with valid parameters to perform a graceful close, but the EMS will send back no ACK. Hence the close event will stay in the queue.  2. Call Close() with the same event and valid other parameters, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.8.5 | 0x772e9c64, 0xc345, 0x4470, 0x9d, 0x93, 0x61, 0x71, 0xf8, 0x95, 0x52, 0x71 | EFI\_TCP6\_PROTOCOL.Close() - Transmit()returns EFI\_ACCESS DENIED when the last close has not been finished. | 1. Call Close() with valid parameters to perform a graceful close, but the EMS will send back no ACK. Hence the close event will stay in the queue and the first close will keep unfinished.  2. Call Close() with different event and valid other parameters, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.4.8.6 | 0x45385c8f, 0xa54a, 0x481d, 0xb2, 0x64, 0x3f, 0xc8, 0x12, 0xd1, 0x50, 0x39 | EFI\_TCP6\_PROTOCOL.Close() - Close()returns EFI\_SUCCESS with valid parameters. | 5.25.4.8.6 to 5.26.4.8.11 belong to one case  1. Call Close() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.4.8.7 | 0x764114c1, 0x2ba3, 0x4791, 0x96, 0x33, 0x35, 0xb2, 0x0b, 0x88, 0x43, 0xf4 | The FIN packet should be sent by SCT correctly. | 2. Check whether the FIN packet is sent out in time. |
| 5.25.4.8.8 | 0x10e12a40, 0x97c5, 0x467d, 0x97, 0x90, 0x0f, 0x58, 0x11, 0x84, 0xf1, 0x21 | The last ACK packet should be sent out correctly by SCT after receiving EMS’s FIN packet. | 3. After EMS receives the FIN packet. It sends out FIN/ACK packet to SCT.  4. Check whether the last ACK packet is sent out by SCT. |
| 5.25.4.8.9 | 0x333bdd81, 0x801d, 0x4aa1, 0x8c, 0x71, 0x31, 0x1d, 0x0f, 0x15, 0x89, 0x57 | The event in close token should be signaled. | 5. After the 4-way handshake finishes, check whether the close token’s event is signaled. |
| 5.25.4.8.10 | 0x33fa7b0c, 0x9e89, 0x4138, 0xa9, 0xaf, 0x3e, 0xee, 0x54, 0xa3, 0x90, 0x04 | The status of close token should be changed to EFI SUCCESS. | 6. Check whether the close token’s status is changed to EFI\_SUCCESS. |
| 5.25.4.8.11 | 0x1cdb5be1, 0xf8d0, 0x4570, 0x8e, 0x99, 0x7c, 0x6b, 0x6b, 0xb9, 0x76, 0x73 | The status of the TCP instance should be TCP\_CLOSEDafter the successful close(). | 7. Check whether the instance’s state is changed to TCP\_CLOSED. |
| 5.25.4.8.12 | 0x134177f3, 0x458a, 0x4088, 0x8e, 0x29, 0x84, 0x75, 0x1d, 0x68, 0x41, 0x43 | EFI\_TCP6\_PROTOCOL.Close() - Close()returns EFI\_SUCCESS with valid parameters when there is tokens in the queue. | 5.25.4.8.12 to 5.26.4.8.16 belong to one case  1. Transmit a large packet including several segments from SCT. EMS sends out ACK to the segments except for the last one. Hence the transmit token will pending in the queue.  2. Call Close() to close the connection, the return status should be EFI\_SUCCESS. |
| 5.25.4.8.13 | 0xb124b733, 0x1f2e, 0x4493, 0x95, 0xf6, 0x8e, 0xa3, 0x93, 0x1a, 0x8d, 0x6f | The FIN packet should be sent out immediately the last ACK is received. | 3. EMS sends out ACK for the last segment.  4. Check whether the SCT sends out FIN. |
| 5.25.4.8.14 | 0xede2639e,  0xa23b, 0x4ae5, 0xa0, 0xb3, 0x9d, 0x1c, 0x1b, 0x27, 0x90, 0x3d | The close token’s event should be signaled and status be changed correctly after the 4-way handshake finishes. | 5. EMS sends out FIN packet back to finish the 4-way handshake.  6. Check whether the close token’s event is signaled.  7. Check whether the close token’s status is changed to EFI\_SUCCESS. |
| 5.25.4.8.15 | 0x7c552532, 0x55ea, 0x46ac, 0x86, 0xf8, 0x0d, 0x1c, 0x27, 0x34, 0x71, 0xed | The TCP instance’s state should be TCP\_CLOSED after the 4-way handshake finishes. | 8. Check whether the instance’s state is changed to TCP\_CLOSED after the 4-way handshake finishes. |
| 5.25.4.8.16 | 0xdfe82050, 0x3325, 0x4dcf, 0xa0, 0xdc, 0xb7, 0x20, 0xa6, 0x72, 0xe9, 0xf0 | The pending transmit token should be signaled after the close finishes. | 9. Check whether the pending token is signaled or not. |
| 5.25.4.8.17 | 0x362144c2, 0xd822, 0x445a, 0x8d, 0x8d, 0x1a, 0x27, 0xcd, 0xf3, 0x17, 0x40 | EFI\_TCP6\_PROTOCOL.Close() - Close() to close and pending tokens should be signaled. | 1. Call Receive() to receive a incoming packet when there’s no packet sent from EMS. The receiving token will stay in the queue.  2. Call Close() to close the connection gracefully.  3. Check whether the receiving token is signaled and its state modified. |

## 

## EFI\_IP6\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IP6\_PROTOCOL Section.

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.1.1 | 0xc5a98289, 0xf32c, 0x4433, 0x81, 0xae, 0xa9, 0x10, 0xa3, 0x51, 0x0c, 0x32 | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild()returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call CreateChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.1.2 | 0x29d8f02c, 0xd19f, 0x48ec, 0xab, 0x8e, 0xb9, 0x10, 0x54, 0x10, 0x34, 0xc4 | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – CreateChild()returns EFI\_SUCCESS with 1st valid ChildHandle. | 5.25.5.1.2 to 5.25.5.1.5 belong to one case  1. Call CreateChild()with the 1st  valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.25.5.1.3 | 0x3e7a34ce, 0x0a96, 0x4029, 0xa0, 0x0a, 0xd2, 0x7c, 0x75, 0x9c, 0xf0, 0x2d | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – CreateChild()returns EFI\_SUCCESS with 2nd valid ChildHandle. | 2. Call CreateChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.25.5.1.4 | 0x8e7bf890, 0x6109, 0x4d71, 0xa5, 0xb7, 0x83, 0x85, 0x0c, 0x5f, 0x78, 0x00 | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() –DestroyChild()returns EFI\_SUCCESS with 2nd valid ChildHandle. | 3. Call DestroyChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.25.5.1.5 | 0x974cd2fd, 0x79da, 0x4008, 0x92, 0x5a, 0x5c, 0x29, 0xa3, 0x7e, 0xd7, 0xb3 | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() –DestroyChild()returns EFI\_SUCCESS with 1st valid ChildHandle. | 3. Call DestroyChild()with the 1st valid ChildHandle, the return status should be EFI\_SUCCESS. |

### DestoryChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.2.1 | 0x5b7d1b2f, 0x41f1, 0x4787, 0xa6, 0xb5, 0xfa, 0x28, 0x9e, 0x34, 0xcd, 0xd3 | EFI\_IP6\_SERVICE\_BINDING\_PROTOCOL.DestoryChild() - DestoryChild() returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call DestoryChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.3.1 | 0xc8a6f564, 0x2320, 0x46fa, 0xbf, 0x2a, 0x0b, 0x77, 0x3c, 0x71, 0x1d, 0xf6 | EFI\_IP6\_PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters | 5.25.5.3.1 to 5.25.5.3.2 belong to one case  1. Call GetModeData() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.3.2 | 0x3919816b, 0xf3bd, 0x4177, 0x8d, 0x90, 0xf3, 0xca, 0xba, 0x20, 0x9a, 0xc2 | Validate the IP6ModeData.IsConfigured | 2. The value of IP6ModeData.IsConfigured should be FALSE. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.4.1 | 0x99fe5cde, 0xdccb, 0x4d55, 0xab, 0xb4, 0xa1, 0xdf, 0x73, 0x30, 0x2d, 0x4b | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.StationAddress is neither zero nor a valid unicast Ipv6 address. | Call Configure()when IpConfigData.StationAddress is neither zero nor a valid unicast Ipv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.5.4.2 | 0xa0998aa3, 0x7f5e, 0x401f, 0x8f, 0x3d, 0xeb, 0xe9, 0x09, 0x5c, 0xbd, 0x7b | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.StationAddress is neither zero nor one of configured Ipv6 address. | Call Configure()when Ip6ConfigData.StationAddress is neither zero nor one of configured Ipv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.5.4.3 | 0xafca1a79, 0xc38f, 0x4e5a, 0x8b, 0xa9, 0x33, 0xaf, 0xd9, 0x04, 0x7b, 0xbf | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.4 | 0xcc598692, 0xc3e7, 0x4008, 0x91, 0xc2, 0x29, 0xf6, 0xc4, 0x0f, 0x74, 0x41 | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData*.*DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.5 | 0x6aa9538e, 0x3e88, 0x4309, 0xab, 0x52, 0x94, 0xc5, 0x09, 0x3e, 0x9a, 0x34 | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.6 | 0x84a3a2cb, 0x3bc5, 0x47f9, 0xab, 0xb4, 0xd5, 0xa6, 0x89, 0xfa, 0x1a, 0x80 | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when *Ip6ConfigData.DefaultProtocol* is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.7 | 0x43804768, 0xca58, 0x4f59, 0xa8, 0x18, 0x1b, 0x0e, 0x9a, 0x0f, 0xc1, 0xa6 | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.8 | 0xecfe10f7, 0xce1f, 0x4711, 0xb0, 0xc8, 0xd8, 0x56, 0xe5, 0x35, 0x4a, 0x82 | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when *Ip6ConfigData.DefaultProtocol* is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.9 | 0xa9c4db07, 0x17f3, 0x43e3, 0xa7, 0x43, 0x78, 0xe9, 0x51, 0xb7, 0x35, 0xce | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.10 | 0x64e2f4e1, 0x4431, 0x490a, 0xa0, 0x2f, 0xe3, 0xb4, 0x0c, 0x80, 0x12, 0xbb | EFI\_IP6 PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.11 | 0x1224d773, 0x44fb, 0x44db, 0xba, 0xb5, 0x63, 0x75, 0x5d, 0x11, 0x20, 0xdb | EFI\_IP6\_PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER when Ip6ConfigData.DefaultProtocol is invalid. | Call Configure()when Ip6ConfigData.DefaultProtocol is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.4.12 | 0xf380d0c6, 0x2b60, 0x4674, 0xa8, 0xec, 0x94, 0x8c, 0x21, 0xbd, 0xc7, 0xd7 | EFI\_IP6\_PROTOCOL.Configure() - Configure()returns EFI\_ALREADY\_STARTED with valid Ip6ConfigData which isn't NULL but the instance has been configured. | Call Configure()with valid Ip6ConfigData which isn't NULL when the instance has been configured, the returns status should be EFI\_ALREADY\_STARTED. |
| 5.25.5.4.13 | 0x217fe9de, 0x908c, 0x4eb8, 0xac, 0xaa, 0x74, 0x96, 0x23, 0xf5, 0x25, 0x98 | EFI\_IP6\_PROTOCOL.Configure() – Configure() returns EFI\_SUCCESS with valid parameters. | 5.25.5.4.13 to 5.25.5.4.16 belong to one case.  1. Call Configure()with valid parameters; the returns status should be EFI\_SUCCESS. |
| 5.25.5.4.14 | 0xc53003dd, 0xd76d, 0x47ca, 0xae, 0x09, 0x1a, 0xed, 0x49, 0x00, 0xc6, 0x9c | EFI\_IP6\_PROTOCOL.GetModeData() – GetModeData() returns EFI\_SUCCESS with valid parameters. | 2. Call GetModeData()with valid parameters after the child configured, the returns status should be EFI\_ SUCCESS. |
| 5.25.5.4.15 | 0x48f68c63, 0x4860, 0x4993, 0x8f, 0xc2, 0x1b, 0x73, 0x28, 0x21, 0xcb, 0x22 | Validate the IP6ModeData.ConfigData. | 3. Validate the IP6ModeData.ConfigData.The IP6ModeData.ConfigData should be the same as the data which have been configured before. The returns status should be EFI\_SUCCESS. |
| 5.25.5.4.16 | 0x8287365d, 0x46e5, 0x406b, 0x98, 0x2c, 0x75, 0xdc, 0x39, 0x99, 0xd7, 0x5b | Validate the IP6ModeData.IsConfiged. | 4. Call Configure()with NULL and then Call GetModeData() with valid parameters, and validate the IP6ModeData.IsConfiged*.* It should beFALSE. |

### Groups()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.5.1 | 0x756d489b, 0x1d6d, 0x4ab5, 0x99, 0x72, 0xd1, 0x96, 0x4a, 0x7b, 0x28, 0x0f | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Groups()with a not configured ChildHandle; the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.5.2 | 0x2c1abd64, 0x7657, 0x4f78, 0x9f, 0x2c, 0xfa, 0x48, 0xf2, 0xd7, 0xbb, 0x66 | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_INVALID\_PARAMETER when JoinFlag isTRUE and GroupAddress isNULL | Call Groups() when JoinFlag is TRUE andGroupAddress isNULL.The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.5.3 | 0x6053a2b7, 0x391a, 0x4b46, 0xa7, 0x34, 0x1e, 0x2e, 0x86, 0x5c, 0x39, 0x82 | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_INVALID\_PARAMETER when GroupAddress is not NULL and GroupAddress is not a multicast IPv6 address. | Call Groups()when GroupAddress is not NULL and GroupAddress is not a multicast IPv6 address. The returned status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.5.4 | 0x1644ec0d, 0x4ef0, 0x42b8, 0xad, 0x6b, 0x8b, 0xbd, 0xd5, 0x3f, 0x84, 0x1d | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_ALREADY\_STARTED when JoinFlag is TRUE and GroupAddress is in the group table. | Call Groups()when JoinFlag is TRUE and GroupAddress is in the group table, the return status should be EFI\_ALREADY\_STARTED. |
| 5.25.5.5.5 | 0xc1fe68df, 0xca52, 0x42c4, 0xbe, 0xd4, 0xc0, 0x34, 0xf9, 0xf0, 0x03, 0x18 | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_NOT\_FOUND when JoinFlag is FALSE and GroupAddress is not in the group table. | Call Groups()when JoinFlag is FALSE and GroupAddress is not in the group table, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.5.6 | 0xbf971751, 0xbc7e, 0x421a, 0x86, 0xbe, 0xda, 0x67, 0x16, 0x03, 0xb0, 0xf0 | EFI\_IP6\_PROTOCOL.Groups() - Groups() returns EFI\_SUCCESS with TRUE JoinFlag and an valid GroupAddress. | 5.25.5.5.6 to 5.25.5.5.10 belong to one case.  1. Call Groups()with TRUE JoinFlag and a valid GroupAddress, the return status should be EFI\_SUCCESS. |
| 5.25.5.5.7 | 0x3542d69e, 0xc8eb, 0x4da6, 0x8e, 0x41, 0xdd, 0x49, 0x43, 0x17, 0xa7, 0x80 | Check the Ip6ModeData.GroupCount field. | 2. The value of Ip6ModeData.GroupCount should be 1. |
| 5.25.5.5.8 | 0x65dafab8, 0xe505, 0x4f4a, 0xa7, 0xaf, 0x54, 0x42, 0x68, 0x42, 0xca, 0xa8 | Check the Ip6ModeData.GroupTable field. | 3. The value of Ip6ModeData.GroupTable should be the same as the route entry we added. |
| 5.25.5.5.9 | 0x25af1861, 0x25e5, 0x4137, 0xb1, 0xb0, 0x56, 0x5f, 0xfa, 0x32, 0xee, 0x44 | EFI\_IP6\_PROTOCOL.Groups () - Groups() returns EFI\_SUCCESS with FALSE JoinFlag and and GroupAddress is in the group table. | 4. Call Groups()with FALSE JoinFlag and and GroupAddress is in the group table, the return status should be EFI\_SUCCESS. |
| 5.25.5.5.10 | 0x882ddbc2, 0x4372, 0x41ff, 0x95, 0x5c, 0x89, 0x15, 0x56, 0x73, 0xb3, 0x5d | Check the Ip6ModeData.GroupCount field. | 5. Call GetModeData() with valid parameters, the value of Ip6ModeData.GroupCount should be 0. |

### Routes()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.6.1 | 0xe5a50efc, 0x831b, 0x4dc1, 0x8a, 0x78, 0xb5, 0x36, 0xa2, 0x39, 0xd8, 0x8d | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Routes ()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.6.2 | 0x9a9fadb0, 0x6651, 0x4070, 0xac, 0x63, 0x2b, 0xa0, 0x92, 0xc5, 0xe0, 0x0b | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_INVALID\_PARAMETER when DeleteRoute is TRUE, both Destiniation and GatewayAddress are NULL. | Call Routes()when DeleteRoute is TRUE, both Destiniation and GatewayAddress are NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.6.3 | 0x38dabbd5, 0x37fb, 0x4744, 0xab, 0x18, 0xac, 0xcf, 0x5d, 0x0e, 0x25, 0xf1 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_INVALID\_PARAMETER when DeleteRoute is FALSE, Destiniation is NULL and GatewayAddress is not NULL. | Call Routes() when *DeleteRoute* is FALSE, Destiniation is NULL and GatewayAddress is not NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.6.4 | 0xb3ea5648, 0x9a8c, 0x4761, 0x9f, 0x9c, 0x9b, 0x44, 0x87, 0xca, 0x14, 0x0a | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_INVALID\_PARAMETER when DeleteRoute is FALSE, *Destiniation* is not NULL and GatewayAddress is NULL. | Call Routes() when *DeleteRoute* is FALSE, Destiniation is not NULL and GatewayAddress is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.6.5 | 0xef4878ab, 0x02e1, 0x4a3f, 0x9b, 0x0c, 0x0a, 0xea, 0x7d, 0x25, 0xf2, 0x46 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_INVALID\_PARAMETER when GatewayAddress is not a valid unicast IPv6 address. | Call Routes()when GatewayAddress is not a valid unicast IPv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.6.6 | 0x67ab6941, 0xfe7d, 0x4046, 0x9f, 0xc4, 0x61, 0x6c, 0x50, 0xb9, 0xd3, 0x72 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_INVALID\_PARAMETER when GatewayAddress is one of configured local IPv6 addresses. | Call Routes()when GatewayAddress is one of configured local IPv6 addresses, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.6.7 | 0x2359c3c5, 0x5789, 0x4c12, 0xbc, 0x1c, 0x5b, 0x94, 0x18, 0x5d, 0x24, 0x39 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_NOT\_FOUND when DeleteRoute is TRUEand this entry is not in current routing table. | Call Routes()when DeleteRoute is TRUEand this entry is not in current routing table, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.6.8 | 0x9c9e4191, 0xbd67, 0x42d7, 0x8e, 0x64, 0x22, 0xe4, 0xc3, 0x4b, 0x8c, 0x2e | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_ACCESS\_DENIED when **DeleteRoute** is FALSE and the entry is already in current routing table. | Call Routes()when DeleteRoute is FALSE and the entry is already in current routing table, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.5.6.9 | 0x576be5b1, 0xc50e, 0x44d3, 0x80, 0x99, 0xa0, 0x67, 0x56, 0x0b, 0x24, 0x10 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_SUCCESS with valid parameters. | 5.25.5.6.9 to 5.25.5.6.13 belong to one case.  1. Call Routes()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.6.10 | 0x8c3d2c17, 0xc282, 0x4daa, 0x96, 0xfb, 0x1d, 0x1c, 0xdc, 0xd2, 0x9f, 0x99 | Check Ip6ModeData.RouteCount field | 2. The value of Ip6ModeData.RouteCount should more than zero. |
| 5.25.5.6.11 | 0xb7cc7815, 0x7a38, 0x4904, 0xb2, 0x4d, 0x22, 0x09, 0x00, 0xb5, 0xf7, 0xcc | Check Ip6ModeData.RouteTable field*.* | 3. Ip6ModeData.RouteTableshould contain the route we added before. |
| 5.25.5.6.12 | 0x709e8127, 0x1a36, 0x4c08, 0xac, 0x22, 0xd1, 0xb5, 0x0f, 0x82, 0x5a, 0x14 | EFI\_IP6\_PROTOCOL.Routes() - Routes() returns EFI\_SUCCESS with valid parameter . | 4. Call Routes()with valid parameters to delete the route we added before, the return status should be EFI\_SUCCESS. |
| 5.25.5.6.13 | 0xe30d8352, 0x4f0c, 0x43fe, 0xb2, 0x0e, 0xcf, 0xeb, 0xfb, 0x45, 0xb4, 0x42 | CheckIp6ModeData.RouteCountfield*.* | 5. The value of Ip6ModeData.RouteCountshould be decreased by 1. |

### Neighbors()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.7.1 | 0x4f6a49b0, 0xff4f, 0x4ba8, 0xa6, 0x31, 0x94, 0x8d, 0x23, 0xbc, 0x15, 0x00 | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_NOT\_STARTED with a not configured ChildHandle*.* | Call Neighbors()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED*.* |
| 5.25.5.7.2 | 0x35ffe726, 0x0b87, 0x480e, 0xa2, 0xeb, 0x1c, 0x7d, 0xed, 0x16, 0x99, 0x4e | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_INVALID\_PARAMETER when TargetIp6Address is NULL*.* | Call Neighbors()when TargetIp6Address is NULL, the return status should be EFI\_INVALID\_PARAMETER*.* |
| 5.25.5.7.3 | 0x3360d9f1, 0x674a, 0x445f, 0xab, 0x8a, 0x3b, 0xca, 0xde, 0xae, 0xed, 0x2b | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_INVALID\_PARAMETER when TargetLinkAddress is NULL and DeleteFlag is TRUE*.* | Call Neighbors()when TargetLinkAddress is NULL and DeleteFlag is TRUE, the return status should be EFI\_INVALID\_PARAMETER*.* |
| 5.25.5.7.4 | 0xc0556979, 0x5ab6, 0x4c65, 0xb6, 0x49, 0xc7, 0xbe, 0x34, 0x9f, 0x04, 0xed | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_INVALID\_PARAMETER when TargetLinkAddress is invalid. | Call Neighbors()when TargetLinkAddress is invalid, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.7.5 | 0x98c0eda5, 0xf1b5, 0x4bf3, 0xa1, 0x58, 0xbb, 0x68, 0xdc, 0xe3, 0xb4, 0x5c | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_INVALID\_PARAMETER when TargetIpAddress is not a valid unicast Ipv6 Address. | Call Neighbors()when TargetIpAddress is not a valid unicast Ipv6 Address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.7.6 | 0xe60636fa, 0x47f1, 0x433e, 0xa0, 0x79, 0x50, 0x92, 0xcf, 0x59, 0x0b, 0xb1 | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_INVALID\_PARAMETER when TargetIpAddress is one of configured local Ipv6 address. | Call Neighbors()when TargetIpAddress is one of configured local Ipv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.7.7 | 0xd88a65be, 0x37ff, 0x41e2, 0xa8, 0xbd, 0x3e, 0x92, 0x1b, 0xf5, 0x89, 0x87 | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_NOT\_FOUND when DeleteFlag is **TRUE** and this entry isn't in current neighbor cache. | Call Neighbors()when DeleteFlag is **TRUE** and this entry isn't in current neighbor cache, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.7.8 | 0x7a528a8e, 0x1339, 0x4618, 0x92, 0x9e, 0xf5, 0x60, 0xb6, 0xd1, 0x98, 0xd0 | EFI\_IP6 PROTOCOL.Neighbors() - Neighbors() returns EFI\_ACCESS\_DENIED when DeleteFlag is **FALSE** and this entry isn't in current neighbor cache. | Call Neighbors()when DeleteFlag is **FALSE** and this entry isn't in current neighbor cache, the return status should be EFI\_ ACCESS\_DENIED. |
| 5.25.5.7.9 | 0xb0c66678, 0x6552, 0x42f7, 0xa4, 0x5a, 0x36, 0x3d, 0xde, 0xa5, 0x75, 0xbd | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_NOT\_FOUND when DeleteFlag is **FALSE** and the **TargetLinkAddress** is **NULL**. | Call Neighbors()when **DeleteFlag** is **FALSE** and the TargetLinkAddress is **NULL**, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.7.10 | 0xf339086f, 0xd826, 0x48b4, 0xbf, 0x77, 0xd7, 0x71, 0xba, 0xb6, 0x28, 0xb5 | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 5.25.5.7.10 to 5.25.5.7.15 belong to one case  1. Call Neighbors()with valid parameters to add a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.11 | 0xa5389777, 0xd3d2, 0x41da, 0xa7, 0x22, 0xbf, 0xbe, 0xe2, 0xc8, 0x78, 0x4e | Check Ip6ModeData.NeighborCount field. | 2. The value of Ip6ModeData.NeighborCount should be 1. |
| 5.25.5.7.12 | 0x179fa1e4, 0xa408, 0x481d, 0xbb, 0x3a, 0x72, 0x81, 0x2e, 0xcd, 0x2a, 0xde | Check Ip6ModeData.NeighborsCache.Neighbor field. | 3. The value of Ip6ModeData.NeighborsCache.Neighbor should be the same as we added. |
| 5.25.5.7.13 | 0x6991227c, 0x3562, 0x4875, 0x82, 0x2e, 0x7d, 0xe3, 0xf3, 0xcf, 0x90, 0x59 | Check Ip6ModeData.NeighborsCache.LinkAddressfield. | 4. The value of Ip6ModeData.NeighborsCache.LinkAddress should be the same as we added. |
| 5.25.5.7.14 | 0x823ca277, 0xdaa3, 0x4917, 0xa2, 0x58, 0xc9, 0xe3, 0x30, 0xef, 0xb6, 0xd1 | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 5. Call Neighbors()with valid parameters to delete a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.15 | 0x971bf190, 0x49c5, 0x4b5b, 0x83, 0x20, 0x0c, 0x74, 0xc3, 0x5c, 0xc9, 0x91 | Check Ip6ModeData.NeighborCount field. | 6. The value of Ip6ModeData.NeighborCount should be 0 after delete. |
| 5.25.5.7.16 | 0x0379e4c1, 0x2b4f, 0x41e2, 0xb6, 0x44, 0xda, 0xf5, 0x4a, 0x53, 0xd9, 0xdd | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 5.25.5.7.16 to 5.25.5.7.22 belong to one case  1. Call Neighbors()with valid parameters to add a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.17 | 0xeb7f4f6f, 0x521e, 0x452c, 0xbc, 0x6e, 0xdf, 0xbf, 0xb9, 0x22, 0x2e, 0x3b | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 2. Call Neighbors()with valid parameters to update a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.18 | 0x53567ad3, 0x2cfe, 0x4bfd, 0xba, 0x97, 0xea, 0xca, 0xad, 0xdd, 0x2d, 0x00 | Check Ip6ModeData.NeighborCountfield. | 3. The value of Ip6ModeData.NeighborCount should be 1 after added**.** |
| 5.25.5.7.19 | 0x6be12cd9, 0xcdf7, 0x4b0c, 0x82, 0xb5, 0x5b, 0xee, 0x3c, 0xfd, 0x52, 0xe8 | Check Ip6ModeData.NeighborsCache.Neighbor field. | 4. The value of Ip6ModeData.NeighborsCache.Neighbor should be the same as we added. |
| 5.25.5.7.20 | 0x8dfbc45e, 0x5b6d, 0x4c1d, 0x9c, 0x0a, 0x2f, 0xcc, 0xb6, 0x1e, 0xeb, 0xfa | Check Ip6ModeData.NeighborsCache.LinkAddress field. | 5. The value of Ip6ModeData.NeighborsCache.LinkAddress should be the same as we added. |
| 5.25.5.7.21 | 0xe9aa5a6e, 0x9b98, 0x4e3d, 0xa2, 0xc1, 0x49, 0x31, 0x85, 0x14, 0x72, 0xde | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 6. Call Neighbors()with valid parameters to delete a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.22 | 0x2d82ca70, 0xc383, 0x458e, 0x93, 0x1d, 0x84, 0xfd, 0x2b, 0xb2, 0x7c, 0xfd | Check Ip6ModeData.NeighborCount field. | 7. The value of Ip6ModeData.NeighborCount should be 0 after deleted**.** |
| 5.25.5.7.23 | 0x5646fc4f, 0x06cb, 0x49ba, 0xbe, 0xb0, 0x3d, 0xf0, 0xde, 0x02, 0xda, 0xbf | EFI\_IP6\_PROTOCOL.Neighbors() - Neighbors() returns EFI\_SUCCESS with valid parameters. | 5.25.5.7.23 to 5.25.5.7.27 belong to the same case  1. Call Neighbors()with valid parameters to add a neighbor cache, the return status should be EFI\_SUCCESS. |
| 5.25.5.7.24 | 0x4baa627a, 0x0019, 0x4eda, 0xbd, 0x27, 0xbb, 0xd2, 0xdd, 0x5f, 0x9f, 0x19 | Check Ip6ModeData.NeighborCount field. | 2. The value of Ip6ModeData.NeighborCountshould be 1 after added**.** |
| 5.25.5.7.25 | 0xa93cf6a1, 0x3548, 0x41e8, 0x94, 0xdc, 0x07, 0xe8, 0x30, 0x72, 0x34, 0xd5 | Check Ip6ModeData.NeighborsCache.Neighbor field. | The value of Ip6ModeData.NeighborsCache.Neighbor should be the same as we added. |
| 5.25.5.7.26 | 0xe0297637, 0x7b3d, 0x4894, 0x80, 0x8d, 0x2c, 0x7d, 0x64, 0xa9, 0x19, 0x46 | Check Ip6ModeData.NeighborsCache.LinkAddress field. | The value of Ip6ModeData.NeighborsCache.LinkAddress should be the same as we added. |
| 5.25.5.7.27 | 0xa03dc0e3, 0xffe3, 0x4bff, 0x82, 0x9f, 0xb0, 0x99, 0xb3, 0xe2, 0x57, 0x64 | Check Ip6ModeData.NeighborCount field. | The value of Ip6ModeData.NeighborCount should be 0 after time out**.** |

### Transmit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.8.1 | 0x255fe450, 0xc537, 0x4b0a, 0xbe, 0x80, 0xc8, 0x73, 0x95, 0x66, 0x26, 0x16 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Transmit()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.8.2 | 0x8347ebcd, 0x4f16, 0x4bfd, 0x83, 0xf6, 0x0f, 0x8a, 0xdc, 0x6a, 0x89, 0x2e | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token. | Call Transmit()with a NULL Token, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.3 | 0xc7cf4815, 0x9c64, 0x4074, 0x94, 0x3f, 0xf5, 0x6d, 0x2e, 0x9d, 0x79, 0x5d | EFI\_IP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Event. | Call Transmit()with a NULL Token->Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.4 | 0x2ccfe480, 0x452c, 0x4706, 0x88, 0x69, 0x97, 0xb7, 0x7b, 0x03, 0xa9, 0x26 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Packet.TxData. | Call Transmit()with a NULL Token->Packet.TxData, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.5 | 0xede110b2, 0x8455, 0x4ec8, 0xbb, 0x22, 0x19, 0x94, 0x59, 0x54, 0x11, 0x46 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER when Token->Packet.TxData->ExtHdrs is NULL. | Call Transmit()when Token->Packet.TxData->ExtHdrs is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.6 | 0xd4f4a746, 0xaff3, 0x4490, 0xa6, 0xd9, 0xef, 0x38, 0x06, 0x69, 0x0a, 0x94 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER when Token->Packet.TxData->FragmentCount is Zero. | Call Transmit()when Token->Packet.TxData->FragmentCount is Zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.7 | 0xa2dc1ca1, 0x37ef, 0x4147, 0xa6, 0x90, 0x4d, 0x4e, 0xd1, 0x4c, 0x99, 0xf9 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER when Token->Packet.TxData->FragmentTable[0].FragmentLength is Zero. | Call Transmit()when **T**oken->Packet.TxData->FragmentTable[0].FragmentLength is Zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.8 | 0xef828012, 0xdeda, 0x4f91, 0xb1, 0x10, 0x38, 0x26, 0x92, 0x50, 0xf3, 0xc8 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Packet.TxData->FragmentTable[0].FragmentBuffer. | Call Transmit()with a NULL Token->Packet.TxData->FragmentTable[0].FragmentBuffer, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.9 | 0x8db7ffb3, 0x47fb, 0x4281, 0x97, 0xa5, 0x8a, 0xa7, 0xe1, 0x98, 0x87, 0x72 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER Token->Packet.TxData->DataLength is zero. | Call Transmit()when Token->Packet.TxData->DataLength is zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.10 | 0x63c9939b, 0x7aa6, 0x4565, 0xab, 0x11, 0xdc, 0x13, 0x32, 0x38, 0x1b, 0x32 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with an invalid Token->Packet.TxData->DataLength which is not equal to the sum of fragments length. | Call Transmit()with an invalid Token->Packet.TxData->DataLength which is not equal to the sum of the fragments length, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.11 | 0x220f2e8c, 0xae0c, 0x4f9c, 0x89, 0x1b, 0x74, 0x54, 0xaa, 0x63, 0xf0, 0xce | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a non-zero Token->Packet.TxData->Udp6sessionData->DestinationAddress which is not specified in configure process. | Call Transmit()with a non-zero Token->Packet.TxData->Udp6sessionData->DestinationAddress which is not specified in configure process, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.12 | 0xc7353218, 0xc96e, 0x4236, 0x92, 0x53, 0x86, 0x85, 0x41, 0x0a, 0x47, 0x0c | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a zero Token->Packet.TxData->Udp6sessionData->DestinationAddress when DestinationAddressis unspecified when doing configure process. | Call Transmit()with a zero Token->Packet.TxData->Udp6sessionData->DestinationAddress when DestinationAddressis unspecified when doing configure process, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.8.13 | 0x2ac52cba, 0xbe4e, 0x4c9e, 0xae, 0xe5, 0x4d, 0x10, 0x6b, 0x95, 0x1b, 0xc4 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_ACCESS\_DENIED with a Token->Event which has already been in the transmit queue. | Call Transmit()with a Token->Event which has already been in the transmit queue, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.5.8.14 | 0xfeaa4963, 0x24c0, 0x477a, 0x8a, 0xc7, 0xa9, 0xac, 0xe5, 0xbb, 0xf4, 0x53 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_NOT\_FOUND with no route entry to the destination. | Call Transmit()with no route entry for the destination, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.8.15 | 0xda08e7a1, 0x7ab6, 0x4b23, 0x9b, 0xb6, 0x27, 0xae, 0x0a, 0xb7, 0xb6, 0xc3 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_BAD\_BUFFER\_SIZE with a Token->Packet.TxData->DataLength which beyond the maximum udp6 packet size. | Call Transmit()with a Token->Packet.TxData->DataLength which beyond the maximum udp6 packet size, the return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.5.8.17 | 0x4660050c, 0x749c, 0x428f, 0xa5, 0xd9, 0x9a, 0x4c, 0x8e, 0xa4, 0x20, 0xe5 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_SUCCESS with valid parameters. | 5.25.5.8.17 to 5.25.5.8.21 belong to one case.  1. Call Transmit()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.8.18 | 0xb67c0483, 0x7b89, 0x446c, 0xac, 0xba, 0x17, 0xb8, 0x7f, 0x4e, 0xcb, 0x5f | Token->Event should be signaled. | 2. Token->Event should be signaled. |
| 5.25.5.8.19 | 0x9a61d143, 0x7ddf, 0x4d4e, 0xa7, 0x97, 0x5f, 0xfc, 0x85, 0x09, 0x0e, 0xb4 | Token->Status should be EFI\_SUCCESS. | 3. Token->Status should be EFI\_SUCCESS. |
| 5.25.5.8.20 | 0x8916816a, 0x6876, 0x4e76, 0xa2, 0xc2, 0x3d, 0xc6,0x3f, 0xcd, 0x00, 0x7a | The packet should be received by the other side. | 4. The packet should be received by the other side. |
| 5.25.5.8.21 | 0x088ed948, 0x0276, 0x4bb4, 0x98, 0x96, 0xe3, 0xa7, 0x67, 0x21, 0x74, 0x2f | The received packet content should be reasonable. | 5. The received packet content should be reasonable. |
| 5.25.5.8.22 | 0x3cf5b8eb, 0xc742, 0x4d34, 0x97, 0x65, 0xf8, 0xcc, 0x32, 0x49, 0x4e, 0x92 | EFI\_IP6\_PROTOCOL.Transmit() - Transmit() returns EFI\_SUCCESS with valid parameters. | 5.25.5.8.22 to 5.25.5.8.28 belong to one case.  1. Call Transmit()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.8.23 | 0x8f8f115e, 0xd436, 0x41a1, 0xaa, 0x42, 0x11, 0xe7, 0x04, 0xe0, 0x29, 0x11 | Token->Event should be signaled. | 2. Token->Event should be signaled. |
| 5.25.5.8.24 | 0x612b38d1, 0x37cb, 0x419d, 0x8d, 0xfe, 0x44, 0xc7, 0x35, 0xef, 0xe0, 0x17 | Token->Status should be EFI\_SUCCESS. | 3. Token->Status should be EFI\_SUCCESS. |
| 5.25.5.8.25 | 0x464f35de, 0xd546, 0x4140, 0xa7, 0x5e, 0x23, 0xfd, 0xa1, 0xce, 0x2a, 0xd5 | The packet should be received by the other side. | 4. The packet should be received by the other side. |
| 5.25.5.8.26 | 0x0c8799bb, 0xeb02, 0x4172, 0x97, 0xe5, 0xec, 0x6b, 0xaf, 0xe6, 0xe5, 0xa6 | The first fragment of received packet content should be reasonable. | 5. The first fragment of received packet content should be reasonable. |
| 5.25.5.8.27 | 0xe3ececa3, 0x8f49, 0x4bb9, 0xb0, 0xc9, 0x55, 0x85, 0x00, 0x28, 0xc3, 0x1a | The second fragment of received packet content should be reasonable. | 6. The second fragment of received packet content should be reasonable. |
| 5.25.5.8.28 | 0xcf73acd9, 0x0893, 0x4b22, 0x88, 0xcf, 0x42, 0x98, 0x22, 0x0e, 0xc0, 0x6c | Total length should be the sum of two fragment length. | 7. Total length should be the sum of two fragment length. |

### Receive()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.9.1 | 0xa1ca863c, 0x8c68, 0x4afc, 0x8a, 0x97, 0xff, 0x60, 0x3e, 0xef, 0xb4, 0xc9 | EFI\_IP6\_PROTOCOL.Receive() - Receive() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Receive()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.9.2 | 0xa9231505, 0xf3ec, 0x462e, 0xb7, 0x0b, 0x14, 0xb2, 0xc6, 0xa2, 0x23, 0xd8 | EFI\_IP6\_PROTOCOL.Receive() - Receive() returns EFI\_INVALID\_PARAMETER with a NULL Token. | Call Receive()with a NULL Token, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.9.3 | 0xdf7d75d2, 0x4288, 0x4a50, 0xa5, 0xdf, 0x01, 0x85, 0x98, 0x74, 0xb8, 0x29 | EFI\_IP6\_PROTOCOL.Receive() - Receive() returns EFI\_INVALID\_PARAMETER with a NULL Token->Event. | Call Receive()with a NULL Token->Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.5.9.4 | 0x1bbc8695, 0x6552, 0x422d, 0xb1, 0x32, 0xda, 0x58, 0x03, 0x0e, 0xf5, 0xb6 | EFI\_IP6\_PROTOCOL.Receive() – Receive() returns EFI\_ACCESS\_DENIED with a Token->Event which has already been in the receive queue. | Call Receive()with a Token->Event which has already been in the receive queue, the return status should be EFI\_ACCESS\_DENIED. |
| 5.25.5.9.5 | 0x5b0a58f2, 0x6668, 0x4247, 0xae, 0x25, 0xae, 0x7e, 0x24, 0x75, 0x02, 0xd7 | EFI\_IP6\_PROTOCOL.Receive() – Receive() returns EFI\_SUCCESS with valid parameters. | 5.25.5.9.5 to 5.25.5.9.11 belong to one case.  1. Call Receive()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.9.6 | 0x019b2b66, 0xfbce, 0x4cab, 0xab, 0x09, 0xd8, 0xdd, 0x34, 0x70, 0x4e, 0xe9 | Token->Event should be signaled. | 2. Token->Event should be signaled. |
| 5.25.5.9.7 | 0x5750bf3b, 0xcead, 0x49a9, 0xad, 0x33, 0xb4, 0x6e, 0x85, 0xc9, 0x78, 0xea | Token->Status should be EFI\_SUCCESS. | 3. Token->Status should be EFI\_SUCCESS. |
| 5.25.5.9.8 | 0x155874a6, 0x0dc9, 0x4b67, 0x9d, 0xb7, 0xda, 0xc9, 0x24, 0xad, 0xc4, 0x4a | Check IPv6 Headlength. | 4. *T*he value of IPv6Headlengthshould be 40*.* |
| 5.25.5.9.9 | 0x7f6044dc, 0x1767, 0x48fc, 0x8a, 0x24, 0xa5, 0x85, 0x6e, 0x82, 0x8e, 0x94 | Check IPv6 RxData.Datalength. | 5. RxData.Datalength should be the same as we expected. |
| 5.25.5.9.10 | 0x022b38cd, 0x5928, 0x4c36, 0x98, 0xd4, 0xd3, 0x67, 0xef, 0x04, 0x55, 0xc7 | RxData.FragmentCount should be 1. | 6. RxData.FragmentCount should be 1. |
| 5.25.5.9.11 | 0x4b71edc9, 0x9c61, 0x45b2, 0xa5, 0x02, 0x05, 0x3a, 0x97, 0x71, 0x19, 0xf3 | The content of Ipv6 header should be the same as we expected. | 7. The content of Ipv6 header should be the same as we expected. |
| 5.25.5.9.12 | 0x48cbff74, 0x89a1, 0x4021, 0xa5, 0x81, 0x40, 0xc1, 0x56, 0xc7, 0x2f, 0x36 | EFI\_IP6\_PROTOCOL.Receive() – Receive() returns EFI\_SUCCESS with valid parameters. | 5.25.5.9.12 to 5.25.5.9.18 belong to one case  1. Call Receive()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.9.13 | 0xa433bb6d, 0x152c, 0x4de8, 0xa6, 0x01, 0x95, 0x31, 0x4d, 0xc3, 0x08, 0xd1 | Token->Event should be signaled. | 2*.* Token->Event should be signaled. |
| 5.25.5.9.14 | 0x0011751a, 0x87f4, 0x4572, 0xad, 0x75, 0xa5, 0x13, 0x84, 0xbf, 0x01, 0x0a | Token->Status should be EFI\_SUCCESS. | *3.* Token->Status should be EFI\_SUCCESS. |
| 5.25.5.9.15 | 0xa2d00870, 0xe59f, 0x4b55, 0xbe, 0x36, 0xda, 0x81, 0x15, 0xe4, 0x57, 0x41 | Check IPv6 Headlength. | 4. The value of IPv6 Headlength should be 40. |
| 5.25.5.9.16 | 0x99aef759, 0xcd2e, 0x46bd, 0x8d, 0x8a, 0x6c, 0xe7, 0x90, 0x8a, 0xf9, 0xa0 | Check IPv6 RxData.Datalength. | 5. RxData.Datalength should be thesame as we expected. |
| 5.25.5.9.17 | 0x1f01211f, 0x1c55, 0x4ee8, 0xb5, 0xe7, 0x14, 0x72, 0xcd, 0xf7, 0x60, 0x64 | RxData.FragmentCount should be 2. | *6.* RxData.FragmentCount should be 1. |
| 5.25.5.9.18 | 0x72f6a9fd, 0xb4bf, 0x47f2, 0x85, 0x07, 0x37, 0x99, 0x02, 0x2f, 0x06, 0xea | The content of Ipv6 header should be the same as we expected. | 7. The content of Ipv6 header should be the same as we expected. |

### Cancel()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.10.1 | 0x136f34b0, 0x4806, 0x4150, 0x98, 0x3c, 0x0c, 0x54, 0x1d, 0x7e, 0x8e, 0x2f | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Cancel()with a Receive Token and a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.10.2 | 0x9c7cacd0, 0xcb07, 0x4181, 0x93, 0x80, 0x90, 0x12, 0xbb, 0x60, 0xe6, 0xe3 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Cancel()with a Transmit Token and a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.10.3 | 0x5e2ebb02, 0xe419, 0x4ed4, 0xa7, 0xd3, 0xa3, 0xa7, 0xba, 0xb4, 0xee, 0x46 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which hasn’t been inserted into receive queue. | Call Cancel()with a Token which hasn’t been inserted into receive queue, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.10.4 | 0x7ceb17ac, 0x03bf, 0x427e, 0xbe, 0xe6, 0x98, 0x7f, 0xda, 0x4f, 0x5c, 0x36 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which hasn’t been inserted into transmit queue. | Call Cancel()with a Token which hasn’t been inserted into transmit queue, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.10.5 | 0x02c484a9, 0x86aa, 0x4484, 0x91, 0xa5, 0x50, 0x0f, 0xd7, 0x0c, 0x3c, 0x84 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which has been removed from receive queue. | Call Cancel()with a Token which has been removed from receive queue, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.10.6 | 0xf1955578, 0x07ba, 0x4119, 0xbe, 0xa2, 0xe0, 0xb1, 0x2b, 0x41, 0x77, 0x59 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which has been removed from transmit queue. | Call Cancel()with a Token which has been removed from transmit queue, the return status should be EFI\_NOT\_FOUND. |
| 5.25.5.10.7 | 0xdb1f8413, 0x7d91, 0x4366, 0x94, 0xe7, 0x96, 0xec, 0xf9, 0xd6, 0x0e, 0xbb | EFI\_IP6\_PROTOCOL.Receive() – Receive() returns EFI\_SUCCESS with valid parameters. | 5.25.5.10.7 to 5.25.5.10.10 belong to one case.  1. Call Receive()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.10.8 | 0xb5c49851, 0x0ea9, 0x4d1c, 0x9a, 0xbd, 0x98, 0x5f, 0x94, 0x98, 0x32, 0xf1 | EFI\_IP6\_PROTOCOL.Cancel() – Cancel() returns EFI\_SUCCESS with valid parameters. | 2. Call Cancel()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.25.5.10.9 | 0xff8a1c8f, 0xdf30, 0x4e95, 0xbf, 0x98, 0x11, 0x46, 0xc0, 0xa3, 0xec, 0x50 | Token->Status should be EFI\_ABORTED. | Token->Status should be EFI\_ABORTED. |
| 5.25.5.10.10 | 0x53bb7192, 0xe93a, 0x4a4b, 0xba, 0x2f, 0x58, 0x26, 0x6c, 0xe9, 0xdc, 0x80 | Token->Event should be signaled. | Token->Event should be signaled. |

### Poll()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.5.11.1 | 0xf0a862e2, 0xf222, 0x4742, 0x9e, 0x3f, 0x26, 0xa9, 0x18, 0xd6, 0x9e, 0xf1 | EFI\_IP6\_PROTOCOL.Poll() – Poll() returns EFI\_NOT\_STARTED with a not configured ChildHandle. | Call Poll()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.25.5.11.2 | 0x6ee2f2aa, 0x0a9f, 0x4690, 0xa5, 0x42, 0x95, 0x02, 0x1e, 0x5e, 0xd8, 0xbf | EFI\_IP6\_PROTOCOL.Poll() – Poll() returns EFI\_NOT\_READY with no income and outcome packets. | Call Poll()with no income and outcome packets, the return status should be EFI\_NOT\_READY. |

## EFI\_IP6CONFIG\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IP6\_CONFIG\_PROTOCOL Section.

### SetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.6.1.1 | 0x7a224cce,  0xb79b,  0x472a,0x9b,  0x8c,0xa4,  0x7e,0x07,  0x4d,0x5e,  0xef | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData() returns EFI\_INVALID\_PARAMETER with Data beingNULL | Call SetData() with **Data** is **NULL**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.2 | 0x46f12872,  0x61f2,  0x46e4,0xa2,  0xf9,0x5f,  0x68,0x5b,  0x41,0x94,  0x79 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with ManualAddress being **::.** | 5.25.6.1.2 to 5.25.6.1.7 belong to one case.  1. Call SetData() with valid parameters except invalid ManualAddress(::), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.3 | 0x1cac93d3,  0x732a,  0x4e30,0x89,  0x4d,0xee,  0x63,0xb6,  0xf4,0x86,  0xa0 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with ManualAddress containing duplicated entries. | 2. Call SetData() with valid parameters except invalid ManualAddress (2002::5000,2002::5001,2002::5000), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.4 | 0xd005ebf3,  0xcfd6,  0x498a,  0x90,0x05,  0xc2,0xb3,  0x70,0x2e,  0xb4,0xfc | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with **Gateway** beingmulticast. | 3. Call SetData() with valid parameters except invalid **Gateway** (ff02::1), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.5 | 0x389806d5,  0x4506,  0x4319,  0x8d,0x17,  0x9b,0x4f,  0xc9,0xd9,  0x7e,0x25 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with **Gateway** containing duplicated entries. | 4. Call SetData() with valid parameters except invalid Gateway (2002::5000,2002::5001,2002::5000), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.6 | 0x5aefdb0c,  0x322f,  0x49c3,  0x9d,0xd2,  0xdf,0xe2,  0x1b,0x66,  0xb3,0x08 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with **DnsServer** being multicast. | 5. Call SetData() with valid parameters except invalid **DnsServer** (ff02::1), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.7 | 0xd339988f,  0x2595,  0x4fb5,  0x81,0xae,  0xa9,0x4d,  0xc4,0x70,  0xb2,0x34 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_INVALID\_PARAMETER with **DnsServer** containing duplicated entries. | 6. Call SetData() with valid parameters except invalid DnsServer (2002::5000,2002::5001,2002::5000), The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.1.8 | 0x4319a43b,  0x7641,  0x47c0,  0x84,0xbb,  0x98,0x5c,  0x47,0x99,  0x02,0xa2 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_WRITE\_PROTECTED when trying to set **InterfaceInfo.** | Call SetData() to set **InterfaceInfo**, The return status should be EFI\_WRITE\_PROTECTED. |
| 5.25.6.1.9 | 0x01f3b344,  0xeb52,  0x4086,  0xb9,0x49,  0x55,0xd7,  0xe4,0xdc,  0x5b,0xde | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_WRITE\_PROTECTED when trying to set **ManualAddress** under **Automatic** policy. | 5.25.6.1.9 to 5.25.6.1.11 belong to one case.  1. Call SetData() to set **MaualAddress(2002::5000)** under **Automatic** policy, The return status should be EFI\_WRITE\_PROTECTED. |
| 5.25.6.1.10 | 0xf612af26,  0x2519,  0x497c,  0xb2,0x05,  0x37,0xa2,  0x91,0x4a,  0xee,0x05 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_WRITE\_PROTECTED when trying to set **Gateway** under **Automatic** policy. | 2. Call SetData() to set **Gateway(2002::5001)** under **Automatic** policy, The return status should be EFI\_WRITE\_PROTECTED. |
| 5.25.6.1.11 | 0x592c1f3d,  0x249e,  0x4654,  0xb4,0xb1,  0x60,0x04,  0x21,0x62,  0x4d,0xd1 | EFI\_IP6CONFIG PROTOCOL. SetData() - SetData()returns EFI\_WRITE\_PROTECTED when trying to set **DnsServer** under **Automatic** policy. | 3. Call SetData() to set **DnsServer(2002::5001)** under **Automatic** policy, The return status should be EFI\_WRITE\_PROTECTED. |
| 5.25.6.1.12 | 0xd70bce29,  0x8026,  0x4e1b,  0xba,0x8b,  0x36,0xa3,  0x13,0xb4,  0x58,0x59 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **ManualAddress** with wrong **DataSize**. | 5.25.6.1.12 to 5.25.6.1.17 belong to one case.  1. Call SetData() to set **ManualAddress(2002::5000)** with **DataSize** being **16**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.13 | 0xfe793490,  0x53f8,  0x4991,  0x83,0x48,  0xe6,0x24,  0x53,0x0e,  0x83,0xe9 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **Gateway** with wrong **DataSize**. | 2. Call SetData() to set **Gateway(2002::5001)** with **DataSize** being **8**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.14 | 0x42ccb2ef,  0xd706,  0x4d1a,  0xb2,0x47,  0xf4,0x2b,  0xba,0x99,  0xf7,0x07 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **DnsServer** with wrong **DataSize**. | 3. Call SetData() to set **Gateway(2002::5002)** with **DataSize** being **8**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.15 | 0x9168cb20,  0xc891,  0x42da,  0xbb,0x9f,  0x7a,0xdb,  0xe4,0x88,  0xb0,0x12 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **AltInterfaceId** with wrong **DataSize**. | 4. Call SetData() to set **AltInterfaceId** with **DataSize** being **1**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.16 | 0xad058d87,  0x1015,  0x4b2d,  0xa3,0x51,  0x5b,0xd4,  0xb0,0x93,  0x0b,0x7b | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **DadXmits** with wrong **DataSize**. | 5. Call SetData() to set **DadXmits(3)** with **DataSize** being **1**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.17 | 0x388be3f6,  0xd63e,  0x4cbf,  0xa3,0xd9,  0x3d,0x94,  0x18,0x23,  0x25,0x9b | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_BAD BUFFER SIZE when trying to set **Policy** with wrong **DataSize**. | 6. Call SetData() to set **Policy(Manual)** with **DataSize** being **1**, The return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.25.6.1.18 | 0x2886bae1,  0x383a,  0x400f,  0x8f,0x88,  0x66,0x37,  0x6b,0x2a,  0x0f,0xf5 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_UNSUPPORTED when trying to set **Maximum** | Call SetData() to set **Maximum**, The return status should be EFI\_UNSUPPORTED. |
| 5.25.6.1.19 | 0xd2c61f06,  0x8822,  0x4a09,  0x89,0xa1,  0x7f,0x06,  0x67,0xfc,  0xaf,0x0e | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_ACCESS DENIED when trying to set valid **ManualAddress** with last asynchronous setting not finished. | Intiate asynchronous **ManualAddress** setting process with **DadXmits 20**.  Before the former setting finishes,  Call SetData() to set valid **ManualAddress**, The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.6.1.20 | 0x0a5902da,  0x4142,  0x4494,  0xac,0x66,  0x2b,0x73,  0x1f,0xfe,  0xa6,0x71 | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS when trying to set valid **InterfaceId.** | 5.25.6.1.20 to 5.25.6.1.23 belong to one case.  1. Call SetData() to set **InterfaceId(0:1:2:3:4:5:6:7)**, The return status should be EFI\_SUCCESS. |
| 5.25.6.1.21 | 0xd9a9ef5e,  0xd819,  0x49d0,  0xbb,0x12,  0x25,0xad,  0xec,0x52,  0xdd,0xb3 | Check the set InterfaceId to be as desired | 2. Call GetData() to retrieve **InterfaceId** and validate it to be **(0:1:2:3:4:5:6:7)**, The compare result should be equal. |
| 5.25.6.1.22 | 0x14e96019,  0x0815,  0x4486,  0x91,0x6c,  0xe4,0x40,  0xe1,0x66,  0x62,0x8e | EFI\_IP6CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS when trying to set valid **DadXmits.** | 3. Call SetData() to set **DadXmits(3)**, The return status should be EFI\_SUCCESS. |
| 5.25.6.1.23 | 0x3458bbe0,  0x0d7e,  0x48ec,  0xb3,0x80,  0x2a,0x88,  0x5f,0x44,  0xe1,0x04 | Check the set DadXmits to be as desired | 4. Call GetData() to retrieve **DadXmits** and validate it to be **3**, The compare result should be equal. |

### GetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.6.2.1 | 0xd15e421d,  0x6228,  0x4fea,  0x8d,0x5a,  0x33,0x0f,  0xff,0x3f,  0x80,0xd2 | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with DataSizebeingNULL | Call GetData() with **DataSize** is **NULL**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.2.2 | 0x38b36c04,  0x12e9,  0x4e96,  0xb2,0x4f,  0xc4,0x53,  0x85,0x1e,  0x6c,0x1d | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with **Data NULL** and DataSize not zero | Call GetData() with **Data NULL** and **DataSize** is **not zero**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.2.3 | 0xd05a6c59,  0x617f,  0x4549,  0x96,0x59,  0x4e,0x0c,  0xfc,0x3c,  0x33,0x36 | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_BUFFER TOO SMALL with DataSizesmaller than Data’s actual size. | 5.25.6.2.3 to 5.25.6.2.4 belong to one case  1. Call GetData() to get ManualAddress with **DataSize** is **16**, The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.6.2.4 | 0xed45c2fe,  0x9ec1,  0x4553,  0xaf,0xa4,  0x77,0x1e,  0x9d,0x4f,  0x76,0x11 | The **DataSize** returned by **GetData()** should be equal to the actual size of the specific data type | 2. Check the **DataSize** returned by **GetData()**, it should be equal to (**sizeof EFI\_IP6\_CONFIG\_MANUAL\_ADDRESS**). |
| 5.25.6.2.5 | 0x59118c46,  0x2f2a,  0x4029,  0xab,0xd6,  0x76,0x74,  0x18,0x92,  0x03,0x69 | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_NOT FOUND when the data type doesn’t exist. | Call GetData() to get Maximum, The return status should be EFI\_NOT\_FOUND. |
| 5.25.6.2.6 | 0x55955d09,  0xc806,  0x4777,  0x9f,0xf0,  0x95,0xc0,  0x0e,0x79,  0xac,0x28 | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_NOT READY when trying to get valid **ManualAddress** with last asynchronous setting not finished. | Intiate asynchronous **ManualAddress** setting process with **DadXmits 20**.  Before the former setting finishes,  Call GetData() to get valid **ManualAddress**, The return status should be EFI\_NOT\_READY. |
| 5.25.6.2.7 | 0xfeaac1a0,  0x95bd,  0x4dcb,  0x91,0xc3,  0x9f,0x08,  0x50,0x4b,  0xef,0xa1 | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_SUCCESS when trying to get valid **InterfaceId.** | 5.25.6.2.7 to 5.25.6.2.10 belong to one case.  1. Call SetData() to set **InterfaceId(0:1:2:3:4:5:6:7)**  2. Call GetData() to get **InterfaceId**,The return status should be EFI\_SUCCESS. |
| 5.25.6.2.8 | 0x3649d729,  0xd6d0,  0x456e,  0x84,0xae,  0xc7,0xe7,  0xb8,0x46,  0x43,0x43 | Check the set InterfaceId to be as desired | 3. Validate the retrieved **InterfaceId** to be **(0:1:2:3:4:5:6:7)**, The compare result should be equal. |
| 5.25.6.2.9 | 0x165e79b4,  0xc987,  0x4100,  0x8a,0xa2,  0x8a,0xb1,  0x15,0xb0,  0x7f,0xad | EFI\_IP6CONFIG PROTOCOL.GetData() - GetData()returns EFI\_SUCCESS when trying to get valid **DadXmits.** | 4. Call SetData() to set **DadXmits(3).**  5. Call GetData() to get **DadXmits**. The return status should be EFI\_SUCCESS. |
| 5.25.6.2.10 | 0xdb420311,  0x17f7,  0x40cf,  0xa0,0xb1,  0x02,0x94,  0xd5,0xdc,  0xcc,0x92 | Check the set DadXmits to be as desired | 6. Validate the retrieved **DadXmits** to be **3**, The compare result should be equal. |

### RegisterDataNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.6.3.1 | 0x7e3f6157,  0xec75,  0x4ecd,  0xa7,0x9b,  0x49,0x26,  0xf3,0xaa,  0x1c,0x0d | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_INVALID\_PARAMETER with **Event** being **NULL** | Call RegisterDataNotify() with **Event** is **NULL**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.3.2 | 0x70dc8c71,  0xc54d,  0x4446,  0x8a,0xd9,  0xba,0xc0,  0x86,0xe4,  0x3d,0x17 | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_UNSUPPORTED with **Datatype** not supported | Call RegisterDataNotify() with **Datatype** being **Maximum,** The return status should be EFI\_UNSUPPORTED. |
| 5.25.6.3.3 | 0x2d88f18b,  0x0bef,  0x4616,  0xbd,0xe5,  0xca,0x4e,  0x00,0x86,  0xe1,0xd3 | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_ACCESS\_DENIED with **Event** already be registered on the same DataType. | 1. Call RegisterDataNotify() with **Datatype** being **Policy** successfully.  2. Call RegisterDataNotify() with **Datatype** being **Policy** and the same **Event** again**,** The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.6.3.4 | 0x9a98dc85,  0xd018,  0x45aa,  0xb8,0x51,  0x34,0xee,  0x2f,0x67,  0x16,0xd4 | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_SUCCESS with valid parameters | 5.25.6.3.4 to 5.25.6.3.5 belong to one case  1. Call RegisterDataNotify() with **Datatype** being **ManualAddress** successfully. |
| 5.25.6.3.5 | 0x39f7fb37,  0x9f9f,  0x485e,  0x8d,0xbc,  0x0f,0x31,  0x91,0xda,  0x99,0x09 | After the data is set, the **Event** should be signaled correctly. | 2. The **Event** should be signaled and the context of the **Event** should be changed. |
| 5.25.6.3.6 | 0xa13da599,  0x37e7,  0x474a,  0x93,0x43,  0x83,0xc9,  0xef,0xe8,  0x08,0x93 | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_SUCCESS with valid parameters | 5.25.6.3.6 to 5.25.6.3.9 belong to one case.  1. Call RegisterDataNotify() with **Datatype** being **Policy** successfully. |
| 5.25.6.3.7 | 0x5428bdd5,  0x4332,  0x4e3b,  0x84,0x1f,  0x3e,0x60,  0x54,0x0a,  0xa3,0x5d | EFI\_IP6CONFIG PROTOCOL.RegisterDataNotify() - RegisterDataNotify()returns EFI\_SUCCESS with the same **Event**. | 2. Call RegisterDataNotify() with **Datatype** being **DadXmits** and the same **Event** successfully. |
| 5.25.6.3.8 | 0x1844a7c8,  0x730c,  0x4927,  0x8e,0x02,  0xce,0x0a,  0x6c,0xa0,  0x8d,0xcc | After the data is set, the **Event** should be signaled correctly. | 3. Call SetData() to set **Policy**. The **Event** should be signaled and the context should be changed. |
| 5.25.6.3.9 | 0xb0e66591,  0x9076,  0x48e3,  0x8d,0xf6,  0x2a,0x1d,  0x59,0xa5,  0x72,0xdb | After the data is set, the **Event** should be signaled correctly. | 4. Call SetData() to set DadXmits. The **Event** should be signaled and the context should be changed. |

### UnregisterDataNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.6.4.1 | 0x8ab0e5a2,  0xa4e1,  0x4282,  0x87,0xb5,  0xe3,0x77,  0xc7,0x63,  0xad,0x2f | EFI\_IP6CONFIG PROTOCOL.UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_INVALID\_PARAMETER with **Event** being **NULL** | Call UnregisterDataNotify() with **Event** is **NULL**, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.6.4.2 | 0x5c68228f,  0xaaae,  0x4d0b,  0x99,0x27,  0x76,0x64,  0x47,0x6e,  0xf3,0x60 | EFI\_IP6CONFIG PROTOCOL.UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_NOT FOUND with no **Event** registered for the **Datatype**. | Call UnregisterDataNotify() with **Datatype** being **ManualAddress** and the **Event** not registered for the **Datatype** before**,** The return status should be EFI\_NOT\_FOUND. |
| 5.25.6.4.3 | 0x55d8193e,  0xf58e,  0x4800,  0x92,0x4b,  0x73,0xc9,  0x02,0x09,  0x8d,0xd8 | EFI\_IP6CONFIG PROTOCOL.UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_NOT FOUND with **Event** first registered and then unregistered for the Datatype. | 1. Call RegisterDataNotify() with **Datatype** being **ManualAddress** successfully.  2. Call UnregisterDataNotify() with **Datatype** being **ManualAddress** successfully.  3. Call UnregisterDataNotify() with **Datatype** being **ManualAddress** and the same **Event** again**,** The return status should be EFI\_NOT\_FOUND. |
| 5.25.6.4.4 | 0x42eb4628,  0x8df6,  0x4704,  0x81,0xe5,  0xf7,0xea,  0xe6,0xcb,  0xb2,0x70 | EFI\_IP6CONFIG PROTOCOL.UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_SUCCESS with valid parameters. | 1. Call RegisterDataNotify() with **Datatype** being **Policy** successfully.  2. Call UnregisterDataNotify() with **Datatype** being **Policy** successfully. |
| 5.25.6.4.5 | 0x174cec07,  0xe573,  0x434b,  0x8e,0x99,  0x77,0xf8,  0xae,0x9c,  0x55,0xb5 | EFI\_IP6CONFIG PROTOCOL.UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_SUCCESS with valid parameters. | 5.25.6.4.5 to 5.25.6.4.7 belong to one case.  1.Call RegisterDataNotify() with **Datatype** being **Policy** successfully.  2.Call RegisterDataNotify() with **Datatype** being **DadXmits** successfully.  3.Call UnregisterDataNotify() with **Datatype** being **Policy** successfully. |
| 5.25.6.4.6 | 0x1f5ef1af,  0x8a19,  0x48d6,  0x83,0x1f,  0x51,0xbe,  0x00,0xb3,  0x2a,0xa5 | After the data is set, the unregistered **Event** should not be signaled correctly. | 4. Call SetData() to set **Policy**. The **Event** should not be signaled and the context should not be changed. |
| 5.25.6.4.7 | 0x388c8838,  0x7790,  0x4a1f,  0x9d,0xb7,  0x50,0x17,  0xd7,0xaa,  0x60,0xdb | After the data is set, the registered **Event** should be signaled correctly. | 5. Call SetData() to set **DadXmits**. The **Event** should be signaled and the context should be changed. |

## EFI\_IPSEC\_CONFIG\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IPSEC\_CONFIG\_PROTOCOL Section.

### SetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.7.1.1 | 0x235a63c3, 0x2ba4, 0x4d1d, 0x8e, 0x25, 0xc8, 0x7e, 0x47, 0x35, 0x36, 0x1c | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData() returns EFI\_UNSUPPORTED with an invalid **DataType** (>2) | Call SetData()with an invalid DataType (>2), The return status should be EFI\_UNSUPPORTED. |
| 5.25.7.1.2 | 0x77f0b145, 0x48a3, 0x4780, 0x8c, 0x0e, 0x63, 0x5b, 0x91, 0x6f, 0x4d, 0xf5 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(0)/Selector/Data. | 5.25.7.1.2 to 5.25.7.1.4 belong to one case.  1. Call SetData() with valid DataType(0)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.3 | 0x8739610b, 0xabf3, 0x4994, 0x96, 0xee, 0x87, 0xd4, 0x95, 0x27, 0x45, 0x67 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - returns EFI\_SUCCESS withvalid DataType(0) /Selector and NULL Data. | 2. Call SetData() with validDataType(0) /Selector and NULL Data, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.4 | 0xeb931bcf, 0x074a, 0x4e69, 0x83, 0xee, 0xd3, 0xc6, 0x39, 0xc6, 0x84, 0xef | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush given selector configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(0) /**Selector/DataSize**. | 3. Call GetData()with valid **DataType**(0) /**Selector/DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.5 | 0x35ec56a7, 0x1c1a, 0x4c84, 0xb0, 0x68, 0x40, 0x53, 0x7c, 0x45, 0x95, 0x41 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(1)/Selector/Data. | 5.25.7.1.5 to 5.25.7.1.7 belong to one case.  1. Call SetData() with valid DataType(1)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.6 | 0x8b6ddfbf, 0x8de1, 0x418d, 0xb0, 0x76, 0xf4, 0x48, 0x07, 0x46, 0xb6, 0x3a | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESSwithvalidDataType(1) /Selector and NULL Data. | 2. Call SetData() with validDataType(1) /Selector and NULL Data, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.7 | 0xa510e599, 0x2cdd, 0x4c14, 0xbe, 0xc9, 0xbd, 0x2f, 0xd8, 0x7d, 0x50, 0x60 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush given selector configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(1) /**Selector**/**DataSize**. | 3. Call GetData()with valid **DataType**(1) /**Selector**/**DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.8 | 0x69d0edc5, 0xd259, 0x42ea, 0xa6, 0x97, 0x47, 0x8c, 0x2a, 0x32, 0x0c, 0x08 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(2)/Selector/Data. | 5.25.7.1.8 to 5.25.7.1.10 belong to one case.  1. Call SetData() with valid DataType(2)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.9 | 0xe389a40e, 0x4c21, 0x4cf1, 0x88, 0xb3, 0xae, 0x86, 0x9b, 0x0b, 0xc2, 0x35 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESS withvalid DataType(2) /Selectorand NULL Data. | 2. Call SetData() with validDataType(2) /Selector andNULL Data, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.10 | 0x4d6b9807, 0x4d26, 0x43aa, 0x8a, 0x53, 0xd1, 0xff, 0xe5, 0x2b, 0xb0, 0xde | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush given selector configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(2) /**Selector**/**DataSize**. | 3. Call GetData()with valid **DataType**(2) /**Selector**/**DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.11 | 0x5747257a, 0xabff, 0x4ac4, 0xa9, 0xb0, 0xfc, 0x82, 0xf7, 0xd0, 0xce, 0xa2 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(0)/Selector/Data. | 5.25.7.1.11 to 5.25.7.1.13 belong to one case.  1. Call SetData() with valid DataType(0)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.12 | 0x808d03fc, 0x2d68, 0x4c51, 0x90, 0x31, 0x01, 0x32, 0x64, 0xf5, 0xf7, 0x85 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESS withvalid DataType(0) /Data andNULL Selector. | 2. Call SetData() with validDataType(0) /Data andNULL Selector, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.13 | 0x2f5d587d, 0x4216, 0x42dd, 0x92, 0x41, 0x72, 0x60, 0xe9, 0x65, 0xa6, 0xf6 | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush entire configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(0) /**Selector**/**DataSize**. | 3. Call GetData()with valid **DataType**(0) /**Selector**/**DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.14 | 0x39a5db14, 0xebb0, 0x460f, 0x92, 0x99, 0x36, 0x28, 0x3f, 0x51, 0x9d, 0xff | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(1)/Selector/Data. | 5.25.7.1.14 to 5.25.7.1.16 belong to one case.  1. Call SetData() with valid DataType(1)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.15 | 0xdee52264, 0x3da1, 0x4f5d, 0xa2, 0x43, 0xa1, 0x15, 0xad, 0xd3, 0x3f, 0x40 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESSwithvalid DataType(1) /Data andNULL Selector. | 2. Call SetData() with validDataType(1) /DataandNULL Selector, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.16 | 0xd76b9b01, 0x6649, 0x4b43, 0xa0, 0x05, 0x1a, 0x64, 0x69, 0xc3, 0xef, 0x0f | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush entire configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(1) /**Selector**/**DataSize**. | 3. Call GetData()with valid **DataType**(1) /**Selector**/**DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.17 | 0x5f9e36d3, 0xa945, 0x4b20, 0xa2, 0x9b, 0x30, 0x3e, 0x9b, 0xd5, 0x6c, 0xcd | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - SetData()returns EFI\_SUCCESS with valid DataType(2)/Selector/Data. | 5.25.7.1.17 to 5.25.7.1.19 belong to one case.  1. Call SetData() with valid DataType(2)/Selector/Data. The return status should be EFI\_SUCCESS. |
| 5.25.7.1.18 | 0xaec61686, 0xf303, 0x4697, 0xb0, 0x7d, 0xe2, 0x08, 0x8e, 0x52, 0x05, 0x58 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESS withvalid DataType(2) /Data and NULL Selector. | 2. Call SetData() with validDataType(2) /Data and NULL Selector, The return status should be EFI\_SUCCESS. |
| 5.25.7.1.19 | 0x69c4e05f, 0x7b94, 0x4c82, 0x81, 0x47, 0xd9, 0x14, 0x57, 0x86, 0x24, 0x3f | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() - After flush entire configuration by SetData, GetData()returns EFI\_NOT\_FOUND with valid **DataType**(2) /**Selector**/**DataSize**. | 3. Call GetData()with valid **DataType**(2) /**Selector**/**DataSize**, The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.1.20 | 0x486c7a3e, 0x4a65, 0x4da6, 0x8e, 0x52, 0x6b, 0x64, 0x48, 0xc3, 0x68, 0xaa | EFI\_IPSEC\_CONFIG PROTOCOL.SetData()returnsEFI\_SUCCESS validDataType(1)/Selector/SA\_Data2 | 5.25.7.1.20 to 5.25.7.1.22  belong to one case.  1. Call SetData()with valid DataType(1)/Selector/  SA\_Data2. The return status should be EFI\_SUCCESS |
| 5.25.7.1.21 | 0x92302107, 0x20fa, 0x49b9, 0x84, 0x5f, 0xec, 0xc6, 0xe0, 0x28, 0x31, 0xf3 | EFI\_IPSEC\_CONFIG PROTOCOL. SetData () - SetData()returns EFI\_SUCCESSwith valid DataType(1) /Selector and NULL Data. | 2. Call SetData()with valid DataType(1) /Selector  and NULL Data, The return  status should be EFI\_SUCCESS. |
| 5.25.7.1.22 | 0x03b2df9d, 0xe5c1, 0x47b3, 0xaa, 0x7a, 0xa0, 0xbb, 0x1d, 0xf2, 0xf0, 0x9b | EFI\_IPSEC\_CONFIG PROTOCOL.SetData() **-** After flush given selector configuration by SetData**,** GetData()returns EFI\_NOT\_FOUNDwith valid DataType(1) /Selector/DataSize. | 3. Call GetData()with valid DataType(1)/Selector/  DataSize, The return status  should be EFI\_NOT\_FOUND. |

### GetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.7.2.1 | 0xa8339798, 0x45fa, 0x47a8, 0xaf, 0x9e, 0x74, 0x17, 0xcd, 0x78, 0xef, 0x40 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL Selector. | Call GetData() with NULL Selector, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.2 | 0x1d04e3e9, 0xfc36, 0x4321, 0xa8, 0x22, 0x51, 0xb2, 0x59, 0x01, 0xbf, 0xb0 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_UNSUPPORTED with an invalid **DataType** (>2) | Call SetData()with an invalid DataType(>2), The return status should be EFI\_UNSUPPORTED. |
| 5.25.7.2.3 | 0x4da58bcc, 0x1ae2, 0x450d, 0xbc, 0x1b, 0x0d, 0x76, 0x77, 0x3a, 0xab, 0x79 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL Data. | Call GetData()with NULL Data, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.4 | 0x39962424, 0x200d, 0x40cd, 0x8f, 0x5b, 0xfd, 0x3f, 0xf8, 0xaa, 0x51, 0x96 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL DataSize. | Call GetData()with NULL DataSize, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.5 | 0x1ef8f8fb, 0xf494, 0x4411, 0x87, 0xd2, 0x73, 0x43, 0x88, 0x6a, 0x14, 0xe7 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_BUFFER\_TOO\_SMALL with small DataSize. | Call GetData()with small DataSize, The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.2.6 | 0xddc718a3, 0xb10d, 0x4f05, 0x9d, 0x97, 0x65, 0xda, 0x75, 0xd9, 0x02, 0xca | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL Data. | Call GetData()with NULL Data, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.7 | 0xc6d16b39, 0x34f6, 0x438a, 0xa5, 0x77, 0xbf, 0xd3, 0x13, 0xbc, 0x9e, 0xe8 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL DataSize. | Call GetData()with NULL DataSize, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.8 | 0xa5fecb65, 0x0501, 0x4d66, 0xbe, 0x1c, 0x37, 0xac, 0xb7, 0x8a, 0xd4, 0xe8 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_BUFFER\_TOO\_SMALL with small DataSize. | Call GetData()with small DataSize, The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.2.9 | 0x6b1c7e3e, 0x47e7, 0x40ef, 0x85, 0xec, 0x3b, 0x8c, 0x0f, 0xa6, 0x08, 0x1f | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL Data. | Call GetData()with NULL Data, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.10 | 0xb4138aae, 0xccfb, 0x45af, 0xa6, 0x41, 0x0a, 0x1c, 0x7f, 0x9d, 0x86, 0x1b | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_INVALID\_PARAMETER with NULL DataSize. | Call GetData()with NULL DataSize, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.2.11 | 0xea851d2d, 0x4031, 0x4966, 0x91, 0x8e, 0x24, 0xda, 0x2a, 0x56, 0xc3, 0xb7 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_BUFFER\_TOO\_SMALL with small DataSize. | Call GetData()with small DataSize, The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.2.12 | 0xd2cabfe5,  0x85a0, 0x47a1, 0x8d,0x71, 0x3c,0x3f, 0x64,0x4a, 0x41,0xf3 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() **-** GetData()returns EFI\_INVALID\_PARAMETERwith NULL SA\_DATA2 | Call GetData()with NULL SA\_DATA2, The return status should be EFI\_INVALID\_PARAMETER . |
| 5.25.7.2.13 | 0x91591c0, 0x5a13, 0x448e, 0xbf, 0x21, 0x1d, 0x12, 0xb3, 0x8c, 0x9e, 0x6d | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() **-** GetData()returns EFI\_INVALID\_PARAMETER with NULL SA\_DATA2 datasize | Call GetData()with NULL  SA\_DATA2 datasize, The  return status should be  EFI\_INVALID\_PARAMETER |
| 5.25.7.2.14 | 0x64ec8c85, 0x7661, 0x4364, 0xa1, 0xf3, 0x56, 0x62, 0x69, 0x3d, 0x8a, 0x7a | EFI\_IPSEC\_CONFIG PROTOCOL**.**GetData() **-** GetData()returns EFI\_BUFFER\_TOO\_SMALLwith small SA\_DATA2  datasize | Call GetData()with small  SA\_DATA2 datasize, The  return status should be  EFI\_BUFFER\_TOO\_SMALL . |
| 5.25.7.2.15 | 0x437749ac, 0x27bc, 0x46ac, 0xb7, 0xa1, 0x1b, 0x39, 0xee, 0xcc, 0x58, 0xc0 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_SUCCESS with Valid DataType(0)/Selector/DataSize. | Call GetData()with Valid DataType(0)/Selector/DataSize. The return status should be EFI\_SUCCESS. |
| 5.25.7.2.16 | 0xe53c2379, 0x58fb, 0x402f, 0xbb, 0x47, 0x12, 0xd7, 0xe3, 0x55, 0x8d, 0x01 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns the right values which are set before. | Call GetData()with Valid DataType(0)/Selector/DataSize. The right values should be same as the values which are set before. |
| 5.25.7.2.17 | 0x37f06d59, 0x2e1f, 0x4ccd, 0x83, 0xbc, 0x1b, 0xf2, 0xcf, 0x4b, 0x92, 0x4e | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_SUCCESS with Valid DataType(1)/Selector/DataSize. | Call GetData()with Valid DataType(1)/Selector/DataSize. The return status should be EFI\_SUCCESS. |
| 5.25.7.2.18 | 0x077a8be2, 0xdd60, 0x48b5, 0xaf, 0x2e, 0x05, 0xcd, 0xc7, 0x07, 0x64, 0xf0 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns the right values which are set before. | Call GetData()with Valid DataType(1)/Selector/DataSize. The right values should be same as the values which are set before. |
| 5.25.7.2.19 | 0x35adfec2, 0x5c65, 0x431f, 0x87, 0x86, 0x7b, 0x70, 0x81, 0x69, 0x71, 0xba | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns EFI\_SUCCESS with Valid DataType(2)/Selector/DataSize. | Call GetData()with Valid DataType(2)/Selector/DataSize. The return status should be EFI\_SUCCESS. |
| 5.25.7.2.20 | 0x26a81e68, 0x1aec, 0x4f1f, 0x9c, 0xe5, 0xc1, 0x59, 0xf2, 0xf3, 0xea, 0x12 | EFI\_IPSEC\_CONFIG PROTOCOL.GetData() - GetData()returns the right values which are set before. | Call GetData()with Valid DataType(2)/Selector/DataSize. The right values should be same as the values which are set before. |
| 5.25.7.2.21 | 0x378cd479, 0x2dd4, 0x4bc8,0x9b, 0xd8, 0x8c, 0x23, 0xfd, 0xda, 0x5d, 0x20 | EFI\_IPSEC\_CONFIG\_PROTO COL.GetData- GetData()returns EFI\_SUCCESS with valid DataType(1)/Selector/DataSize | Call GetData() with valid DataType(1)/Selector/DataSize, The return status should be EFI\_SUCCESS. |
| 5.25.7.2.22 | 0x34fc6d63, 0xb2ec, 0x4c20, 0xb7, 0x7d, 0xa8, 0xf8, 0xf, 0x74, 0x7b, 0xa3 | EFI\_IPSEC\_CONFIG\_PROTO COL.GetData- GetData() returns EFI\_SUCCESS& the right SA\_DATA2 which are set before | Call GetData()returns the right SA\_DATA2 which are set before, The return status should be EFI\_SUCCESS**.** |

### GetNextSelector ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.7.3.1 | 0xf85ce018, 0x2fad, 0x4b4e, 0xbb, 0xbb, 0x1c, 0x59, 0x57, 0x12, 0x85, 0xac | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector()returns EFI\_UNSUPPORTED with an invalid **DataType** (>2) | Call GetNextSelector()with an invalid **DataType** (>2). The return status should be EFI\_UNSUPPORTED. |
| 5.25.7.3.2 | 0x17a12f39, 0xba49, 0x4abb, 0x8f, 0x52, 0x3a, 0x32, 0x24, 0x8e, 0x04, 0xdd | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_INVALID\_PARAMETER with **NULL SelectorSize**. | Call GetNextSelector() with **NULL SelectorSize**. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.3.3 | 0xc404ce41, 0x6802, 0x415d, 0x8b, 0x76, 0x41, 0x26, 0x65, 0x1d, 0x56, 0x29 | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_INVALID\_PARAMETER with **NULL Selector**. | Call GetNextSelector()with **NULL Selector**. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.3.4 | 0x23b72aad, 0xa975, 0x4500, 0x95, 0x19, 0x2e, 0x6d, 0xc4, 0x5f, 0x23, 0x27 | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_BUFFER\_TOO\_SMALL with valid **DataType**(0)/**Selector** and **SelectorSize** is 0. | Call GetNextSelector()with valid **DataType**(0)/**Selector** and **SelectorSize** is 0. The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.3.5 | 0xa11a6002, 0x911b, 0x4702, 0x85, 0xa7, 0xc9, 0x73, 0x91, 0xa6, 0xdb, 0x6d | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_BUFFER\_TOO\_SMALL with valid **DataType**(1)/**Selector** and **SelectorSize** is 0. | Call GetNextSelector()with valid **DataType**(1)/**Selector** and **SelectorSize** is 0. The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.3.6 | 0xccbcee8b, 0xf23b, 0x4c70, 0x8e, 0x3b, 0x19, 0xdb, 0xa6, 0xd1, 0xa8, 0x51 | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_BUFFER\_TOO\_SMALL with valid **DataType**(2)/**Selector** and **SelectorSize** is 0. | Call GetNextSelector()with valid **DataType**(2)/**Selector** and **SelectorSize** is 0. The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.25.7.3.7 | 0x502ad851, 0x41ae, 0x483e, 0xaa, 0xcd, 0x8d, 0x23, 0x73, 0x04, 0x91, 0xcf | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(0)/**Selector** and **SelectorSize**. | Call GetNextSelector()with valid **DataType**(0)/**Selector** and **SelectorSize**. The return status should be EFI\_SUCCESS. |
| 5.25.7.3.8 | 0x2f0d92f8, 0x2371, 0x4547, 0xa9, 0x5e, 0x79, 0x09, 0xc8, 0x62, 0xee, 0x26 | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(0)/**Selector** and **SelectorSize**. | Call GetNextSelector()with valid **DataType**(0)/**Selector** and **SelectorSize**. The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.3.9 | 0xdaa5a475, 0x0d4a, 0x4e58, 0xa4, 0xd4, 0xfe, 0x33, 0xe7, 0x13, 0xd5, 0xbd | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(1)/**Selector** and **SelectorSize**. | Call GetNextSelector() with valid **DataType**(1)/**Selector** and **SelectorSize**. The return status should be EFI\_SUCCESS. |
| 5.25.7.3.10 | 0x78ea1b63, 0x979e, 0x41fe, 0xab, 0xb1, 0xc3, 0xb3, 0x42, 0x38, 0xc2, 0xa0 | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(1)/**Selector** and **SelectorSize**. | Call GetNextSelector() with valid **DataType**(1)/**Selector** and **SelectorSize**. The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.3.11 | 0xd570e742, 0x8122, 0x4abc, 0xbb, 0xe8, 0x34, 0xcf, 0x8f, 0x6e, 0x00, 0xdd | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(2)/**Selector** and **SelectorSize**. | Call GetNextSelector()with valid **DataType**(2)/**Selector** and **SelectorSize**. The return status should be EFI\_SUCCESS. |
| 5.25.7.3.12 | 0xb3a7efaa, 0x0c6e, 0x4686, 0xad, 0x77, 0xab, 0xd2, 0x62, 0xb4, 0x71, 0xfb | EFI\_IPSEC\_CONFIG PROTOCOL. GetNextSelector() – GetNextSelector() returns EFI\_SUCCESS with valid **DataType**(2)/**Selector** and **SelectorSize**. | Call GetNextSelector()with valid **DataType**(2)/**Selector** and **SelectorSize**. The return status should be EFI\_NOT\_FOUND. |

### RegisterDataNotify ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.7.4.1 | 0x22857d7f, 0xa20c, 0x467f, 0xa5, 0x70, 0x54, 0xbd, 0x56, 0x3d, 0x93, 0x7e | EFI\_IPSEC\_CONFIG PROTOCOL. RegisterDataNotify() - RegisterDataNotify()returns EFI\_INVALID\_PARAMETER with **NULL Event**. | Call RegisterDataNotify()with **NULL Event**. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.4.2 | 0x9361ecca, 0xf59a, 0x4d4c, 0xb5, 0x9d, 0x1a, 0xc8, 0xf3, 0x7b, 0x75, 0x1a | EFI\_IPSEC\_CONFIG PROTOCOL. RegisterDataNotify() - RegisterDataNotify()returns EFI\_UNSUPPORTED with invalid **DataType**(>2). | Call RegisterDataNotify() with invalid **DataType**(>2). The return status should be EFI\_UNSUPPORTED. |
| 5.25.7.4.3 | 0x9bd0dce3, 0x15c1, 0x4104, 0x82, 0x3f, 0x35, 0x80, 0x97, 0x00, 0x49, 0xcb | EFI\_IPSEC\_CONFIG PROTOCOL. RegisterDataNotify() - RegisterDataNotify()returns EFI\_SUCCESS with valid DataType/Event. | Call RegisterDataNotify()with valid DataType/Event. The return status should be EFI\_SUCCESS. |
| 5.25.7.4.4 | 0x53fe8163, 0xb212, 0x4c7e, 0x88, 0xa0, 0xe9, 0x90, 0x0a, 0x10, 0x20, 0x75 | EFI\_IPSEC\_CONFIG PROTOCOL. RegisterDataNotify() - RegisterDataNotify()returns EFI\_ ACCESS\_DENIED with valid DataType/Event. | Call RegisterDataNotify()with valid DataType/Event. The return status should be EFI\_ACCESS\_DENIED. |
| 5.25.7.4.5 | 0xe3ef592d, 0xb247, 0x417f, 0xad, 0x54, 0x4e, 0xfc, 0x0b, 0x7a, 0x03, 0x02 | EFI\_IPSEC\_CONFIG PROTOCOL. RegisterDataNotify() - RegisterDataNotify()returns EFI\_SUCCESS with valid DataType/Event. | Call RegisterDataNotify()with valid DataType/Event. The return status should be EFI\_SUCCESS. |

### UnregisterDataNotify ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.7.5.1 | 0x4fd58448, 0x8d87, 0x4bd0, 0xbf, 0xd1, 0xe0, 0xa5, 0x7a, 0x70, 0xce, 0x0c | EFI\_IPSEC\_CONFIG PROTOCOL. UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_INVALID\_PARAMETER with **NULL Event**. | Call UnregisterDataNotify()with **NULL Event**. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.25.7.5.2 | 0x12dd249e, 0xa481, 0x4a9a, 0x87, 0x45, 0xa9, 0xfd, 0x26, 0xac, 0xb1, 0xc8 | EFI\_IPSEC\_CONFIG PROTOCOL. UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_UNSUPPORTED with invalid **DataType**(>2). | Call UnregisterDataNotify()with invalid **DataType**(>2). The return status should be EFI\_UNSUPPORTED. |
| 5.25.7.5.3 | 0xa561620c, 0xfc80, 0x478d, 0xab, 0x8c, 0x2c, 0xdb, 0xc8, 0x47, 0x46, 0xc4 | EFI\_IPSEC\_CONFIG PROTOCOL. UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_NOT\_FOUND with valid DataType/Event. | Call UnregisterDataNotify()with valid DataType/Event. The return status should be EFI\_NOT\_FOUND. |
| 5.25.7.5.4 | 0x3053b6d9, 0xa5ba, 0x41c1, 0xad, 0x8f, 0x49, 0xf3, 0x37, 0x9f, 0x90, 0x55 | EFI\_IPSEC\_CONFIG PROTOCOL. UnregisterDataNotify() - UnregisterDataNotify()returns EFI\_SUCCESS with valid DataType/Event. | Call UnregisterDataNotify()with valid DataType/Event. The return status should be EFI\_SUCCESS. |
| 5.25.7.5.5 | 0xa829c13e, 0x551d, 0x443e, 0xaf, 0xa0, 0x1d, 0x8d, 0x0a, 0xea, 0x61, 0x98 | EFI\_IPSEC\_CONFIG PROTOCOL. UnregisterDataNotify() - UnregisterDataNotify()returnsEFI\_NOT\_FOUND with valid DataType/Event. | Call UnregisterDataNotify()with valid DataType/Event. The return status should be EFI\_NOT\_FOUND. |

## EFI\_IPSEC2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_IPSEC2\_PROTOCOL Section.

### ProcessExt()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.25.8.1.1 | 0x5de601fb, 0xc3c4, 0x4bff, 0x89, 0x3e, 0xdd, 0x40, 0x67, 0xd1, 0xe1, 0x6b | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_INVALID\_PARAMETER with NULL OptionsBuffer Input | 1. Call ProcessExt() with NULL OptionsBuffer Input. 2.The return code should be EFI\_INVALID\_PARAMETER |
| 5.25.8.1.2 | 0xd7cf3852, 0xcb7c, 0x4f68, 0x9b, 0x28, 0x56, 0x64, 0x72, 0xbe, 0xe3, 0x3d | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_INVALID\_PARAMETER with NULL OptionsLengthInput | 1. Call ProcessExt() with NULL OptionsLength Input. 2. The return code should be EFI\_INVALID\_PARAMETER |
| 5.25.8.1.3 | 0xf33aeb54, 0xe1be, 0x4541, 0xac, 0x79, 0x4e, 0xc1, 0xbc, 0x23, 0x87, 0x2b | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt()returns EFI\_INVALID\_PARAMETER with NULL FragmentTable Input | 1. Call ProcessExt() with Null FragmentTable Input. 2.The return code should be EFI\_INVALID\_PARAMETER |
| 5.25.8.1.4 | 0x861f3f9, 0x4361, 0x4a23, 0x98, 0x41, 0xf0, 0x2d, 0x14, 0x97, 0x33, 0xb6 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_INVALID\_PARAMETER with NULL **FragmentCount** Input | 1. Call ProcessExt() with NULL FragmentCount Input. 2. The return code should be EFI\_INVALID\_PARAMETER |
| 5.25.8.1.5 | 0x2b45f62a, 0xb9f, 0x473d, 0xbb, 0x5f, 0xcf, 0x59, 0x35, 0xed, 0xae, 0x4a | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode OutBound Call to do IP4 IPSEC with Encrypt Algorithm {SHA1HMAC, 3DESCBC} | 1. Call ProcessExt()in Transport Mode OutBound Call to do IP4 IPSEC with Encrypt Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS |
| 5.25.8.1.6 | 0xd486fd03, 0x7888, 0x42ed, 0x8f, 0xdd, 0xc5, 0xb, 0x40, 0xae, 0x25, 0xd7 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC} and check if Packet Header content is intact | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS and Packet Header content is intact. |
| 5.25.8.1.7 | 0xfd4a5c6f, 0x9072, 0x463a, 0xb6, 0x5, 0x80, 0x72, 0x80, 0x14, 0x13, 0xc9 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt()returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}. Check if Packet Payload Content is intact | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS and Packet Payload Content is intact. |
| 5.25.8.1.8 | 0xbcddcd9a, 0xc0d9, 0x450c, 0xbc, 0xdb, 0xe0, 0xeb, 0x1c, 0xb7, 0x98, 0x3d | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Transport Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC} | 1.Call ProcessExt() in Transport Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC}  2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.9 | 0xd89ad072, 0xfd5e, 0x42af, 0x83, 0x4a, 0xf2, 0xde, 0xcb, 0xfd, 0x9, 0x2d | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. Check if Packet Header content is intact | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should beEFI\_SUCCESS and Packet Header content is intact |
| 5.25.8.1.10 | 0x530369c, 0xaf77, 0x4064, 0xbc, 0xc1, 0x70, 0x68, 0x31, 0x4, 0x76, 0x94 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. Check if Packet Header content is intact | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS and Packet Header content is intact |
| 5.25.8.1.11 | 0x6d729b2d, 0x1524, 0x49ae, 0xb6, 0xb9, 0xfa, 0xee, 0x59, 0x51, 0xe1, 0x61 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Tunnel Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, 3DESCBC} | 1.Call ProcessExt() in Tunnel Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.12 | 0x79eba4f0, 0xcfd0, 0x42fa, 0xb7, 0x94, 0x21, 0xa2, 0xd9, 0xac, 0xfa, 0x34 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}. Check Returned Packet Header is set ZERO | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS and Returned Packet Header is set ZERO. |
| 5.25.8.1.13 | 0xd23154b3, 0xbe46, 0x4924, 0x86, 0xfa, 0x1b, 0x16, 0x25, 0x24, 0xfe, 0xc6 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}. Check IP4 Packet InnerHeader is correct. | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESSand IP4 Packet InnerHeader is correct. |
| 5.25.8.1.14 | 0xf5503af0, 0x8305, 0x40ce, 0x88, 0xf3, 0x29, 0x1a, 0xe, 0x32, 0x5b, 0x9d | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}. Check IP4 Packet PayLoad is intact. | 1.Call **ProcessExt()** in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, 3DESCBC}. 2.The return code should be EFI\_SUCCESS and Check IP4 Packet PayLoad is intact. |
| 5.25.8.1.15 | 0x123fa8ee, 0xa9ff, 0x4fa3, 0x92, 0xef, 0x5c, 0x31, 0x60, 0x8c, 0x9e, 0x65 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC} | 1.Call **ProcessExt()** in Tunnel Mode OutBound Call to do IP4 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC} 2.The return code should be **EFI\_SUCCESS**. |
| 5.25.8.1.16 | 0xbb52fb61, 0xdba9, 0x45b0, 0x9e, 0xb4, 0x2b, 0xfa, 0x1e, 0xa3, 0xa6, 0xde | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. Check Returned Packet Header is set ZERO | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. 2.The return code should be EFI\_SUCCESS & Returned Packet Header should be set ZERO. |
| 5.25.8.1.17 | 0x6fc08962, 0xcf2, 0x445b, 0x9f, 0x54, 0x59, 0x12, 0x79, 0xc3, 0xd9, 0x56 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. Check IP4 Packet InnerHeader is correct | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. 2.The return code should be EFI\_SUCCESS & IP4 Packet InnerHeader is correct. |
| 5.25.8.1.18 | 0x16dc1d54, 0x755b, 0x482b, 0xa2, 0xca, 0x9d, 0xce, 0xf7, 0xf, 0xa8, 0x8b | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in IPSEC Encrypt & Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC} and Check IP4 Packet PayLoad is intact | 1.Call **ProcessExt()** in Tunnel Mode IPSEC InBound to Decrypt IP4 packet Algorithm {SHA1HMAC, AESCBC}. 2.The return code should be EFI\_SUCCESS & IP4 Packet PayLoad is intact. |
| 5.25.8.1.19 | 0x5c8f633, 0xea97, 0x4c28, 0xb6, 0xf6, 0x4a, 0xa3, 0x8, 0x7c, 0x9b, 0x52 | **E**FI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Transport Mode OutBound Call to do IPSEC IP6 Packet Encrypt Algorithm {SHA1HMAC, 3DESCBC} | 1.Call ProcessExt() in Transport Mode OutBound Call to do IPSEC IP6 Packet Encrypt Algorithm {SHA1HMAC, 3DESCBC}. 2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.20 | 0x25181e14, 0xb84b, 0x4aae, 0x89, 0xdd, 0x4a, 0xe, 0xe0, 0x27, 0xca, 0xc1 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC IP6 InBound to Decrypt Algorithm {SHA1HMAC, 3DESCBC}. Check if Packet Header content is intact | 1.Call **ProcessExt()** in Transport Mode IPSEC IP6 InBound to Decrypt Algorithm {SHA1HMAC, 3DESCBC}. 2.The return code should be EFI\_SUCCESS & Packet Header content is intact. |
| 5.25.8.1.21 | 0xf6ee80b9, 0x622c, 0x4306, 0xae, 0xd2, 0xb6, 0xf8, 0x42, 0x87, 0x92, 0x11 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}. Check if Packet Payload Content is intact | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS & Packet Payload Content is intact. |
| 5.25.8.1.22 | 0xf251fd3b, 0xf026, 0x4040, 0x8d, 0x8, 0xc9, 0x22, 0x22, 0xaf, 0xe9, 0xbb | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode OutBound Call to do IPSEC IP6 packet Encrypt Algorithm {SHA1HMAC, AESCBC}. | 1.Call ProcessExt() in Transport Mode OutBound Call to do IPSEC IP6 packet Encrypt Algorithm {SHA1HMAC, AESCBC}. 2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.23 | 0x5b865ed2, 0x95a6, 0x47bf, 0xbb, 0x35, 0x1a, 0x3b, 0x5, 0x3, 0xb6, 0x80 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returnsEFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. Check if Packet Header content is intact. | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS& Packet Header content is intact. |
| 5.25.8.1.24 | 0xed35f3c3, 0x2222, 0x4d4c, 0xb1, 0x16, 0x4c, 0x38, 0x25, 0x29, 0x88, 0x4f | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. Check if Packet Payload Content is intact. | 1.Call ProcessExt() in Transport Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. 2.The return code should be EFI\_SUCCESS & Packet Payload Content is intact. |
| 5.25.8.1.25 | 0xb20f0b, 0xdce8, 0x4c22, 0x98, 0x20, 0xcc, 0xb6, 0x5a, 0x40, 0x14, 0xbe | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode OutBound Call to do IP6 IPSEC Tunnel Mode Encrypt Algorithm {SHA1HMAC, 3DESCBC}. | 1.Call ProcessExt() in Tunnel Mode OutBound to do IP6 IPSEC Tunnel Mode Encrypt Algorithm {SHA1HMAC, 3DESCBC}. 2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.26 | 0x52ae482f, 0x4882, 0x4945, 0x88, 0xfd, 0x75, 0xe5, 0x8a, 0x14, 0x4a, 0x4f | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode IPSEC Tunnel Mode InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}. Check IP6 Packet InnerHeader is correct. | 1.Call ProcessExt() in Tunnel Mode IPSEC Tunnel Mode InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}. 2.The return code should be EFI\_SUCCESS & IP6 Packet InnerHeader is correct. |
| 5.25.8.1.27 | 0xead97223, 0x1dca, 0x4895, 0xa5, 0x9a, 0xc0, 0x3e, 0x8, 0x80, 0x61, 0x54 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in IPSEC Tunnel Mode InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}. Check IP6 Packet PayLoad is intact. | 1.Call ProcessExt() in IPSEC Tunnel Mode InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, 3DESCBC}.  2.The return code should be EFI\_SUCCESS & IP6 Packet PayLoad is intact. |
| 5.25.8.1.28 | 0xd4f53e8f, 0xe53, 0x44ae, 0xbc, 0xef, 0x7e, 0x28, 0xd2, 0x85, 0xc6, 0xf | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt()returns EFI\_SUCCESS in Tunnel Mode OutBound Call to do IP6 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC}. | 1.Call ProcessExt() in Tunnel Mode OutBound Call to do IP6 IPSEC Encrypt Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS. |
| 5.25.8.1.29 | 0xd96aaf71, 0xca6f, 0x4cc7, 0x89, 0xf4, 0x99, 0x1a, 0xb1, 0xb5, 0x22, 0xe9 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. Check Returned Packet Header is set ZERO. | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS & Returned Packet Header is set ZERO. |
| 5.25.8.1.30 | 0xc0ca611c, 0x97bb, 0x4c4e, 0x90, 0x84, 0xff, 0x90, 0x94, 0x20, 0xd9, 0x6e | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt()returnsEFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. Check IP6 Packet InnerHeader is correct. | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS & IP6 Packet InnerHeader is correct. |
| 5.25.8.1.31 | 0x6098f2af, 0xe85c, 0x4201, 0xbb, 0xc9, 0xf9, 0x10, 0x2b, 0xcb, 0x94, 0xe7 | EFI\_IPSEC2\_PROTOCOL. ProcessExt–ProcessExt() returns EFI\_SUCCESS in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}. Check IP6 Packet PayLoad is intact. | 1.Call ProcessExt() in Tunnel Mode IPSEC InBound to Decrypt IP6 packet Algorithm {SHA1HMAC, AESCBC}.  2.The return code should be EFI\_SUCCESS & IP6 Packet PayLoad is intact. |

# Network Protocols UDP and MTFTP

## EFI\_UDP4\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_UDP4\_PROTOCOL Section.

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.1.1.1 | 0xfc4d1b7b, 0x4abd, 0x47d3, 0xbd, 0x64, 0xe0, 0x98, 0x86, 0x29, 0x73, 0xec | EFI\_UDP4\_PROTOCOL.GetModeData() **–** invokes GetModeData() to get all mode data before configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**GetModeData() to get all mode data. The return status should be EFI\_NOT\_STARTED.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.2 | 0x15c32ffb, 0x2cdf, 0x4b5b,  0xab, 0x3e, 0x5a, 0xed, 0x7f, 0xc5, 0x25, 0xe7 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_UDP4\_PROTOCOL mode data before configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_UDP4\_PROTOCOL mode data. The return status should be EFI\_NOT\_STARTED.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.3 | 0xcdcd0bb9, 0x455a, 0x4525, 0xb8, 0xf2, 0x0e, 0xe0, 0x4b, 0xaa, 0x80, 0x14 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_IP4\_PROTOCOL mode data before configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_IP4\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.4 | 0xcc19f3f7, 0x80b9, 0x46e8, 0xb2, 0xaa, 0xb6, 0xdd, 0x81, 0x66, 0xd8, 0x93 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_MANAGED\_NETWORK\_PROTOCOL mode data before configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_MANAGED\_NETWORK\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.5 | 0xd291d441, 0x2d3b, 0x4575, 0xa3, 0xf3, 0x05, 0xe1, 0x5a, 0x34, 0x62, 0xc0 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_SIMPLE\_NETWORK\_PROTOCOL mode data before configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_SIMPLE\_NETWORK\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.6 | 0xf28448b0, 0xd525, 0x40f7, 0x92, 0xf1, 0xed, 0x6d, 0xaa, 0x59, 0xe4, 0xb4 | EFI\_UDP4\_PROTOCOL.GetModeData() **–** invokes GetModeData() to get all mode data after configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure() to configure the new instance.  3 Call EFI\_UDP4\_PROTOCOL**.**GetModeData() to get all mode data. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.7 | 0x182f712c, 0x1b2a, 0x4850, 0xbd, 0x78, 0xa6, 0xe6, 0xb6, 0xf6, 0x73, 0x54 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_UDP4\_PROTOCOL mode data after configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure() to configure the new instance.  3 Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_UDP4\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.8 | 0x8aa1ebeb, 0xb735, 0x421e, 0x92, 0x1d, 0xf8, 0x76, 0xd2, 0xae, 0xdf, 0x1c | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_IP4\_PROTOCOL mode data after configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure() to configure the new instance.  3 Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_IP4\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.9 | 0xba1c7d49, 0x4490, 0x42e1, 0xa8, 0x92, 0xc3, 0x61, 0xef, 0x5d, 0x94, 0x79 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_MANAGED\_NETWORK\_PROTOCOL mode data after configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure() to configure the new instance.  3 Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_MANAGED\_NETWORK\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.1.10 | 0x5df96df3, 0x6404, 0x4486, 0xb6, 0xb7, 0x00, 0xb9, 0x2d, 0x81, 0x21, 0x26 | EFI\_UDP4\_PROTOCOL.GetModeData() – invokes GetModeData() to get EFI\_SIMPLE\_NETWORK\_PROTOCOL mode data after configuration. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure() to configure the new instance.  3 Call EFI\_UDP4\_PROTOCOL.GetModeData() to get EFI\_SIMPLE\_NETWORK\_PROTOCOL mode data. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.1.2.1 | 0x13a8fd73, 0x6b66, 0x4418, 0x85, 0x4c, 0xda, 0x63, 0xff, 0x42, 0x75, 0x4f | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with a StationAddressvalue of a multicast address. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with a StationAddressvalue of a multicast address. The return status should be EFI\_INVALID\_PARAMETER.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.2 | 0xd8b6f8bd, 0x1ba8, 0x48c1, 0x90, 0x30, 0x5a, 0x37, 0x18, 0x0c, 0x06, 0x01 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with an invalid SubnetMask value. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with an invalid SubnetMask value. The return status should be EFI\_INVALID\_PARAMETER.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.3 | 0xb4a98a30, 0x35e9, 0x4460, 0x81, 0x5d, 0x42, 0x33, 0x7c, 0x17, 0x6c, 0x44 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *AcceptPromiscuous*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure() to reconfigure the AcceptPromiscuous. The return status should be EFI\_ALREADY\_STARTED.  4. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.23 | 0x349fc21a, 0x37db, 0x406e, 0xbd, 0xc8, 0xf6, 0x12, 0x2c, 0xa9, 0xe9, 0xfc | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *RemoteAddress* being a multicast address.The return status should be EFI\_INVALID\_PARAMETER. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()with the parameter *RemoteAddress* being a multicast address.The return status should be EFI\_INVALID\_PARAMETER.  3. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL**.**DestroyChild**()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.4 | 0xa36f507b, 0x7526, 0x441e, 0xaf, 0x48, 0x4a, 0xc4, 0xf4, 0x31, 0xe6, 0xbd | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *AcceptBroadcast* before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the AcceptBroadcast. The return status should be EFI\_ALREADY\_STARTED.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.5 | 0xac4cf23e, 0x0c5e, 0x4299, 0xb4, 0x29, 0xc8, 0x83, 0xe7, 0xe6, 0x73, 0xb8 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *AcceptAnyPort* before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the AcceptAnyPort. The return status should be EFI\_ALREADY\_STARTED.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.6 | 0xc08bfbab, 0x0cde, 0x4332, 0x86, 0x86, 0x42, 0x52, 0xdc, 0x50, 0x48, 0xcc | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *AllowDuplicatePort* before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the AllowDuplicatePort. The return status should be EFI\_ALREADY\_STARTED.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.7 | 0x66544950, 0x16ff, 0x4854, 0x9c, 0x09, 0x45, 0x84, 0x29, 0x2d, 0x7c, 0x51 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *UseDefaultAddress* before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the UseDefaultAddress. The return status should be EFI\_ALREADY\_STARTED.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.24 | 0xee87c393, 0xf728, 0x46b9, 0xb1, 0x31, 0x58, 0xc3, 0xdd, 0x5e, 0x18, 0x34 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure()when UdpConfigData*.*AllowDuplicatePort is FALSE and UdpConfigData.StationPort is already used by other instance. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()when UdpConfigData.AllowDuplicatePort is FALSE and UdpConfigData.StationPort is already used by other instance. The return status should be EFI\_ACCESS\_DENIED**.**  3. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.8 | 0xbe8ab604, 0x1c84, 0x4a80, 0xb6, 0x9a, 0x43, 0xfd, 0xf8, 0x94, 0x5e, 0xf2 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to test the function of transmitting a packet. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()to transmit a packet and verify if it is successful.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.9 | 0xddbba5ba, 0x678b, 0x426e, 0x87, 0xa8, 0x8c, 0x1b, 0xde, 0x5b, 0x36, 0x96 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to test that function of receiving a packet. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive a packet and verify if it is successful.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.10 | 0xefe91110, 0x4e6e, 0x4e07, 0xa7, 0xec, 0x09, 0x74, 0xb7, 0xe3, 0x03, 0x87 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *TypeOfService*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the *TypeOfService*. The return status should be EFI\_SUCCESS.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.11 | 0xc6f4f65f, 0x9a98, 0x4d6e, 0xaf, 0xae, 0xe9, 0x87, 0xf9, 0xb4, 0xb4, 0x9c | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *TimeToLive*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the *TimeToLive*. The return status should be EFI\_SUCCESS.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.12 | 0xe6313038, 0x43f2, 0x4cbe, 0xb8, 0x61, 0xa4, 0x1b, 0x6e, 0x3d, 0x58, 0x91 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *DoNotFragment*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the *DoNotFragment*. The return status should be EFI\_SUCCESS.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.13 | 0x2c81abe0, 0xcf2a, 0x42d0, 0xb4, 0xe3, 0x59, 0x9e, 0x9e, 0x2f, 0x60, 0x6a | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *ReceiveTimeout*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the *ReceiveTimeout*. The return status should be EFI\_SUCCESS.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.14 | 0x798d02e5, 0x0810, 0x462c, 0x8f, 0xba, 0xe9, 0x32, 0xfb, 0x9d, 0x84, 0x85 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to reconfigure the *TransmitTimeout*before the instance has been stopped or reset. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Configure()to reconfigure the *TransmitTimeout*. The return status should be EFI\_SUCCESS.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.15 | 0xbe426d4c, 0x8242, 0x4a4e, 0x8d, 0x7d, 0x58, 0xe0, 0x93, 0x92, 0x77, 0x7c | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptBroadcast* set to **FALSE**. Check that it can not receive broadcast packet. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptBroadcast* set to **FALSE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check it can not receive broadcast packet.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.16 | 0xb50d8d35, 0xc0c9, 0x4955, 0x94, 0x13, 0xf7, 0x0a, 0x39, 0x2d, 0xa3, 0x0f | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptBroadcast* set to **TRUE**. Check that it can receive broadcast packet successfully. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptBroadcast* set to **TRUE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check that it can receive broadcast packet successfully.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.17 | 0x4881a297, 0x3afc, 0x4324, 0xa5, 0x8f, 0xcb, 0x02, 0x64, 0xe5, 0xbd, 0x5e | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptPromiscuous*set to **FALSE**. Check that it can not receive packet to other unicast MACs than its own. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptPromiscuous*set to **FALSE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check that it can not receive packet to other unicast MACs than its own.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.18 | 0x066131ca, 0xa6e4, 0x478b, 0x9a, 0xca, 0x05, 0x93, 0xfc, 0xc7, 0xfd, 0x4b | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptPromiscuous*set to **TRUE**. Check that it can receive packet to other unicast MACs than its own. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptPromiscuous*set to **TRUE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check that it can receive packet to other unicast MACs than its own.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.19 | 0x2867badf, 0x1696, 0x40a1, 0xb8, 0x40, 0x00, 0x4c, 0x79, 0xed, 0xc7, 0xf3 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptAnyPort*set to **FALSE**. Check that it can not receive packet to other port. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptAnyPort*set to **TRUE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check that it can not receive packet to other port.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.20 | 0x17d43b3d, 0x9187, 0x4515, 0x83, 0x94, 0x13, 0xdf, 0xf9, 0x35, 0xf4, 0x9e | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() with the parameter *AcceptAnyPort*set to **TRUE**. Check that it can receive packet to other port. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *AcceptAnyPort*set to **TRUE**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()and check that it can receive packet to other port.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.21 | 0x08c86675, 0x7018, 0x418d, 0xb4, 0x3d, 0x36, 0xdc, 0xc5, 0x8b, 0xdc, 0x88 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to check if the parameter *TypeOfService*can effect the sending out of the packet. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *TypeOfService*set to **1**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()and check that it can transmit the packet successfully.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.2.22 | 0x4fb07a34, 0xc2ab, 0x40c1, 0x8a, 0x26, 0x42, 0x6d, 0x54, 0x32, 0x3a, 0xa4 | EFI\_UDP4\_PROTOCOL. Configure() **–** invokes Configure() to check if the parameter *TimeToLive*can effect the sending out of the packet . | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Configure()to configure the new EFI\_UDP4\_PROTOCOL instance with the parameter *TimeToLive*set to **111**. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()and check that it can transmit the packet successfully.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Groups()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.3.1 | 0x90ff05c9, 0xea78, 0x4359, 0x95, 0xc0, 0x4d, 0x09, 0x7b, 0xa2, 0xcf, 0x14 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() with a JoinFlag value of TRUE and a MulticastAddress value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() with a *JoinFlag* value of **TRUE** and a *MulticastAddress* value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.2 | 0x4e1cabfe, 0x2dda, 0x4e0c, 0xbd, 0xbc, 0x5f, 0xfc, 0x77, 0x42, 0xf8, 0x0f | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() with a *JoinFlag* value of **TRUE** and a *\*MulticastAddress*value of an invalid multicast address. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() with a *JoinFlag* value of **TRUE** and a *\*MulticastAddress*value of an invalid multicast address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.3 | 0xf1018cf8, 0xd8ba, 0x4fa1, 0x82, 0xec, 0x64, 0x52, 0x06, 0x9a, 0x4a, 0xa7 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() when the group address is not in the group table ,while *JoinFlag* is **FALSE**. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Groups() to leave an group address which is not in the group table The return status should be **EFI\_NOT\_FOUND**.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.8 | 0x86b5bd38, 0x04ae, 0x4a44, 0xbe, 0x0d, 0x1d, 0x7f, 0x32, 0x0f, 0x46, 0xf8 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() when the EFI UDPv4 protocol instance has not been started. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.Groups()**when the EFI UDPv4 protocol instance has not been started.  3. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.9 | 0xde218295, 0x6dec, 0x4c7f, 0x8c, 0x02, 0xc9, 0x46, 0xea, 0x64, 0x59, 0xd6 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() when the group address is already in the group table when *JoinFlag* is **FALSE.** | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() when the group address is already in the group table when *JoinFlag* is **FALSE.**The return status should be **EFI\_ALREADY\_STARTED**.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.4 | 0x101a001f, 0x547e, 0x4e1b, 0xae, 0xf6, 0x7d, 0x35, 0x27, 0xb1, 0x23, 0x6f | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() to join a group address and call Receive() to check that it can receive UDP packets to the group IP. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join a group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Receive() to receive the packets and check that it is successful.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.5 | 0x22561bd0, 0x47ba, 0x4240, 0x96, 0x3a, 0x2a, 0xaf, 0x83, 0x5b, 0xda, 0x72 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() to join two multicast group address and call Receive() to check if it can receive UDP packets to either of the groups. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join two group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Receive() to check it can receive UDP packets to either of the groups.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.6 | 0x7fcefed3, 0x6e40, 0x4ed8, 0xa4, 0x41, 0x83, 0x7f, 0x5e, 0x13, 0x06, 0x62 | EFI\_UDP4\_PROTOCOL.Groups() – invokes Groups() to leave a specified group. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join a specified group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Groups() to leave the group joined in step 3. The return status should be EFI\_SUCCESS.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.3.7 | 0x06e97222, 0x1858, 0x469a, 0xa8, 0x19, 0x25, 0xd7, 0x1a, 0x15, 0xc3, 0x68 | EFI\_UDP4\_PROTOCOL.Groups() **–** invokes Groups() to leave all multicast groups with a *MulticastAddress* value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Groups() to join two group address into the group table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Groups() to leave all multicast groups with a *MulticastAddress* value of NULL. The return status should be EFI\_SUCCESS.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Routes()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.4.1 | 0xedcd02f7, 0x3b78, 0x4186, 0x9d, 0x14, 0x52, 0x92, 0x6b, 0x85, 0x73, 0x08 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() with a SubnetAddress value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()with a SubnetAddress value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.2 | 0xf0bedea5, 0x05bf, 0x4ab9, 0x89, 0xb3, 0xdf, 0xd9, 0x8e, 0x08, 0xe4, 0xdd | EFI\_UDP4\_PROTOCOL.Routes() – invokes Routes() with a SubnetMask value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()with a SubnetMaskvalue of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.3 | 0x377694cc, 0x9254, 0x4197, 0x92, 0x6c, 0x26, 0x58, 0x5c, 0xde, 0xc9, 0x4c | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() with a GatewayAddressvalue of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()with a GatewayAddressvalue of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.4 | 0xc694ffe9, 0xef16, 0x47f4, 0x86, 0x89, 0x34, 0x6c, 0x80, 0xb1, 0x59, 0x54 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() with a *\**SubnetMaskvalue of an invalid subnet mask. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()with a *\**SubnetMaskvalue of an invalid subnet mask. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.5 | 0x601c9a17, 0x1da6, 0x45bc, 0xbb, 0xdc, 0xf8, 0x92, 0xdc, 0xe3, 0x43, 0x04 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() with a *\**GatewayAddressvalue of an invalid unicast IP address. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()with a *\**GatewayAddressvalue of an invalid unicast IP address. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.6 | 0xab7d87d5, 0x9761, 0x4877, 0x9f, 0x96, 0x42, 0xab, 0x99, 0x66, 0xd5, 0x3f | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() to delete a route which is not in the routing table. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()to delete a route which is not in the routing table. The return status should be **EFI\_NOT\_FOUND**.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.7 | 0x72569926, 0x4edb, 0x4d5b, 0xa2, 0xe5, 0x76, 0x31, 0x2f, 0xd2, 0x76, 0x74 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() to add a route that has already defined in the routing table. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()to add a route into the routing table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Routes()to add the route into the routing table which has already defined in step 3. The return status should be **EFI\_ACCESS\_DENIED**.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.10 | 0xe9ff9948, 0x9168, 0x4698, 0xa1, 0x49, 0x44, 0xef, 0x57, 0x33, 0x77, 0x20 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes()when the EFI UDPv4 Protocol instance has not been started. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()when the EFI UDPv4 Protocol instance has not been started. The return status should be **EFI\_NOT\_STARTED**.  3. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.8 | 0xae5c33be, 0x930e, 0x401b, 0x8f, 0x4d, 0x32, 0xc8, 0x95, 0xc4, 0x55, 0x48 | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() to add a route to destination IP and send a packet to it. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()to add a route into the routing table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Transmit()to send a packet to the destination IP and check that it is successful.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.4.9 | 0xd39800b9, 0xe6e6, 0x4e29, 0xab, 0xd6, 0x17, 0x7a, 0x46, 0x10, 0x51, 0x3d | EFI\_UDP4\_PROTOCOL.Routes() **–** invokes Routes() to delete a route to destination IP and check that packet can not been sent to it. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Routes()to add a route into the routing table. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Routes()to delete the route added in the step 3. The return status should be EFI\_SUCCESS.  5. Call EFI\_UDP4\_PROTOCOL**.**Transmit()to send a packet to the destination IP and check that it will be failed.  6. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Transmit()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.5.1 | 0xd793cd46, 0x574d, 0x4f5d, 0x92, 0x8a, 0x2b, 0x84, 0x7a, 0xc0, 0x77, 0xd9 | EFI\_UDP4\_PROTOCOL.Transmit() – invokes Transmit() with a Token value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.2 | 0xf8ffef65, 0x20fe, 0x4381, 0xa5, 0x46, 0x07, 0x7c, 0x5a, 0x89, 0x7b, 0x6d | EFI\_UDP4\_PROTOCOL.Transmit() – invokes Transmit() with a Token.Event value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Transmit() with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.3 | 0x157caa4e, 0xa260, 0x47a2, 0x97, 0x04, 0xd6, 0x62, 0x6c, 0xd9, 0x62, 0xf9 | EFI\_UDP4\_PROTOCOL.Transmit() – invokes Transmit() with a Token.Packet.FragmentCount value of 0. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Transmit() with a Token.Packet.FragmentCount value of 0. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.4 | 0xceebb331, 0x26c1, 0x4c6b, 0x91, 0x74, 0xb2, 0xdd, 0xda, 0xb7, 0x3a, 0x7a | EFI\_UDP4\_PROTOCOL.Transmit() – invokes Transmit() with a Token.Packet.TxData value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Transmit() with a Token.Packet.TxData value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.5 | 0xd381956d, 0x6b86, 0x48a4, 0x82, 0x56, 0x37, 0x5e, 0xa2, 0x46, 0xf6, 0xfa | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit() with a Token**.Packet.DataLength** value other than equal to the sum of fragment lengths. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with a Token**.Packet.DataLength** value other than equal to the sum of fragment lengths. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.7 | 0x7f9fc4ec, 0x756c, 0x4399, 0xa2, 0x7e, 0x2e, 0x38, 0x3a, 0xff, 0x4e, 0x7b | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with the parameter Token.Packet.TxData*.*FragmentTable[].FragmentLenth/FragmetBufferfields being invalid. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the parameter Token.Packet.TxData*.*FragmentTable*[].FragmentLenth* fields being zero. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the parameter Token.Packet.TxData*.*FragmentTable*[].FragmentBuffer* fields being NULL. The return status should be EFI\_INVALID\_PARAMETER**.**  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.8 | 0x5d755449, 0x3840, 0x4cc8, 0x9c, 0x7f, 0x3a, 0x1a, 0xf3, 0x42, 0xd2, 0x89 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being not a valid unicast IPv4 address if it is not NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being 255.255.255.255. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.9 | 0x411080da, 0x2db4, 0x415e, 0xa0, 0xf5, 0x72, 0xf4, 0x1e, 0x55, 0x38, 0xdb | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being not a valid unicast IPv4 address if it is not NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being 172.16.220.255. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.10 | 0x154ee561, 0x041a, 0x4e4b, 0x96, 0x3a, 0xfd, 0xc6, 0x4c, 0x4e, 0x3f, 0x29 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being not a valid unicast IPv4 address if it is not NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the parameter Token.Packet.TxData*.*GatewayAddress being 224.0.0.2. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.11 | 0x0161be6a, 0x75d4, 0x444b, 0xaf, 0x31, 0x78, 0xa4, 0xf0, 0x65, 0xed, 0x43 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with Token.Packet.TxData*.*UdpSessionData being not valid unicast IPv4 addresses if it is not NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the Token.Packet.TxData*.*UdpSessionData being 224.0.0.1. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.12 | 0x3315e964, 0xc1bb, 0x4984, 0xb7, 0xc3, 0xff, 0x1a, 0x94, 0xb0, 0xe9, 0xd3 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()with Token.Packet.TxData*.*UdpSessionData being not valid unicast IPv4 addresses if it is not NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the Token.Packet.TxData*.UdpSessionData* being 172.16.220.0. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.13 | 0x4206d340, 0xe096, 0x4369, 0x96, 0x32, 0x9a, 0x35, 0x27, 0xcf, 0x64, 0xce | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()when the EFI UDPv4 Protocol instance has not been started. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Transmit()when the EFI UDPv4 Protocol instance has not been started. The return status should be **EFI\_NOT\_STARTED.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.14 | 0xbd543b46, 0xcb6a, 0x4cfb, 0x80, 0x68, 0xe1, 0xaa, 0x28, 0x32, 0x43, 0x75 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()when there is no route to the destination network or address. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()when there is no route to the destination network or address. The return status should be **EFI\_NOT\_FOUND.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.15 | 0x0b3c198b, 0xfffd, 0x4dde, 0x9b, 0x1e, 0xbd, 0x5f, 0x8e, 0x70, 0xa0, 0xc2 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()when the data length is greater than the maximum UDP packet size. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()when the data length is greater than the maximum UDP packet size. The return status should be **EFI\_BAD\_BUFFER\_SIZE.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.16 | 0xae0d4495, 0xbcda, 0x4de3, 0xa4, 0xbc, 0xab, 0xed, 0xd4, 0x82, 0xdc, 0x92 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()when the length of the IP header+UDP header+data length is greater than MTU if *DoNotFragment* is **TRUE** | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit()when the length of the IP header+UDP header+data length is greater than MTU if *DoNotFragment* is **TRUE.** The return status should be **EFI\_BAD\_BUFFER\_SIZE.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.17 | 0xd983be7a, 0x33fd, 0x4308, 0x80, 0x6c, 0x00, 0x58, 0xef, 0xff, 0xe8, 0x17 | EFI\_UDP4\_PROTOCOL.Transmit() – to add a route to destination IP and send a packet to it. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Routes()to add a route.  4. Call EFI\_UDP4\_PROTOCOL.Transmit()to transmit packet.  5. Captured packet and verify.  6. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.18 | 0x71158c72, 0xa476, 0x42a8, 0x94, 0x81, 0x6d, 0xa0, 0xb8, 0xb4, 0x2c, 0xef | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit()when the *TxData.*GatewayAddress has been set | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Transmit()to transmit packet.  4. Captured packet and verify.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.5.6 | 0xc0c68374, 0x0d85, 0x4bbb, 0x8b, 0x20, 0xbd, 0x88, 0xb1, 0xb0, 0x7b, 0xd7 | EFI\_UDP4\_PROTOCOL.Transmit() **–** invokes Transmit() with the transmit completion token whose Token.Event was already in the transmit queue. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Transmit() to transmit a packet. The return status should be EFI\_SUCCESS.  4. Call EFI\_UDP4\_PROTOCOL**.**Transmit()with the same Token.Event in step 3. The return status should be **EFI\_ACCESS\_DENIED.**  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Receive()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.6.1 | 0x95bf8134, 0x5277, 0x413c, 0xbe, 0x1f, 0xf5, 0x03, 0x2b, 0x08, 0x78, 0x92 | EFI\_UDP4\_PROTOCOL.Receive() – invokes Receive() with a Token value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()with a Token value of NULL. The return status should be EFI\_INVALID\_PARAMETER**.**  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.6.2 | 0xa158c0cd, 0x496b, 0x4dfe, 0x9c, 0xe9, 0x93, 0xea, 0x76, 0x40, 0x77, 0x7a | EFI\_UDP4\_PROTOCOL.Receive() – invokes Receive() with a Token.Event value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL.Receive() with a Token.Event value of NULL. The return status should be EFI\_INVALID\_PARAMETER.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.6.3 | 0xdd8e13d5, 0x7a76, 0x4237, 0x82, 0x14, 0x79, 0x03, 0xda, 0x61, 0x92, 0x4d | EFI\_UDP4\_PROTOCOL.Receive() **–** invokes Receive()when the EFI UDPv4 Protocol instance has not been started. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()when the EFI UDPv4 Protocol instance has not been started. The return status should be **EFI\_NOT\_STARTED.**  3. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.6.4 | 0xe2a9f6b9, 0x7827, 0x474f, 0x97, 0x12, 0xc6, 0x9c, 0xad, 0xb0, 0x1c, 0x49 | EFI\_UDP4\_PROTOCOL.Receive() **–** invokes Receive()when a receive completion token with the same Token.Event was already in the receive queue. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive() at the first time the return status should be EFI\_SUCCESS**.**  3. Call EFI\_UDP4\_PROTOCOL.Receive() again the return status should be EFI\_ACCESS\_DENIED.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.6.5 | 0xa96aa0f5, 0x1c6b, 0x41cf, 0x98, 0x2f, 0xf8, 0x4f, 0x90, 0x43, 0x34, 0xb3 | EFI\_UDP4\_PROTOCOL.Receive() **–** the receiving fails because an ICMP error packet is received. | 1. Create a NETWORK unreachable packet.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive the packet. The return status should be EFI\_SUCCESS**.**  3. Verify the R\_Token.Status it should be EFI\_NETWORK\_UNREACHABLE. |
| 5.26.1.6.6 | 0x3db8e8ee, 0x6c0b, 0x43d2, 0xa5, 0xfe, 0xb2, 0x34, 0x30, 0x5c, 0x12, 0xf8 | EFI\_UDP4\_PROTOCOL.Receive() **–** the receiving fails because an ICMP error packet is received. | 1. Create a HOST unreachable packet.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive the packet. The return status should be EFI\_SUCCESS**.**  3. Verify the R\_Token.Status it should be EFI\_HOST\_UNREACHABLE. |
| 5.26.1.6.7 | 0x26f533d1, 0xb63e, 0x4997, 0xbd, 0x2d, 0x68, 0x52, 0xc8, 0x0c, 0xe3, 0x71 | EFI\_UDP4\_PROTOCOL.Receive() **–** the receiving fails because an ICMP error packet is received. | 1. Create a PROTOCOL error packet.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive the packet. The return status should be EFI\_SUCCESS**.**  3. Verify the R\_Token.Status it should be EFI\_PROTOCOL\_UNREACHABLE. |
| 5.26.1.6.8 | 0xc982e2f7, 0xdf6f, 0x4a7b, 0x9d, 0x4a, 0x25, 0x87, 0x0c, 0x80, 0xb7, 0x9b | EFI\_UDP4\_PROTOCOL.Receive() **–** the receiving fails because an ICMP error packet is received. | 1. Create a PORT unreachable packet.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive the packet. The return status should be EFI\_SUCCESS**.**  3. Verify the R\_Token.Status it should be EFI\_PORT\_UNREACHABLE. |
| 5.26.1.6.9 | 0x0685647b, 0xeee8, 0x4756, 0xbf, 0xea, 0x72, 0xc6, 0xb5, 0xff, 0x98, 0xb6 | EFI\_UDP4\_PROTOCOL.Receive() **–** the receiving fails because an ICMP error packet is received. | 1. Create a TCMP error packet.  2. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive the packet. The return status should be EFI\_SUCCESS**.**  3. Verify the R\_Token.Status it should be EFI\_ICMP\_ERROR. |

### Cancel()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.7.1 | 0xb4ca8ee0, 0x2b8b, 0x41b3, 0x97, 0x3c, 0x2f, 0x2b, 0x05, 0x07, 0x48, 0x17 | EFI\_UDP4\_PROTOCOL.Cancel() **–** invokes Cancel()to cancel a receive request while it has been completed. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive a packet and check that it is successful.  4. Call EFI\_UDP4\_PROTOCOL**.**Cancel() to cancel the receive request while the token has been completed. The return status should be **EFI\_NOT\_FOUND**.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.7.2 | 0x46a1ec38, 0x0183, 0x485a, 0xa2, 0xa5, 0x50, 0x4e, 0x3b, 0xdb, 0x1b, 0x53 | EFI\_UDP4\_PROTOCOL.Cancel() **–** invokes Cancel()to cancel a receive request. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()to receive a packet.  4. Call EFI\_UDP4\_PROTOCOL**.**Cancel() to cancel the receive request in step 3. Then check the packet sent to EUT will not be captured.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |
| 5.26.1.7.3 | 0x6fff20b8, 0x55cd, 0x4610, 0xb3, 0xbe, 0xaa, 0x19, 0x5f, 0x29, 0x10, 0x66 | EFI\_UDP4\_PROTOCOL.Cancel() **–** invokes Cancel()to cancel all pending tokens with the parameter Token set to NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance.  3. Call EFI\_UDP4\_PROTOCOL**.**Receive()to set two requests in the receive queue.  4. Call EFI\_UDP4\_PROTOCOL**.**Cancel() with the parameter Token set to NULL. Then check that no packet sent to EUT will be captured.  5. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### Poll()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.8.1 | 0x18e54eae, 0x4d67, 0x468c, 0xb6, 0x0d, 0x81, 0x83, 0xd4, 0x07, 0xfe, 0xe8 | EFI\_UDP4\_PROTOCOL.Poll() **–** invokes **Poll()** when the instance has not been started. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_PROTOCOL.Configure() to configure the new EFI\_UDP4\_PROTOCOL instance. Then call EFI\_IP4\_PROTOCOL.Configure() again with an IpConfigData value of NULL.  3. Call EFI\_IP4\_PROTOCOL.**Poll()** for incoming data packets and processing outgoing data packets. The return status should be **EFI\_NOT\_STARTED**.  4. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### CreateChild()

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| Number | GUID | Assertion | Test Description |
| 5.26.1.9.1 | 0xf88eaa0c, 0x764e, 0x45e0, 0x95, 0x86, 0xa6, 0x7f, 0x7d, 0x6f, 0xb2, 0x82 | EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – invokes CreateChild() with a ChildHandle value of NULL. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child with a ChildHandle value of NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.1.9.2 | 0x4dedef14, 0xbcba, 0x4b26, 0xbc, 0xc8, 0xb4, 0x7f, 0x8c, 0x08, 0xc9, 0x9d | EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – invokes CreateChild() to create three instances. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create three EFI\_UDP4\_PROTOCOL instances and configure them. The return status should be EFI\_SUCCESS.  2. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. |

### DestroyChild()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.1.10.1 | 0x0ff5f5a1, 0x4d29, 0x40ae, 0xa4, 0xef, 0x02, 0x3b, 0xd3, 0xb8, 0x2e, 0x8c | EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() – invokes DestroyChild() with an invalid ChildHandle value. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()with an invalid ChildHandle value. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.1.10.3 | 0x9d888685, 0xfde7, 0x4832, 0xbc, 0x95, 0x03, 0xd6, 0x44, 0xc6, 0x29, 0xc5 | EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() – invokes DestroyChild() to destroy an existed child twice. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_UDP4\_PROTOCOL child.  2. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created EFI\_UDP4\_PROTOCOL. The return status should be EFI\_SUCCESS.  2. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() again. The return status should be EFI\_UNSUPPORTED. |
| 5.26.1.10.2 | 0x1ff85dcf, 0x885e, 0x42bf, 0x80, 0xd8, 0xf8, 0x4a, 0xaf, 0x11, 0xeb, 0x77 | EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() – invokes DestroyChild() to destroy a child. | 1. Call EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a EFI\_UDP4\_PROTOCOL child. The return status should be EFI\_SUCCESS.  2. Call **EFI\_UDP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()** to destroy the created EFI\_UDP4\_PROTOCOL child and clean up the environment. The return status should be EFI\_SUCCESS. |

## 

## EFI\_MTFTP4\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_MTFTP4\_PROTOCOL Section.

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.1.1 | 0xf44c5295, 0x599e, 0x48bc, 0xbb, 0x67, 0xed, 0x9a, 0x21, 0x5b, 0xa9, 0xb1 | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_INVALID\_PARAMETER when creating Child 1 again. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create the same child again.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.1.5 | 0x5e30aa7c,0xd5f6,  0x4cac,  0xb2,0x54,  0xbf,0xdf,  0x16,0x3b,  0x34,0xfc | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() – invokes CreateChild() with ChildHandle being NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild()with ChildHandle being NULL. The return status must be EFI\_INVALID\_PARAMETER. |
| 5.26.2.1.2 | 0xca3fb64a, 0xd149, 0x4f76, 0x91, 0x45, 0xe4, 0xf6, 0xcc, 0xe6, 0x5b, 0x27 | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_SUCCESS when creating child1. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle1.  The return status must be FI\_SUCCESS. |
| 5.26.2.1.3 | 0xb07ae013, 0x0d83, 0x49c3, 0x99, 0x23, 0xef, 0x27, 0x67, 0xd5, 0x48, 0xfe | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_SUCCESS when creating child2. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle1.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle2. The return status must be EFI\_SUCCESS. |
| 5.26.2.1.4 | 0xd4d966c4, 0xc05a, 0x4995, 0xbf, 0xfb, 0x2c, 0x86, 0x8b, 0x3c, 0x2c, 0x0b | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - returns EFI\_SUCCESS when creating child3. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle1.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle2.  4. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle3. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() three times to destroy the three newly created EFI\_MTFTP4\_PROTOCOL child handles and clean up the environment. |

### DestroyChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.2.1 | 0x3c312328, 0x313d, 0x47f6, 0x80, 0x7c, 0x5b, 0x1e, 0x10, 0xc2, 0xc0, 0x4d | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_INVALID\_PARAMETER when destroying a NULL child. | Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy a NULL child.  The return status must be EFI\_INVALID\_PARAMETER. |
| 5.26.2.2.2 | 0xe1c0ee52, 0xd5af, 0x4ec0, 0xa3, 0xf6, 0x31, 0xfb, 0xe0, 0xd4, 0xb7, 0x04 | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_INVALID\_PARAMETER when destroying an un-existed child. | Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy an un-existed child.  The return status must be EFI\_INVALID\_PARAMETER. |
| 5.26.2.2.3 | 0x28f8e30c, 0xa5d9, 0x4327, 0x99, 0xfa, 0xac, 0xda, 0xc9, 0x5f, 0xa4, 0xff | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_UNSUPPORTED when destroying the same child twice. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle:  2. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the new created child.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created child again. The return status must be EFI\_UNSUPPORTED. |
| 5.26.2.2.4 | 0xcb939b7a, 0x266a, 0x44f5, 0xa2, 0xe3, 0x57, 0xea, 0xde, 0x7f, 0x44, 0x08 | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_SUCCESS with all valid invocations. | 1 .Add an entry in ARP cache.  2. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle1.  3. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters  4. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  5. If having not captured the packet, OS side set assert fail and call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created child and clean up the environment. The return status must be EFI\_SUCCESS. |
| 5.26.2.2.5 | 0xc9d38d67, 0xadc1, 0x425d, 0xa4, 0xa1, 0x04, 0x18, 0xc6, 0x4b, 0x63, 0x0c | EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - returns EFI\_SUCCESS with all valid invocations. | 1 .Add an entry in ARP cache.  2. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle: Handle1.  3. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters  4. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  5. If having captured the packet, configured OS side will send back a normal OACK packet with active flag set. 6. OS side captures ack packet sent from EUT side and call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the created child and clean up the environment. The return status must be EFI\_SUCCESS. |

### GetModeData()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.3.1 | 0xdc9ac841, 0x8a0f, 0x4214, 0x91, 0x73, 0x60, 0x65, 0xee, 0x51, 0x8c, 0x52 | EFI\_MTFTP4\_PROTOCOL.GetModeData() - returns EFI\_INVALID\_PARAMETER with a *ModeData* value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.GetModeData() with a *ModeData* value of NULL. The return status must be EFI\_INVALID\_PARAMETER.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.3.2 | 0x40eccfcd, 0xee1c, 0x405f, 0xb0, 0x64, 0x2d, 0xe5, 0x66, 0x7b, 0xfb, 0xee | EFI\_MTFTP4\_PROTOCOL.GetModeData() - returns EFI\_SUCCESS with all valid invocations. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetModeData() with all valid parameters. The return status must be EFI\_SUCCESS.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment.. |

### Configure()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.4.1 | 0x2c5b72d9, 0x2c30, 0x4249, 0xa2, 0x3a, 0x92, 0x14, 0xfd, 0xea, 0x73, 0x12 | EFI\_MTFTP4\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER when  MtftpConfigData->*UseDefaultSetting* is **FALSE** and *MtftpConfigData*->*StationIp* is an invalid IPv4 unicast address. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2.Call EFI\_MTFTP4\_PROTOCOL.Configure() with  a MtftpConfigData-> UseDefaultSetting value of **FALSE** and a MtftpConfigData-> StationIp value of unicast address. The return status must be EFI\_INVALID\_PARAMETER**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.2 | 0x01ef2cac, 0x1259, 0x41c9, 0xbd, 0x91, 0x49, 0x68, 0xa9, 0xfd, 0xd6, 0x42 | EFI\_MTFTP4\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER when  MtftpConfigData-> UseDefaultSetting is FALSE and MtftpConfigData-> SubnetMask is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2.Call EFI\_MTFTP4\_PROTOCOL.Configure() when *MtftpConfigData*->*UseDefaultSetting* is **FALSE** and *MtftpConfigData*->SubnetMask is invalid. The return status must be EFI\_INVALID\_PARAMETER**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.3 | 0xbe92bd2e, 0xd085, 0x4da2, 0xaf, 0xbf, 0xec, 0x7b, 0x0d, 0xc7, 0xec, 0xca | EFI\_MTFTP4\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER when  MtftpConfigData-> UseDefaultSetting is FALSE and MtftpConfigData-> ServerIp is an invalid IPv4 unicast address. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a  *MtftpConfigData*->*UseDefaultSetting* value of **FALSE** and a *MtftpConfigData*->*ServerIp* value of an invalid IPv4 unicast address. The return status must be EFI\_INVALID\_PARAMETER**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.4 | 0x5891d15c, 0x7f5d, 0x4c0d, 0xb0, 0x90, 0x88, 0xcd, 0x44, 0xe1, 0xea, 0x68 | EFI\_MTFTP4\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER when  MtftpConfigData-> UseDefaultSetting is FALSE and MtftpConfigData-> GatewayIp is an invalid IPv4 unicast address. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a  *MtftpConfigData*->*UseDefaultSetting* value of **FALSE** and a *MtftpConfigData*->*GatewayIp* value of an invalid IPv4 unicast address. The return status must be EFI\_INVALID\_PARAMETER**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.5 | 0xd01d26be, 0x35fb, 0x4a08, 0xb0, 0x22, 0x7b, 0xe2, 0x53, 0xcf, 0x99, 0x02 | EFI\_MTFTP4\_PROTOCOL.Configure() - returns EFI\_INVALID\_PARAMETER when  *MtftpConfigData*->*UseDefaultSetting* is **FALSE** and *MtftpConfigData*->*GatewayIp* is not in the same subnet with station address. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2.Call EFI\_MTFTP4\_PROTOCOL.Configure() when  *MtftpConfigData*->*UseDefaultSetting* is **FALSE** and *MtftpConfigData*->*GatewayIp* is not in the same subnet with station address. The return status must be EFI\_INVALID\_PARAMETER**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.6 | 0x37ccae28, 0x4b81, 0x4ba5, 0x8d, 0xe6, 0x79, 0xe7, 0xda, 0xb9, 0x03, 0x04 | **EFI\_MTFTP4\_PROTOCOL.Configure ()** - returns **EFI\_ACCESS\_DENIED** when some operation of this EFI MTFTPv4 Protocol driver instance has not finished yet and the configuration data cannot be changed at this time. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2.Call EFI\_MTFTP4\_PROTOCOL.Configure() when  some operation of this EFI MTFTPv4 Protocol driver instance has not finished yet and the configuration data cannot be changed at this time. The return status must be **EFI\_ACCESS\_DENIED.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.4.7 | 0xd31e47ea, 0x5a76, 0x49aa, 0xbd, 0x40, 0x6f, 0xd9, 0x49, 0x88, 0x5f, 0x84 | **EFI\_MTFTP4\_PROTOCOL.Configure ()** - returns EFI\_SUCCESSwhen it is reset by calling Configure () with a MtftpConfigData value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call **EFI\_MTFTP4\_PROTOCOL.**Configure()with MtftpConfigData set to NULL. The return status must be EFI\_SUCCESS**.**  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |

### GetInfo()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.5.1 | 0x794b1aae, 0x92b4, 0x40de, 0xad, 0xed, 0x43, 0xb3, 0x55, 0x37, 0xd8, 0xa3 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER with a FileName value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData-> UseDefaultSetting value of FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with a *FileName* value of NULL. The return stats must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.2 | 0x0733cdb5, 0x4072, 0x4129, 0xa2, 0x06, 0xce, 0x56, 0x6e, 0xf6, 0xd8, 0x61 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER with an OverrideData.GatewayIp value of invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData-> UseDefaultSetting value of FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with an OverrideData.GatewayIp value of invalid. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.3 | 0xa04d3e7c, 0x5e50, 0x4472, 0xa7, 0x70, 0xc1, 0xa9, 0x48, 0xcb, 0xd9, 0x1e | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER with an invalid OverrideData.ServerIp value. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData-> UseDefaultSetting value of FALSE.  2. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with an OverrideData.ServerIp value of invalid. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.4 | 0x10d2101c, 0x0aa3, 0x4713, 0xb8, 0x2b, 0xe1, 0x43, 0xed, 0xf4, 0x11, 0x26 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER when OverrideData.GatewayIp and OverrideData.ServerIp are not in the same subnet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData->UseDefaultSetting value of FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with OverrideData.GatewayIp and OverrideData.ServerIp are not in the same subnet. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.5 | 0xf85b07f6, 0x9f89, 0x41ad, 0x8d, 0x53, 0x47, 0x53, 0x97, 0xac, 0x98, 0x1a | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER when OptionCount is not 0 and OptionList is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData->UseDefaultSetting value of FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() when OptionCount is not 0 and OptionList is NULL. The return status must be EFI\_INVALID\_PARAMETER**.**  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.6 | 0xb9caedcf, 0xf071, 0x421a, 0x9f, 0xb9, 0x7e, 0x24, 0x9d, 0xf4, 0xe3, 0xb2 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_INVALID\_PARAMETER when PacketLength is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with a MtftpConfigData->UseDefaultSetting value of FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with a PacketLength value of NULL. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.7 | 0x5cb9e305, 0xb4e2, 0x4416, 0xa7, 0x35, 0xe2, 0x72, 0xb6, 0x98, 0xf8, 0x23 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns **EFI\_TFTP\_ERROR** with a MTFTPv4 ERROR packet having received in the Buffer. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with MtftpConfigData->UseDefaultSetting is FALSE.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() when OverrideData is NULL and ModeStr is NULL. OS side must capture the packet sent from EUT side.  4. If have captured the packet, configured OS side to send back a MTFTPv4 ERROR packet and OS side should capture another packet sent from EUT side. The return status must be **EFI\_TFTP\_ERROR**.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.8 | 0x30e6a222, 0x2bbc, 0x4ff6, 0xa8, 0xf2, 0xd6, 0x8a, 0xc2, 0x91, 0x98, 0x29 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns **EFI\_TIMEOUT** when no packets were received from the MTFTPv4 server. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() when OverrideData is NULL and ModeStr is NULL. In addition, the OS side doesn’t send any packets back. The return status must be **EFI\_TIMEOUT.**  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.9 | 0xc4c5ced1, 0x30a5, 0x4c54, 0xa3, 0xc0, 0x80, 0x2b, 0x35, 0x83, 0xbf, 0x70 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns **EFI\_NOT\_STARTED** with the EFI MTFTPv4 Protocol driver having not been started. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.GetInfo()when both OverrideData and ModeStr are NULL. The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.10 | 0x32db978c, 0x9d9b, 0x4144, 0x97, 0x9c, 0x27, 0x14, 0x42, 0x9f, 0xe3, 0x47 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_ACCESS\_DENIED when invoking GetInfo() interface while the previous operation has not been completed yet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() to change the EFI\_MTFTP4\_PROTOCOL State.  4. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() when the previous operation has not been completed yet. The return status must be **EFI\_ACCESS\_DENIED**.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.11 | 0xbf72714a, 0x113f, 0x487e, 0xab, 0x10, 0x08, 0xa7, 0x98, 0xf3, 0x4f, 0xc4 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - returns EFI\_SUCCESS when the server responding a normal OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side should capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet and OS side should capture another packet sent from EUT side.  5. The return status of the EFI\_MTFTP4\_PROTOCOL.GetInfo() must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.12 | 0x77dbe1e4, 0x6219, 0x4531, 0xae, 0xbe, 0x58, 0x26, 0x4b, 0x53, 0x7e, 0xd1 | EFI\_MTFTP4\_PROTOCOL.GetInfo() - test the **EFI\_ICMP\_ERROR** conformance of GetInfo() when an ICMP ERROR packet was received and in the buffer. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side should capture the packet sent from EUT side.  4. Configure OS side to send back a ICMP error packet. The return status must be **EFI\_ICMP\_ERROR.**  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.13 | 0x70e8d3e9, 0x75a9, 0x4652, 0x82, 0x68, 0xa4, 0x0d, 0xdd, 0x1a, 0x81, 0x5f | EFI\_MTFTP4\_PROTOCOL.GetInfo() - test the **EFI\_UNSUPPORTED** conformance of GetInfo() when one or more options in the optionlist are in the unsupported list of structure EFI\_MTFTP4\_MODE\_DATA. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with one or more options in the optionlist are in the unsupported list of structure EFI\_MTFTP4\_MODE\_DATA. The return status should be **EFI\_UNSUPPORTED.**  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.5.14 | 0xfaa23d30, 0x1d66, 0x4d8e, 0xbe, 0x21, 0x2d, 0xa7, 0xbc, 0x1c, 0x9d, 0xfd | EFI\_MTFTP4\_PROTOCOL.GetInfo() - test the **EFI\_PROTOCOL\_ERROR** conformance of GetInfo(). The client received an unexpected MTFTPv4 packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side should capture the packet sent from EUT side.  4. Configure OS side to send back an unexpected packet and the return status should be **EFI\_PROTOCOL\_ERROR**.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.5.15 | 0xd2c1e819, 0x610b, 0x4cfc, 0x94, 0xf1, 0x33, 0xcd, 0x13, 0xaf, 0x4b, 0xc9 | EFI\_MTFTP4\_PROTOCOL.GetInfo – GetInfo()must return EFI\_NETWORK\_UNREACHABLEwhen receive an ICMP net unreachable packet. | 1. Call  **EFI\_MTFTP4\_SERVICE\_BINDING\_PROT OCOL.CreateChild()** to create a new **EFI\_MTFTP4\_PROTOCOL** child  handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.GetInfo()with all valid parameters. OS side should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP net unreachable packet and the return status should be EFI\_NETWORK\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_P ROTOCOL.DestroyChild()to  destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.5.16 | 0x290076e3, 0xdaf2, 0x453d, 0xb2,0x21,0xcd,0x27, 0xce,,0xe7,0x3d,0xbe | EFI\_MTFTP4\_PROTOCOL.GetInfo – GetInfo() must return EFI\_HOST\_UNREACHABLE when receiving an ICMP host unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROT OCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child  handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP host unreachable packet and the return status should be EFI\_HOST\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_P ROTOCOL.DestroyChild() to  destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.5.17 | 0x706bc816, 0x6353, 0x40ae, 0xa9,0x47,0x9a,0xf0, 0x01,0xa9,0x82,0x8c | EFI\_MTFTP4\_PROTOCOL.GetInfo – GetInfo() must return EFI\_PROTOCOL\_UNREACHABLE when receive an ICMP protocol unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROT OCOL.CreateChild()to create a new EFI\_MTFTP4\_PROTOCOL child  handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP protocol unreachable packet and the return status should be EFI\_PROTOCOL\_UNREACHABLE.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild()to  destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.5.18 | 0xa165bd19, 0x951a, 0x4486, 0x88,0x4d,0x1d,0x94,0x30,0xa7,0xbe,0x3c | EFI\_MTFTP4\_PROTOCOL.GetInfo – GetInfo() must return EFI\_PORT\_UNREACHABLE when receive an ICMP port unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROT OCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child  handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.GetInfo() with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP port unreachable packet and the return status should be EFI\_PORT\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_P ROTOCOL.DestroyChild() to  destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |

### ParseOptions()

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| Number | GUID | Assertion | Test Description |
| 5.26.2.6.1 | 0x9bea2f3f, 0x9f02, 0x4eb2, 0x8b, 0x1f, 0x99, 0xd5, 0xcf, 0xc3, 0x57, 0x29 | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with a *PacketLength* value of 0. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with a PacketLength value of 0. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.2 | 0x0bc09196, 0xb38a, 0x4fa8, 0xb0, 0x38, 0x4c, 0x4c, 0x8b, 0x3c, 0x69, 0xfa | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with a Packet value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with a Packet value of NULL. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.3 | 0x72723929, 0x60bd, 0x49c1, 0x99, 0xbd, 0xd1, 0x48, 0x60, 0x33, 0x7a, 0xdc | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with a Packet value of an invalid MTFTPv4 Packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with a Packet value of an invalid MTFTPv4 Packet **-** **Packet.OpCode** is 0x11. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.4 | 0xb7ed01b9, 0x7e1b, 0x40ba, 0x8b, 0x6a, 0x52, 0x34, 0xdf, 0x13, 0x53, 0xf0 | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with a Packet value of an invalid MTFTPv4 Packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with a Packet value of an invalid MTFTPv4 Packet - **Packet.OpCode** is 0x01.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.5 | 0x350c473e, 0x9901, 0x4125, 0xbc, 0xc9, 0x65, 0xbf, 0xa9, 0xf3, 0x16, 0x30 | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with a Packet value of an invalid MTFTPv4 Packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with a Packet value of an invalid MTFTPv4 Packet - **Packet.OpCode** is 0x06 and PacketLength is 1. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.6 | 0xcf909489, 0xace2, 0x4fec, 0x8d, 0xc9, 0x66, 0xa0, 0xd9, 0x33, 0xa6, 0x4a | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_parameter with an OptionCount value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with an OptionCount value of NULL.  The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.7 | 0x0131da11, 0x62a1, 0x494f, 0xb1, 0x0a, 0xaf, 0x5d, 0xe2, 0x12, 0xe9, 0x88 | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_INVALID\_PARAMETER when parsing a non-OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call BS-> CopyMem() to fill the packet needed to be parsed. Set **Packet.OpCode** to be 0x100.  4. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with the configured non-OACK packet.  The return status must be EFI\_INVALID\_PARAMETER.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.9 | 0x5b7bbe95, 0xdba3, 0x4e9c, 0x89, 0xde, 0x37, 0xf1, 0xf6, 0x42, 0x04, 0x24 | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - test the EFI\_NOT\_FOUND conformance of ParseOptions() with no options were found in the OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  4. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with no options were found in the OACK packet..The return status must be EFI\_NOT\_FOUND.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.6.8 | 0x973e370a, 0x5936, 0x4377, 0xb0, 0x6c, 0x82, 0xe6, 0x11, 0x4d, 0xda, 0x6f | EFI\_MTFTP4\_PROTOCOL.ParseOptions() - returns EFI\_SUCCESS when parsing a OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call BS-> CopyMem() to fill the packet needed to be parsed. Set **Packet.OpCode** to be 0x600.  4. Call EFI\_MTFTP4\_PROTOCOL.ParseOptions() with the configured OACK packet. The return status must be EFI\_SUCCESS.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |

### ReadFile()

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| Number | GUID | Assertion | Test Description |
| 5.26.2.7.1 | 0x38728e11, 0x6f6f, 0x409a, 0x84, 0x31, 0xf5, 0x1e, 0x60, 0x0f, 0x7d, 0x6f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TIMEOUT with no packets sent back from the MTFTPv4 server. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.R**eadFi**le() with all valid parameters.  4. If OS side has captured the packet, don’t send back any packets, stall and wait until client timeout.  The return status must be **EFI\_TIMEOUT**.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.2 | 0xcb0105ab, 0x7f16, 0x46a1, 0x87, 0xf2, 0x18, 0x6b, 0x86, 0x74, 0x6a, 0xba | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TIMEOUT when the passive Client having not received any data packets from the server. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet with flag set to be passive.  5. Then OS side doesn’t send any data packets back, then stall and wait until client timeout.  The return status must be EFI\_TIMEOUT.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.3 | 0x95384167, 0xa706, 0x4f2c, 0x82, 0x8c, 0x8e, 0x3f, 0x15, 0xee, 0x82, 0x0a | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when TFTPv4 ERROR packet was received. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If having captured the packet, configure OS side to send back a EFI\_MTFTP4\_PROTOCOL Error packet.  5. OS side should capture another packet sent from EUT side. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.4 | 0xf5ac75d7, 0xa32e, 0x4b1f, 0xa8, 0x19, 0x2e, 0xfc, 0x73, 0x24, 0xcc, 0xba | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the active client receives an MTFTPv4 ERROR packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If having captured the packet, Configure OS side to respond a normal OACK with flag set to be active.  5. If having captured ack, OS side sends back a EFI\_MTFTP4\_PROTOCOL Error packet. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.5 | 0x49f424ed, 0xfdbc, 0x4c82, 0x8d, 0xb8, 0xd5, 0xa2, 0xa4, 0x9b, 0x7e, 0xff | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the passive client has received a MTFTPv4 ERROR packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If having captured the packet, configure OS side to respond a normal OACK packet with flag set to be passive, and then send back a EFI\_MTFTP4\_PROTOCOL Error packet. The return status must be EFI\_TFTP\_ERROR.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.6 | 0x1392cef9, 0x74e0, 0x4f89, 0xa5, 0x26, 0xa7, 0xa7, 0x77, 0x56, 0x33, 0xd4 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the server responds with an error OACK packet – active/passive flag error. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – active/ passive flag error.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.7 | 0x1f4fd053, 0x9e4b, 0x49c4, 0x9a, 0xea, 0x58, 0x75, 0x60, 0xf1, 0xec, 0x7d | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when timeout value in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – timeout value is invalid.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.8 | 0x9bbcc0bb, 0x5386, 0x4e5c, 0xa3, 0xac, 0x65, 0xc7, 0x62, 0xf6, 0x93, 0xaa | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when blocksize option value in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – blocksize option value is invalid.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.9 | 0x329ae187, 0x6758, 0x42b9, 0x84, 0xae, 0x92, 0x32, 0x42, 0x15, 0xa5, 0xef | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when multicast IP address in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – multicast IP address is invalid.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.10 | 0xe491fc10, 0x0c0f, 0x4d45, 0xb5, 0xc3, 0x3c, 0x29, 0x10, 0xdb, 0xe4, 0x70 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when client's listening port in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – client's listening port is 65536.  5. If having captured an ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.11 | 0xcff83e43, 0x5d33, 0x4cc0, 0x80, 0xc4, 0x55, 0x96, 0x0e, 0x5f, 0x58, 0xae | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the format of multicast IP address in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – the format of multicast IP address is invalid.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.12 | 0x28754983, 0xac7d, 0x4e7f, 0x9f, 0xad, 0xbf, 0x55, 0x59, 0xff, 0xa7, 0x62 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the format of multicast option in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – the format of multicast option is invalid.  5. If having captured the ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.13 | 0x64fd965d, 0x2acc, 0x4540, 0xbc, 0x57, 0x50, 0xe8, 0xab, 0x02, 0xe8, 0x8a | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the format of multicast option in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with error OACK packet – the format of multicast option is invalid.  5. If having captured ack, OS check whether it is a packet with error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.14 | 0xd09c7076, 0x316f, 0x4245, 0xac, 0x31, 0x95, 0x82, 0x22, 0xa4, 0x67, 0xd7 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the format of multicast option in OACK packet is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond with an error OACK packet – the format of multicast option is invalid.  5. If having captured an ack, OS check whether it is a packet with an error code. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.15 | 0x1322cb38, 0x8f90, 0x4fa8, 0xbe, 0xa9, 0x5b, 0x31, 0x8e, 0xb8, 0x24, 0xad | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the passive client tries to change to be active, but the server responds with an error OACK packet - active/passive flag is error. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to respond OACK with flag set to be passive and then send the file missing several packets.  5. The OS side should capture the ack sent from the passive client to ask for the missing packets.  7. If having captured it, OS sends back OACK with error active/ passive flag. The return status must be EFI\_TFTP\_ERROR.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.16 | 0xff2d0e80, 0xdecd, 0x4a1c, 0xb6, 0x7c, 0xe4, 0xcd, 0x99, 0x9d, 0x69, 0x09 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when the server adds more other options in the OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active while adding more other options in the OACK packet; then OS should capture the ack packet.  5. If having captured ack, OS sends back the only data packet and then receives another ack. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.17 | 0xa7fcbfff, 0x8367, 0x466e, 0x9d, 0x25, 0x5b, 0x80, 0xb8, 0x4f, 0xb5, 0x8f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR when active client receives OACK, while Token-> OptionCount is 0. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() without any option requested. OS side must capture the packet  sent from EUT side  4. If OS side has captured the packet, configure server to send back OACK with some options and flag set to be active.  5. Then OS should capture ack and sends back the only one data packet. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.18 | 0x00450815, 0x41f5, 0x4da8, 0x90, 0x66, 0x78, 0x80, 0x94, 0x07, 0x34, 0xea | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_TFTP\_ERROR –When the passive client downloads, it misses the first and the last data packet. Then server set the client to be active while changing the transfer channel. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the second and the third data packet to the multicast IP address while missing the first and the last data packet.  6. After passive client is timeout, it’ll send ack0 to ask for the missing packets and the server should capture it.  7. If having captured the request, the server sends back OACK with flag set to be active and the client’s listening port also changed. Then the server should capture an error packet. The return status must be EFI\_TFTP\_ERROR.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.19 | 0x9017244c, 0x127a, 0x486e, 0x81, 0x5b, 0x20, 0xe8, 0xa6, 0x55, 0xd4, 0x6f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_NOT\_STARTED with the EFI MTFTPv4 Protocol driver having not been started. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.20 | 0x84b13fab, 0x04f5, 0x474b, 0x89, 0x4c, 0x63, 0xef, 0x9d, 0xcf, 0x78, 0x58 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when Token is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when Token is NULL. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.21 | 0xd25ff5a4, 0x71e7, 0x4e38, 0xb4, 0x3e, 0x4a, 0xcc, 0xe7, 0x83, 0xfa, 0x77 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when Token->Filename is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when Token->Filename is NULL. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.22 | 0xf370c329, 0xe20b, 0x45a0, 0x9a, 0xb3, 0xd4, 0x13, 0x70, 0x98, 0x00, 0x03 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when Token-> OptionCount is not 0 and Token-> OptionList is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when Token->OptionCount is not 0 and Token->OptionList is NULL. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.23 | 0x2357c86f, 0xf9ba, 0x4f25, 0x9c, 0x77, 0x75, 0x10, 0xab, 0xb5, 0x10, 0x7e | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when Token->Buffer and Token->CheckPacket are both NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when Token->Buffer and Token->CheckPacket are both NULL. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.24 | 0x66019567, 0x321d, 0x41a8, 0xaa, 0xff, 0x60, 0x7f, 0x75, 0xa4, 0x08, 0x42 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when OverrideData.GatewayIp is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when OverrideData.GatewayIp is invalid.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.25 | 0x5f64495c, 0xad06, 0x4185, 0x87, 0x55, 0x86, 0xd9, 0x44, 0xf6, 0x39, 0x81 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when OverrideData.ServerIp is invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when OverrideData.ServerIp is invalid. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.26 | 0x17fa0734, 0x38f6, 0x4fe5, 0x9f, 0x6a, 0x5d, 0xae, 0x9e, 0xf2, 0xf3, 0xac | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_INVALID\_PARAMETER when OverrideData.GatewayIp is not in the same subnet with *StationIp*. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when OverrideData**.**GatewayIp is not in the same subnet with *StationIp*. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.27 | 0xa5d93fc4, 0x9b20, 0x45cc, 0xbe, 0x45, 0xcc, 0x60, 0x5e, 0x51, 0xae, 0xf4 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_UNSUPPORTED when options of “restart” and “session” in the Token->OptionList are in the unsupported list of this implementation. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when options of “restart” and “session” in the Token->OptionList are in the unsupported list of this implementation. The return status must be  EFI\_UNSUPPORTED.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.28 | 0x40f05e07, 0x3a7b, 0x4244, 0x97, 0x4f, 0x96, 0x9a, 0x89, 0x5c, 0xa4, 0x83 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_UNSUPPORTED when option of “pktdelay” in the Token->OptionList are in the unsupported list of this implementation. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() when option of “pktdelay” in the Token->OptionList are in the unsupported list of this implementation.The return status must be EFI\_UNSUPPORTED.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.29 | 0xa8d5abdf, 0x3e19, 0x462e, 0x9f, 0x6d, 0x9f, 0xa6, 0x13, 0xd2, 0x96, 0xd3 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ACCESS\_DENIED for calling EFI\_MTFTP4\_PROTOCOL.ReadFile() again before the first call ends. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() for the first time with all valid parameters.  4. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() for the second time with the same Token before the first call ends. The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.30 | 0xab02a8d2, 0x2086, 0x4372, 0xb5, 0xc7, 0x06, 0x0e, 0x28, 0x65, 0x1e, 0x8f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_BUFFER\_TOO\_SMALL whenclient is active and the BufferSize is not larger enough to hold the downloaded data in downloading process. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet with multicast option and flag set to be active. In addition, OS side should capture Ack packet sent from EUT side and then responds with data packet whose size is larger than the set BufferSize.  5. Then OS side should capture another packet.  The return status must be  EFI\_BUFFER\_TOO\_SMALL.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.31 | 0xf135f02b, 0x51ca, 0x47b9, 0xab, 0xf4, 0x4b, 0xd9, 0x78, 0x86, 0x68, 0xf8 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_BUFFER\_TOO\_SMALL when client is passive. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet with multicasts option and flag set to be passive and wait for the client's processing.  5. OS side sends a data packet whose size is larger than the set BufferSize. The return status must be EFI\_BUFFER\_TOO\_SMALL.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.32 | 0xb8363dd2, 0xedca, 0x49a6, 0xbe, 0x32, 0x90, 0x87, 0xb9, 0x57, 0x6a, 0x1f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_BUFFER\_TOO\_SMALL when calling ReadFile asynchronously and Client is passive. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() asynchronously with all valid parameters. OS side must capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet with option of multicast and flag set to be passive and wait for the client's processing.  5. OS side sends a data packet whose size is larger than the set BufferSize. The return status must be EFI\_BUFFER\_TOO\_SMALL.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment |
| 5.26.2.7.33 | 0x5ae24123, 0xbb88, 0x42a5, 0xa1, 0xd0, 0xb3, 0x49, 0xfa, 0x20, 0x04, 0x6f | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_BUFFER\_TOO\_SMALL when the client is an active client and the BufferSize is not larger enough to hold the downloaded data in downloading process - return this status until having received the last data block. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. Configure OS side to send back a normal OACK packet with multicast option and flag set to be active. In addition, OS side should capture Ack packet sent from EUT side and then responds with serious data packets whose size are larger than the set BufferSize.  5. Then OS side should capture the ack for the data blocks except the last block.  6. Then OS side should capture the error packet.  The return status must be  EFI\_BUFFER\_TOO\_SMALL.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.34 | 0xcfdaf47b, 0x8a46, 0x498c, 0x92, 0x0e, 0x96, 0x15, 0xc1, 0x23, 0xbe, 0x57 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the active download process in CheckPacket callback routine in the case of receiving data packets. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with CheckPacket callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture an ack packet sent from client.  5. If having captured it, server sends the only data packet back to the client.  6. Then server should capture another packet and check that if it is an error packet. The return status must be EFI\_ABORTED.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.35 | 0x731fb0ec, 0xb6b1, 0x4424, 0xb0, 0x61, 0x1b, 0xaa, 0xb3, 0x3f, 0xc0, 0x88 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the active download process in CheckPacket callback routine in the case of receiving OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with CheckPacket callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture another packet and check whether it is an error packet. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.36 | 0xbd75e9f5, 0x76b3, 0x4e67, 0xb9, 0xbf, 0xcd, 0xfb, 0xed, 0x5c, 0x34, 0xa6 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the passive download process in CheckPacket callback routine in the case of receiving data packets. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with CheckPacket callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive.  5. If having captured it, server sends the only data packet back to the client.  6. Then server should capture another packet and check that if it is an error packet. The return status must be EFI\_ABORTED.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.37 | 0xc9f2cdc8, 0x38eb, 0x4446, 0x9d, 0xc4, 0x5c, 0x78, 0x4a, 0x69, 0x0b, 0xd1 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the passive download process in CheckPacket callback routine in the case of receiving OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with CheckPacket callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive and then OS should capture another packet and check that if it is an error packet.  The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.38 | 0xc911f1f0, 0x385b, 0x4de3, 0xb3, 0x86, 0xe3, 0x20, 0xec, 0x3c, 0xa8, 0xc2 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the active download process in TimeoutCallback routine in the case of receiving Ack. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with Timeout callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.39 | 0xfd55be46, 0xb941, 0x4708, 0xbe, 0x69, 0x24, 0x82, 0xca, 0x2c, 0x29, 0x34 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_ABORTED when the user aborts the passive download process in Timeout Callback routine in the case of receiving Ack. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with Timeout callback set. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive and then OS should capture ack. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.40 | 0x8ad083d8, 0x9757, 0x40ef, 0x99, 0x86, 0x21, 0xee, 0x90, 0x4a, 0xa0, 0x2d | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server sends back with normal OACK packet whose active flag is set. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, OS sends back the only data packet and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.41 | 0xc3640c29, 0xbfcd, 0x4f0c, 0xae, 0x7e, 0xcc, 0x44, 0x8a, 0xc1, 0x8e, 0x16 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when server send backs with normal OACK packet whose passive flag is set. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive and stall to wait for the client to join in the multicast group.  5. OS sends back the only data packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.42 | 0x5e294d5a, 0xf09e, 0x4fdc, 0xa2, 0x2e, 0x9d, 0xcb, 0xfa, 0x44, 0x3d, 0x2b | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server sends back normal OACK packet after the client resends RRQ several times. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters, client should retry 5 times to send RRQ then OS side should capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, OS sends back the only data packet and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.43 | 0x162e4457, 0x63d9, 0x4402, 0xad, 0xac, 0xaa, 0xdf, 0x3a, 0x61, 0xaf, 0xdc | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server doesn’t copy the client’s option strings verbatim from the RRQ packet to the OACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active while not coping the client’s option strings verbatim from the RRQ packet to the OACK packet; then OS should capture ack packet.  5. If having captured ack, OS sends back the only data packet and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.44 | 0xe0d3922c, 0x017d, 0x44a2, 0x90, 0x88, 0xad, 0xb6, 0xeb, 0x9f, 0x4c, 0xed | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when client receives an error server source port data packet, it just ignores the packet and continues the data processing. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active; then OS should capture ack packet.  5. If having captured ack, OS sends back an error server source data packet. In addition, client just ignores it.  6. The server sends back another correct source data packet then. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.45 | 0xcc4f141c, 0x9df1, 0x404e, 0x90, 0x27, 0x60, 0xea, 0xbd, 0xa8, 0x08, 0xd8 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS After passive client having received some packets, the server sets it to be active and sends out remaining packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK to set the client passive.  5. If having captured ack0, OS sends back the first and the last data packet.  6. Server resends an empty multicast OACK to set the client active.  7. If having captured ack, OS sends out remain packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.46 | 0x2d4d9962, 0x24ac, 0x4f62, 0x9b, 0x66, 0x3c, 0xa5, 0xf3, 0x67, 0xb3, 0xa0 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when server doesn’t support option extension and just sends back the data packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If having captured the packet, OS side sends back the only one data packet then receives another ack. The return status must be EFI\_SUCCESS.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.47 | 0x9e9e85f5, 0x669d, 0x4de3, 0x82, 0xa4, 0xff, 0x96, 0xb9, 0x69, 0x79, 0x05 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server doesn’t support multicast option and just doesn’t support multicast. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back an OACK without multicast option only and then OS should capture ack packet.  5. If having captured ack, OS sends back the only one data packet then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.48 | 0x0bdc47fc, 0x659e, 0x497f, 0x8d, 0x10, 0x10, 0x52, 0xd3, 0x95, 0x7d, 0x19 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the client continuously joins the group to download file, while the Active flag is set. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Do the step of 4,5,6 for 5 times:  4. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  5. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  6. If having captured ack, OS sends back the only data packet and then receives another ack.  The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.49 | 0xc965cbdf, 0x1539, 0x4507, 0xb0, 0xd1, 0x4f, 0xcd, 0x17, 0xc4, 0xbb, 0x54 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server sends back the Data with incorrect sequence of the block numbers. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, OS sends back data packets with incorrect sequence of block numbers and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.50 | 0xcf00a8ae, 0x8676, 0x4ee3, 0xb5, 0xcc, 0x82, 0x22, 0xf9, 0x46, 0x94, 0x03 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server sends back the Data after some packets' retransmission. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, server send backs the Number1 data packet and then receive another ack.  6. Then server doesn’t do anything until having received the fourth ack. Then it sends the rest data packets back. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.51 | 0x21a80b34, 0x73b3, 0x47ba, 0x82, 0x0c, 0x37, 0x34, 0x43, 0x7e, 0xd5, 0xd4 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when client downloads a file with length equal to 1 byte. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, OS sends back the only data packet with length equal to 1 byte and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.52 | 0x9e8004a9, 0xc28c, 0x461b, 0x84, 0xa1, 0x31, 0xca, 0xc6, 0x48, 0x31, 0x28 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when using OverrideData to replace the configuration data and retry counter is set to 0 in override data. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with OverrideData replacing the configuration data and retry counter set to 0 in override data. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active and then OS should capture ack packet.  5. If having captured ack, OS sends back the only data packet with length equal to 1 byte and then receives another ack. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.53 | 0x9bd82567, 0x6249, 0x4635, 0xb0, 0x2d, 0xf8, 0x06, 0x0d, 0x26, 0x68, 0xa6 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when active client receives data packets after server sends back OACK packet twice. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active; then OS should capture ack packet.  5. If having captured ack, OS send backs another OACK with the same option. Then sends back the only data packet and then receives another ack.  The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.54 | 0xcf35445d, 0x0aa1, 0x4485, 0x8e, 0xb6, 0x5f, 0xd8, 0xb4, 0x65, 0x55, 0x84 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the client is passive and it receives unexpected packets (BlockNo is a former number). | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive.  5. Then OS doesn’t sends back all the data packets in sequence. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.55 | 0x62908d19, 0xc308, 0x4f16, 0xa1, 0x70, 0xb6, 0x9a, 0xdf, 0x47, 0xb4, 0x72 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the client is passive and it receives unexpected packets (BlockNo is a further number). | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be passive.  5. Then OS doesn’t sends back all the data packets in sequence. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.56 | 0x58c614fb, 0x51d9, 0x4043, 0xb1, 0x24, 0x95, 0xa3, 0x7c, 0xcd, 0x3d, 0x70 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the server responds data packet with data length larger than blocksize. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back OACK with flag set to be active. In addition, OS should capture an ack.  5. If having captured it, OS sends back the first data packet with length larger than blocksize, then the rest data packet.  6. OS should capture ack. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.57 | 0x23a7aebe, 0x0117, 0x44fc, 0x9d, 0xcc, 0x68, 0x4c, 0xa6, 0x31, 0x2a, 0x20 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the client receives an unexpected ACK packet in the case of downloading file. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back an unexpected ACK and a normal OACK with flag set to be active.  5. Then if OS side has captured the ack, OS side sends back the only data packet.  6. OS should capture another ack. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.58 | 0x9df88b27, 0x0a20, 0x4d91, 0x98, 0x2b, 0x32, 0x26, 0x41, 0x62, 0x39, 0x44 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the active client receives an unexpected OACK packet in the case of downloading file. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be active.  5. If OS side has captured the ack, OS side send backs OACK again.  6. The server should capture another ack. Then the server sends the only data packet back to the client. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.59 | 0xad60cb28, 0x6451, 0x400a, 0xa5, 0x74, 0xf6, 0x35, 0x9f, 0x01, 0x92, 0xd3 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client receives an unexpected OACK packet in the case of downloading file. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the first data packet to the multicast IP address and another OACK to the client again.  6. Then the server sends the last data packet back to the multicast IP address. The return status must be EFI\_SUCCESS.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.60 | 0x2309b8ea, 0x5593, 0x4835, 0xb6, 0x24, 0x65, 0xda, 0xc5, 0x51, 0x04, 0x5d | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the last data packet. After client is timeout, server sets client to be passive again and sends out the lost packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the first three data packets to the multicast IP address while missing the last data packet.  6. After passive client is timeout, it’ll send ack0 to ask for missing packets and the server should capture it.  7. If having captured the request, the server sends OACK back again and then the last data packet.  The return status must be EFI\_SUCCESS.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.61 | 0xf6c81b41, 0x8edd, 0x46df, 0x8a, 0x82, 0x46, 0x40, 0xd9, 0x8b, 0xda, 0xa5 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the last data packet. After client is timeout, server sets client to be passive again and sends out all the data packets. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the first three data packets to the multicast IP address while missing the last data packet.  6. After passive client is timeout, it’ll send ack0 and the server should capture it.  7. If having captured the request, the server sends OACK back again and then all the data packets.  The return status must be EFI\_SUCCESS.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.62 | 0x7156d37f, 0xd7ef, 0x47ea, 0xa2, 0xf3, 0x64, 0x3e, 0x7c, 0x44, 0x9f, 0x65 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the first and the last packet. After client is timeout, server sets client to be passive again and sends out the lost packet | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the second and the third data packet to the multicast IP address while missing the first and the last data packet.  6. After passive client is timeout, it’ll send ack0 and the server should capture it.  7. If having captured the request, the server sends OACK back again and then all the lost packets.  The return status must be EFI\_SUCCESS.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.63 | 0x34753378, 0xb423, 0x40b1, 0x93, 0x7c, 0x4d, 0xaa, 0x5c, 0xa6, 0x63, 0x43 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the first and the last packet. After client is timeout, server sets client to be passive again and sends out all the data packets. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the second and the third data packet to the multicast IP address while missing the first and the last data packet.  6. After passive client is timeout, it’ll send ack0 and the server should capture it.  7. If having captured the request, the server sends OACK back again and then all the packets.  The return status must be EFI\_SUCCESS.  8. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.64 | 0xd756be67, 0xd667, 0x432f, 0xbb, 0xd6, 0x3a, 0xe1, 0xf5, 0xe6, 0x61, 0xd1 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the first and the last packet. After client is timeout, server sets client to be active again and sends out the missing packets. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the second and the third data packet to the multicast IP address while missing the first and the last data packet.  6. After passive client is timeout, it’ll send ack0 to ask for the missing packets.  7. If having captured the request, the server sends back OACK with flag set to be active and then the first data packet.  8. The server expects the ack packet to request the last packet. If having captured it, server will send the last data packet. The return status must be EFI\_SUCCESS.  9. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.65 | 0xc0fc889f, 0xc91f, 0x4a41, 0x80, 0x59, 0x0e, 0x22, 0x56, 0x79, 0x0b, 0x53 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses two blocks of packets. After client is timeout, server sets client to be passive again and sends out the lost packets randomly. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the first and the seventh data packet to the multicast IP address while missing the Number2, 3, 4, 5, 6, 8 data packets.  6. After passive client is timeout, it’ll send ack0 and the server should capture it.  7. If having captured the ack0 packet, the server sends back OACK with flag set to be passive. Then it sends out the data packets randomly in the order Number4, 2, 6, 3, 5, 8.  8. The server expects the ack packet. If having captured, server will send the second data packet.  The return status must be EFI\_SUCCESS.  9. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.66 | 0x5a4ed7d1, 0x0e36, 0x4f9c, 0xa7, 0x9c, 0xf2, 0x35, 0x2e, 0xf7, 0x3b, 0x2d | EFI\_MTFTP4\_PROTOCOL.ReadFile() - returns EFI\_SUCCESS when the passive client downloads, it misses the first and the last packets. Then server changes the client to be active and retrieves its unicast transfer model. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side must capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back a normal OACK with flag set to be passive.  5. Then server sends back the second and the third data packets to the multicast IP address while missing the first and the last data packets.  6. After passive client is timeout, it’ll send ack0 and the server should capture it.  7. If having captured the request, the server sends back OACK with transfer mode changed to be unicast and flag set to be active. Then it expects the ack sent from the client and sends out the first data packet.  8. The server should capture the ack and then sends back the second packet.  9. As above, server sends the third and the last data packets. The return status must be EFI\_SUCCESS.  10. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.67 | 0xb441ee5b, 0xbf7f, 0x446f, 0xa2, 0x5c, 0x77, 0x7a, 0x0b, 0xdd, 0xde, 0x78 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - to test the EFI\_ICMP\_ERROR conformance of ReadFile() with an ICMP ERROR packet being received. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() and OS side capture the packet sent from EUT side.  4. If OS side has captured the packet, configure server to send back an ICMP error packet. The return status must be EFI\_ICMP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.68 | 0x6eaabf78, 0x3914, 0x4d08, 0x85, 0x0c, 0xbf, 0x63, 0x6d, 0xe9, 0xf3, 0x55 | EFI\_MTFTP4\_PROTOCOL.ReadFile() - to test the EFI\_INVALID\_PARAMETER conformance of ReadFile() when one or more options in Token.OptionList have wrong format. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadFile() with invalid muticast option value. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.7.69 | 0xd5e062fc, 0x5c0f, 0x470c, 0x8b,0x7a,0x44,0xf7, 0xbc,0xad, 0xc6,0x9c | EFI\_MTFTP4\_PROT  OCOL.ReadFile()- ReadFile()must return EFI\_NETWORK\_UNREACHABLEwhen receive an ICMP network unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create  a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configur  e() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP network unreachable packet and the return status should be EFI\_NETWORK\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to  destroy the newly created  EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |
| 5.26.2.7.70 | 0x6d8a5555, 0xe632, 0x470e, 0x98,0xe5,0x61,0xd2,0x2e,0xc9, 0x0d,0x0d | EFI\_MTFTP4\_PROT  OCOL.ReadFile()  - ReadFile() must return  EFI\_HOST\_UNREACHABLE when receive an ICMP host unreachable packet. | 1. Call  **EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild()** to create  a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile  () with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP host unreachable packet and the return status should be EFI\_HOST\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to  destroy the newly created EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |
| 5.26.2.7.71 | 0x732738e8, 0x1ff1, 0x4f3a, 0xa0,0xc8, 0x38,0x81,0x1d,0x15,0x92,0x83 | EFI\_MTFTP4\_PROT  OCOL.ReadFile()  - ReadFile() must return EFI\_PROTOCOL\_UNREACHABLEwhen receive an ICMP protocol unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create  a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile()with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an ICMP protocol unreachable packet and the return status should be EFI\_PROTOCOL\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to  destroy the newly created  EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |
| 5.26.2.7.72 | 0xd1c4e1e8, 0x1099, 0x4646, 0xb7,0xc9, 0x64,0x7e, 0x65,0xc3, 0x82,0x30 | EFI\_MTFTP4\_PROTOCOL.ReadFile()- ReadFile() must return  **EFI\_PORT\_UNREACHABLE** when receive an ICMP port unreachable packet. | 1. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call  EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call  EFI\_MTFTP4\_PROTOCOL.ReadFile() with all valid parameters. OS side  should capture the packet sent from  EUT side.  4. Configure Host side to send back an  ICMP port unreachable packet and the return status should be EFI\_PORT\_UNREACHABLE.  5. Call  EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created  EFI\_MTFTP4\_PROTOCOL child  handle and clean up the environment. |

### WriteFile()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.8.1 | 0x4b00df17, 0xc244, 0x413d, 0x8e, 0xbf, 0xe8, 0x7e, 0x10, 0x9a, 0xa8, 0xd4 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER with a Token value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with a Token value of NULL. The return status must be EFI\_NVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.2 | 0xddc80d3b, 0x448d, 0x4ef9, 0xab, 0x74, 0x88, 0x47, 0xa7, 0xc9, 0x7c, 0xa8 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER with a Token->Filename value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with Token->Filename value of NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.3 | 0x97304d43, 0x1101, 0x4b76, 0x90, 0x70, 0x66, 0x85, 0x62, 0x9e, 0xb3, 0xa3 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER when Token-> OptionCount is not 0 and Token->OptionList is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() when Token-> OptionCount is not 0 and Token->OptionList is NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.4 | 0xf061683f, 0xb39e, 0x42af, 0x92, 0x86, 0x9f, 0x18, 0xcc, 0xc7, 0xc0, 0x8d | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER when both Token->Buffer and Token-> PacketNeeded are NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() when both Token->Buffer and Token-> PacketNeeded are NULL. The return status must be EFI\_NVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.5 | 0xa2d02347, 0x9410, 0x49b3, 0xa9, 0xd2, 0xd7, 0x1a, 0xf4, 0xc5, 0xa7, 0x34 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER with an OverrideData.GatewayIp value of invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with an OverrideData.GatewayIp value of invalid. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment.. |
| 5.26.2.8.6 | 0xe8f09c7b, 0x2cf3, 0x482e, 0x93, 0xc6, 0x4f, 0x45, 0x85, 0x3a, 0x43, 0x0c | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER with an OverrideData.ServerIp value of invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with an OverrideData**.**ServerIp value of invalid. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.7 | 0x069921c9, 0x8f37, 0x45b6, 0xa4, 0x98, 0xa3, 0x2f, 0xc9, 0xb5, 0x8d, 0x50 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_INVALID\_PARAMETER when OverrideData.GatewayIp is not in the same subnet with *StationIp*. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() when OverrideData.GatewayIp is not in the same subnet with *StationIp*. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.8 | 0xb95d36a6, 0x091e, 0x444b, 0x9d, 0xd7, 0x30, 0x4c, 0x9e, 0x59, 0xab, 0x81 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_NOT\_STARTED when the EFI MTFTPv4 Protocol driver having not been started. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters. The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.9 | 0x67021dd5, 0xf97d, 0x4783, 0x8d, 0xe2, 0x93, 0x6e, 0x6c, 0x5a, 0xe5, 0xeb | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_ACCESS\_DENIED when calling EFI\_MTFTP4\_PROTOCOL.WriteFile again before the first call ends. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() for the first time with all valid parameters.  4. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() for the second time with the same Token before the first call ends. The return status must be EFI\_ACCESS\_DENIED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.10 | 0x4a445105, 0xf332, 0x4251, 0xb1, 0x5c, 0x10, 0x5c, 0x27, 0xeb, 0x67, 0x09 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_UNSUPPORTED when one or more options in the Token->OptionList are in the unsupported list for this implementation. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() when one or more options in the Token->OptionList are in the unsupported list for this implementation. The return status must be EFI\_UNSUPPORTED.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.11 | 0x00ee8108, 0xb8ce, 0x4428, 0x9a, 0x58, 0x3c, 0xf3, 0x33, 0x3e, 0xf4, 0x9a | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_TFTP\_ERROR when the client receives an MTFTPv4 ERROR packet during uploading. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, send a normal OACK to the client.  5. Then OS side should capture the data packets. If having captured, OS side sends an error packet back. The return status must be EFI\_TFTP\_ERROR.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.12 | 0x0b05148f, 0x4f07, 0x413d, 0x8e, 0x47, 0x99, 0xbe, 0xac, 0x25, 0xc3, 0x4d | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_ICMP\_ERROR, when server sends back an ICMP error packet, client should terminate the session. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds an ICMP error packet. The return status must be EFI\_ICMP\_ERROR.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.13 | 0x26ac0f66, 0x2fa1, 0x4e91, 0x93, 0x14, 0xfe, 0x0f, 0x86, 0x93, 0x47, 0x4d | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_ABORTED when the user aborts the upload process in CheckPacket callback routine | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with CheckPacket callback set.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.14 | 0x105a5b0c, 0x72cb, 0x4854, 0x95, 0xdd, 0x86, 0xd7, 0x28, 0x0d, 0xa6, 0x12 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_ABORTED when the user aborts the upload process in TimeoutCallback callback routine | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with TimeoutCallback callback set.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.15 | 0xcaeef509, 0x3240, 0x4675, 0xa2, 0x50, 0x0b, 0xaf, 0xb5, 0x5a, 0xcb, 0x16 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_ABORTED when the user aborts the upload process in PacketNeeded callback routine | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with PacketNeeded callback set.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK. The return status must be EFI\_ABORTED.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.25 | 0xb76d5034, 0xbee6, 0x468a, 0xa1, 0xf2, 0xc6, 0x9f, 0x20, 0x0d, 0xa6, 0xae | EFI\_MTFTP4\_PROTOCOL.WriteFile() - to test the EFI\_INVALID\_PARAMETER conformance of WriteFile when one or more options in Token.OptionList have wrong format. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with invalid timeout option value. The return status must be EFI\_INVALID\_PARAMETER  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.16 | 0xcc7a5aad, 0xe6ec, 0x4fa7, 0x97, 0x0a, 0xac, 0x30, 0xd6, 0x39, 0x20, 0x16 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the user uploads a packet with data less than one block. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with BufferSize set to 100.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK.  5. The server should capture the only data packet sent from the client and respond ACK.  The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.17 | 0x2649936f, 0x161c, 0x40c2, 0xa8, 0x53, 0xc0, 0xa4, 0xa3, 0x2e, 0xf2, 0x62 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the user uploads a packet with data length equal to 1 byte. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with BufferSize set to 1.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK.  5. The server should capture the only data packet sent from the client and respond with an ACK packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.18 | 0xbcbec9fd, 0x00d8, 0x494d, 0xa4, 0xff, 0x86, 0x98, 0xc4, 0xb0, 0x6a, 0x5a | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the user uploads a packet with override configuration data. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with override configuration data.  4. The server should capture the write request. If having captured the packet, server responds a normal OACK.  5. The server should capture the only data packet sent from the client and respond with an ACK packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.19 | 0x741101e7, 0x7888, 0x4bd8, 0xa2, 0xcb, 0x1d, 0xec, 0xb1, 0x34, 0x66, 0x31 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the server responds with an incorrect ack packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds an OACK.  5. The server should capture the only data packet sent from the client and responds with an incorrent ACK to the incorrect packet number followed by a correct ACK. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.20 | 0xa3c22b82, 0x5f14, 0x4419, 0x8f, 0xc6, 0xd7, 0x89, 0x88, 0xa9, 0x88, 0xe9 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the server responds WRQ with an ACK instead of OACK, so client sends data packet to server. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds with an ACK instead of an OACK.  5. The server should capture the only data packet sent from the client and respond with an ACK to this packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.21 | 0x20787b06, 0x8766, 0x4ced, 0xb0, 0x25, 0x65, 0xfa, 0xf1, 0xd3, 0x6c, 0x7c | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the server replies WRQ with an invalid BlockNo ACK instead of OACK, client should ignore this packet and continue the normal process. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds with an invalid BlockNo ACK instead of an OACK.  5. The server should capture the only data packet sent from the client and responds with an ACK to this packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.22 | 0xf549a91c, 0x9d15, 0x45c7, 0xb2, 0xed, 0xa6, 0x7e, 0xff, 0x08, 0xc0, 0xf4 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the server replies DATA packet with an error ACK ( BufferLen < sizeof(UINT16)) instead of OACK, client should ignore this packet and continue the normal process. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds with a normal OACK.  5. The server should capture the only data packet sent from the client and replies with an error ACK ( BufferLen < sizeof(UINT16)) and a correct ACK , client should ignore this error ACK and continue the normal process.  The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.23 | 0x9ee2172f, 0xb96e, 0x4d13, 0x9e, 0x6c, 0xbd, 0x27, 0x44, 0x95, 0xee, 0xc6 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the client receives an unexpected OACK when waiting for ACK packet during uploading file. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds with ACK.  5. The server should capture the only data packet sent from the client and respond with an unexpected OACK and an ACK to this packet. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.8.24 | 0x434974c8, 0x5f8c, 0x46d8, 0x89, 0x57, 0x4e, 0x03, 0xff, 0xfa, 0xa3, 0xc5 | EFI\_MTFTP4\_PROTOCOL.WriteFile() - returns EFI\_SUCCESS when the client receives an error server source port ACK in the case of waiting for ACK packet. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.WriteFile() with all valid parameters.  4. The server should capture the write request. If having captured the packet, server responds with a normal OACK.  5. The server should capture the only data packet sent from the client and replies with an error server source port ACK and a correct ACK for the packet; client should ignore this error ACK and continue the normal process. The return status must be EFI\_SUCCESS.  6. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |

### ReadDirectory()

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| Number | GUID | Assertion | Test Description |
| 5.26.2.9.1 | 0xc9e02ded, 0x0e98, 0x4162, 0x8d, 0x4c, 0x14, 0x58, 0xd0, 0x6a, 0xc7, 0xab | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER with a Token value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with a Token value of NULL. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.2 | 0x120fa0f3, 0xad22, 0x4d39, 0xb9, 0x00, 0xe5, 0x60, 0xdd, 0x8f, 0xe3, 0xb2 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER with a Token->Filename value of NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with a Token->Filename value of NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.3 | 0xe6339187, 0x07d0, 0x467f, 0x9b, 0x89, 0x5b, 0xf5, 0x6c, 0x2d, 0xf8, 0xe0 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER when Token- > OptionCount is not 0 and Token-> OptionList is NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() when Token- >OptionCount is not 0 and Token-> OptionList is NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.4 | 0xc39cb583, 0x3fa4, 0x4c7f,0x9a, 0x93, 0xa5, 0xf9, 0x30, 0xf0, 0x42, 0x6c | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER when both Token->Buffer and Token->CheckPacket are NULL. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() when both Token->Buffer and Token->CheckPacket are NULL.  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.5 | 0xaf58aaf5, 0x3cd0, 0x47aa, 0x8b, 0x93, 0x4f, 0x7b, 0x8b, 0xe8, 0x4d, 0xf1 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER with an OverrideData.GatewayIp value of invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with an OverrideData**.GatewayIp** value of invalid. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.6 | 0x7044e68a, 0x6ca9, 0x4b23, 0x9a, 0x50, 0x91, 0x85, 0x34, 0xa3, 0xca, 0xfb | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER with an OverrideData.ServerIp value of invalid. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with an OverrideData**.ServerIp** value of invalid. The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.7 | 0x8bd21805, 0xec3c, 0x4041, 0xa4, 0xe4, 0x75, 0xf1, 0xa4, 0xec, 0xae, 0x4d | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_INVALID\_PARAMETER when OverrideData.GatewayIp is not in the same subnet with *StationIp*. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() for OverrideData.GatewayIp is not in the same subnet with*StationIp* .  The return status must be  EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.8 | 0x7ecf38c4, 0x4fc5, 0x4663, 0xa4, 0xc4, 0xc0, 0x48, 0x45, 0xfe, 0x59, 0x6b | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_NOT\_STARTED while the EFI MTFTPv4 Protocol driver having not been started. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with all valid parameters.  The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.9 | 0x31599521, 0xb38b, 0x47c8, 0xa6, 0x39, 0xaf, 0x50, 0xe3, 0x30, 0xbe, 0x87 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_UNSUPPORTED when one or more options in the a Token->OptionList value of in the unsupported list of this implementation. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with one or more options in the a Token->OptionList value of in the unsupported list of this implementation.  The return status must be EFI\_UNSUPPORTED.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.10 | 0xefc6d249, 0x179f, 0x49a2, 0x96, 0x1c, 0x0d, 0x90, 0xe7, 0x79, 0x4c, 0xcb | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_ICMP\_ERROR when the server responds with an ICMP error packet, client should terminate the session. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with all valid parameters.  4. If OS side has captured the request, it sends out an ICMP error packet.  The return status must be EFI\_ICMP\_ERROR.  5. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.12 | 0xab9bacfb, 0x79ee, 0x41e5, 0xb9, 0xe9, 0x40, 0x31, 0x7a, 0xf1, 0xcc, 0x64 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - test the EFI\_INVALID\_PARAMETER conformance of ReadDirectory() when one or more options in Token.OptionList have wrong format. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with invalid timeout option value. The return status must be EFI\_INVALID\_PARAMETER.  4. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |
| 5.26.2.9.11 | 0x968731a3, 0x01e8, 0x44d7, 0xad, 0xba, 0x70, 0x88, 0x80, 0x8c, 0x99, 0xe1 | EFI\_MTFTP4\_PROTOCOL.ReadDirectory() - returns EFI\_SUCCESS - read a list of files on the MTFTPv4 server that are logically (or operationally) related to Token->FileName. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Configure() with all valid parameters.  3. Call EFI\_MTFTP4\_PROTOCOL.ReadDirectory() with all valid parameters.  4. If OS side has captured the request, it sends out a normal OACK.  5. Then OS side should capture the ack from the client and send back the only data packet.  6. Then OS side expects another ack.  The return status must be EFI\_ICMP\_ERROR.  7. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |

### Poll()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.2.10.1 | 0x57e97972, 0xa7a3, 0x4647, 0x95, 0x9a, 0x23, 0x29, 0x5b, 0x81, 0x2c, 0xfe | EFI\_MTFTP4\_PROTOCOL.Poll() - returns EFI\_NOT\_STARTED when the EFI MTFTPv4 Protocol driver having not been started. | 1. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.CreateChild() to create a new EFI\_MTFTP4\_PROTOCOL child handle.  2. Call EFI\_MTFTP4\_PROTOCOL.Poll() with all valid parameters. The return status must be EFI\_NOT\_STARTED.  3. Call EFI\_MTFTP4\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() to destroy the newly created EFI\_MTFTP4\_PROTOCOL child handle and clean up the environment. |

## EFI\_UDP6\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_UDP6\_PROTOCOL Section.

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.1.1 | 0x1d3e7323, 0x5a46, 0x4fe3, 0xbf, 0x9d, 0x0a, 0xb8, 0xb1, 0xfd, 0xe7, 0x92 | EFI\_UDP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild()returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call CreateChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.1.2 | 0x8872614e, 0x51d5, 0x434d, 0xb8, 0x71, 0x20, 0x30, 0x4f, 0xbe, 0x04, 0x92 | EFI\_UDP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild()returns EFI\_SUCCESS with a valid ChildHandle. | Call CreateChild()with a valid ChildHandle, the return status should be EFI\_SUCCESS. |

### DestoryChild()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.2.1 | 0x25c39b09, 0xba61, 0x49f3, 0xa3, 0x58, 0x98, 0x11, 0x17, 0xd8, 0x14, 0x0e | EFI\_UDP6\_SERVICE\_BINDING\_PROTOCOL.DestoryChild() - DestoryChild() returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call DestoryChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.2.2 | 0x1e938ebd, 0x425a, 0x4eb6, 0xbd, 0x12, 0x9c, 0xa2, 0xdc, 0xc4, 0x0b, 0x4c | EFI\_UDP6\_SERVICE\_BINDING\_PROTOCOL.DestoryChild() - DestoryChild()returns EFI\_SUCCESS with a valid ChildHandle. | Call DestoryChild()with a valid ChildHandle, the return status should be EFI\_SUCCESS. |

### GetModeData()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.3.1 | 0x920b75d9, 0xba94, 0x4e72, 0xb0, 0x4d, 0x77, 0xe5, 0x81, 0xe7, 0xcf, 0x91 | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_NOT\_STARTED with a not configured ChildHandle | Call GetModeData()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.26.3.3.2 | 0x1a823790, 0xcaec, 0x413d, 0xbc, 0xf3, 0xe7, 0xfa, 0x70, 0xdf, 0x87, 0x6d | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters | 5.26.3.3.2 to 5.26.3.3.4 belong to one case  1. Call GetModeData()with valid parameters, the return status should be EFI\_ SUCCESS. |
| 5.26.3.3.3 | 0xdb72ffca, 0xd3d9, 0x4837, 0x8f, 0x39, 0xf9, 0x67, 0x2e, 0x9d, 0x93, 0xab | Validate the IP6ModeData.IsConfigured | 2. The value of IP6ModeData.IsConfigured should be TRUE. |
| 5.26.3.3.4 | 0x923aecf2, 0xcfc6, 0x4497, 0x8c, 0x49, 0xe6, 0x74, 0x1c, 0x60, 0xc7, 0x66 | Validate the Udp6ConfigData | 3. The value of Udp6ConfigData should be same with the assigned configure data. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.4.1 | 0x1c36e6e8, 0xf453, 0x41bb, 0x84, 0x6f, 0x0a, 0x67, 0x91, 0xa6, 0xe5, 0xe7 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER with a UdpConfigData.StationAddress being neither zero nor one of the configured IP addresses in the underlying IPv6 driver | Call Configure()with a UdpConfigData.StationAddress being neither zero nor one of the configured IP addresses in the underlying IPv6 driver, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.4.2 | 0xef302465, 0x7ec6, 0x4652, 0xbb, 0xf0, 0x62, 0x73, 0xa5, 0x5a, 0xd5, 0x52 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_INVALID\_PARAMETER with a UdpConfigData.RemoteAddressbeing an invalid unicast IPv6 address if it is not zero. | Call Configure()with a UdpConfigData RemoteAddressbeing an invalid unicast IPv6 address if it is not zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.4.3 | 0xe146a746, 0x2985, 0x4a7b, 0x92, 0xa5, 0x08, 0x44, 0x8d, 0x41, 0x69, 0x03 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_ALREADY\_STARTED with a ChildHandle instance has already been started/configured. | Call Configure()with a ChildHandle instance has already been started/configured, the return status should be EFI\_ALREADY\_STARTED. |
| 5.26.3.4.4 | 0x3522ad76, 0xe7aa, 0x4477, 0x9a, 0x41, 0xb7, 0xdc, 0xd6, 0xff, 0x7f, 0xf2 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_ACCESS\_DENIED with UdpConfigData. AllowDuplicatePort is FALSE and UdpConfigData.StationPort is already used by other instance. | Call Configure() with UdpConfigData. AllowDuplicatePort is FALSE and UdpConfigData.StationPort is already used by other instance, the return status should be EFI\_ACCESS\_DENIED. |
| 5.26.3.4.5 | 0x370fcb11, 0x68de, 0x4c01, 0xb0, 0xce, 0x64, 0x53, 0xb0, 0x94, 0x8f, 0xb5 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_SUCCESS with valid parameters | 5.26.3.4.5 to 5.26.3.4.9 belong to one case.  1. Call Configure()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.3.4.6 | 0xd6c84689, 0x0df8, 0x4f69, 0xa6, 0xd0, 0x76, 0x92, 0x89, 0xd0, 0x7d, 0x20 | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters | 2. Call GetModeData()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.3.4.7 | 0x7c2f3112, 0x80e9, 0x4b59, 0x98, 0xd5, 0x06, 0x25, 0x8e, 0x3e, 0x5f, 0x9f | Validate the IP6ModeData.IsConfigured and Udp6ConfigData | 3. The value of IP6ModeData.IsConfigured should be TRUE. The value of Udp6ConfigData should be same with the assigned configure data. |
| 5.26.3.4.8 | 0xc3fbe729, 0x3f1d, 0x41df, 0x83, 0x66, 0x6f, 0x50, 0x45, 0xf7, 0xce, 0x74 | EFI\_UDP6 PROTOCOL.Configure() - Configure() returns EFI\_SUCCESS with a NULL Udp6ConfigData | 4. Call Configure() with a NULL Udp6ConfigData, the return status should be EFI\_SUCCESS. |
| 5.26.3.4.9 | 0xd5a2273d, 0x33f4, 0x4f98, 0xb0, 0x8e, 0x9a, 0xd4, 0xec, 0x49, 0x9c, 0x76 | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_NOT\_STARTED with valid parameters | 5. Call GetModeData()with valid parameters, the return status should be EFI\_NOT\_STARTED. |

### Groups()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.5.1 | 0x1f290403, 0xaa9e, 0x4e3b, 0x94, 0xfb, 0x2d, 0x2b, 0xa0, 0x56, 0x6b, 0x22 | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_NOT\_STARTED with a not configured ChildHandle | Call Groups()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.26.3.5.2 | 0xb1fd2421, 0x6e59, 0x4987, 0xb8, 0x28, 0x1c, 0x13, 0xb1, 0xe3, 0x60, 0x37 | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_INVALID\_PARAMETER with TRUE JoinFlag and an invalid MulticaseAddress | Call Groups() with TRUE JoinFlag and an invalid MulticaseAddress, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.5.3 | 0xd2d32833, 0x51b6, 0x4c1b, 0x9a, 0x1c, 0x08, 0x11, 0xe6, 0xc1, 0xef, 0x4a | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_ALREADY\_STARTED with TRUE JoinFlag and an MulticaseAddress which has already been in the group table. | Call Groups()with TRUE JoinFlag and an MulticaseAddress which has already been in the group table, the return status should be EFI\_ALREADY\_STARTED. |
| 5.26.3.5.4 | 0x68c084c2, 0x55ef, 0x488a, 0x93, 0x24, 0xf9, 0x7b, 0x64, 0xbc, 0xbf, 0x03 | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_NOT\_FOUND with FALSE JoinFlag and an MulticaseAddress which is not in the group table. | 5.26.3.5.4 to 5.26.3.5.7 belong to one case.  1. Call Groups()with FALSE JoinFlag and an MulticaseAddress which is not in the group table, the return status should be EFI\_NOT\_FOUND. |
| 5.26.3.5.5 | 0xf16ff0fc, 0x074a, 0x460e, 0xa1, 0x11, 0x5f, 0x9e, 0xd3, 0x35, 0x9c, 0xac | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_SUCCESS with TRUE JoinFlag and an MulticaseAddress which is not in the group table. | 2. Call Groups()with TRUE JoinFlag and an MulticaseAddress which is not in the group table, the return status should be EFI\_SUCCESS. |
| 5.26.3.5.6 | 0x60253644, 0x6c0e, 0x4662, 0xbd, 0x4c, 0x63, 0xc8, 0xde, 0xb1, 0x0c, 0x21 | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_SUCCESS with FALSE JoinFlag and an MulticaseAddress which has been inserted in the group table. | 3. Call Groups()with FALSE JoinFlag and an MulticaseAddress which has been inserted in the group table, the return status should be EFI\_SUCCESS. |
| 5.26.3.5.7 | 0x5200ac0c, 0x0adb, 0x4a14, 0xa8, 0xbf, 0xbd, 0x42, 0xeb, 0x68, 0x2d, 0x8e | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_NOT\_FOUND with FALSE JoinFlag and an MulticaseAddress which has been removed from the group table. | 4. Call Groups()with FALSE JoinFlag and an MulticaseAddress which has been removed from the group table, the return status should be EFI\_NOT\_FOUND. |
| 5.26.3.5.8 | 0x05df343c, 0xaff4, 0x4dc5, 0x8b, 0xa5, 0xd7, 0x76, 0x63, 0x12, 0x89, 0x25 | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_SUCCESS with TRUE JoinFlag and an MulticaseAddress which is not in the group table. | 5.26.3.5.8 to 5.26.3.5.11 belong to one case.  1. Call Groups() with TRUE JoinFlag and an MulticaseAddress which is not in the group table, the return status should be EFI\_SUCCESS. |
| 5.26.3.5.9 | 0x24602ea3, 0x6bb2, 0x49cf, 0xac, 0x38, 0xb0, 0x13, 0x85, 0x5c, 0xc8, 0xb9 | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. Check the Ip6ModeData.GroupCount and Ip6ModeData.GroupTable | 2. Call GetModeData()with valid parameters, the return status should be EFI\_SUCCESS. Ip6ModeData.GroupCount and Ip6ModeData.GroupTable should be reasonable. |
| 5.26.3.5.10 | 0x6aabe731, 0x0de1, 0x4643, 0x82, 0x4e, 0x18, 0x0c, 0x65, 0x4a, 0xac, 0x0c | EFI\_UDP6 PROTOCOL.Groups() - Groups() returns EFI\_SUCCESS with FALSE JoinFlag and an MulticaseAddress which has been inserted in the group table. | 3. Call Groups()with FALSE JoinFlag and an MulticaseAddress which has been inserted in the group table, the return status should be EFI\_SUCCESS. |
| 5.26.3.5.11 | 0xe9d7c7e6, 0xfc75, 0x48ef, 0xb9, 0x46, 0x00, 0xda, 0x5d, 0xe4, 0xcd, 0xea | EFI\_UDP6 PROTOCOL.GetModeData() - GetModeData() returns EFI\_SUCCESS with valid parameters. Check the Ip6ModeData.GroupCount | 4. Call GetModeData()with valid parameters, the return status should be EFI\_SUCCESS. Ip6ModeData.GroupCount should be reasonable. |

### Transmit()

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| Number | GUID | Assertion | Test Description |
| 5.26.3.6.1 | 0x845b6a05, 0x23f3, 0x4c4f, 0x8d, 0xbc, 0xc0, 0xd3, 0x69, 0x9b, 0x76, 0x46 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_NOT\_STARTED with a not configured ChildHandle | Call Transmit()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.26.3.6.2 | 0x71c15402, 0x7d5c, 0x4b8c, 0xb9, 0xa5, 0xfd, 0xe5, 0x3e, 0x68, 0xed, 0x22 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token | Call Transmit()with a NULL Token, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.3 | 0x12795cad, 0xdbbe, 0x41cd, 0x84, 0x57, 0x5f, 0xae, 0x7d, 0x72, 0x07, 0x2a | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Event | Call Transmit()with a NULL Token->Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.4 | 0xbfcd7c31, 0xcb6f, 0x4cfd, 0xb9, 0xe2, 0x01, 0xd7, 0x5c, 0x6b, 0x44, 0xfa | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Packet.TxData | Call Transmit()with a NULL Token->Packet.TxData, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.5 | 0x4c71fbec, 0x6cc6, 0x4cac, 0x89, 0x74, 0x67, 0xb5, 0x27, 0xbe, 0xef, 0xa3 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with Token->Packet.TxData->FragmentCount is Zero | Call Transmit()with Token->Packet.TxData->FragmentCount is Zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.6 | 0xe0e3d058, 0xbdc3, 0x4ed2, 0x9c, 0x39, 0xea, 0x10, 0x6b, 0xe5, 0xea, 0x7a | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with Token->Packet.TxData->FragmentTable[0].FragmentLength is Zero | Call Transmit()with Token->Packet.TxData->FragmentTable[0].FragmentLength is Zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.7 | 0xbacc7fd3, 0x9a5c, 0x4ae6, 0xb6, 0xb3, 0x7f, 0x95, 0xc7, 0xda, 0xc4, 0xa2 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Packet.TxData->FragmentTable[0].FragmentBuffer | Call Transmit()with a NULL Token->Packet.TxData->FragmentTable[0].FragmentBuffer, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.8 | 0xf062269b, 0x66bb, 0x426a, 0x8e, 0xeb, 0x06, 0xd3, 0x0c, 0xd3, 0x30, 0x16 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with an invalid Token->Packet.TxData->DataLength | Call Transmit()with an invalid Token->Packet.TxData->DataLength which is not equal to the sum of the fragments length, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.9 | 0x5a3af347, 0xdf8a, 0x4a67, 0x80, 0x32, 0xa7, 0xd0, 0xa8, 0xcc, 0x2f, 0x97 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a non-zero Token->Packet.TxData->Udp6sessionData->DestinationAddress which is not specified in Configure process | Call Transmit()with a non-zero Token->Packet.TxData->Udp6sessionData->DestinationAddress which is not specified in Configure process, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.10 | 0x52218200, 0xfffd, 0x4b78, 0x8b, 0x2b, 0xec, 0x17, 0x56, 0x2c, 0x3f, 0xd7 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a zero Token->Packet.TxData->Udp6sessionData->DestinationAddress when DestinationAddressis unspecified when doing Configure process | Call Transmit()with a zero Token->Packet.TxData->Udp6sessionData->DestinationAddress when DestinationAddressis unspecified when doing Configure process, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.11 | 0x97434d51, 0x8e06, 0x49e9, 0x95, 0xd0, 0xfc, 0x3a, 0x03, 0xf9, 0x9c, 0xee | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_INVALID\_PARAMETER with a NULL Token->Packet.TxData->Udp6sessionData and the instance’s UdpConfigData.RemoteAddress is unspecified. | Call Transmit()with a NULL Token->Packet.TxData->Udp6sessionData and the instance’s UdpConfigData.RemoteAddress is unspecified, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.6.12 | 0x31b5da9f, 0xd866, 0x43c7, 0x8c, 0x2b, 0xf8, 0xd9, 0x7c, 0x5b, 0xdb, 0x12 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_ACCESS\_DENIED with a Token->Event which has already been in the transmit queue. | Call Transmit()with a Token->Event which has already been in the transmit queue, the return status should be EFI\_ACCESS\_DENIED. |
| 5.26.3.6.13 | 0x99e6bfb0, 0x903b, 0x4c6c, 0xa4, 0x6c, 0x9e, 0x51, 0x23, 0xdb, 0xdd, 0x4b | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_BAD\_BUFFER\_SIZE with a Token->Packet.TxData->DataLength which beyond the maximum udp6 packet size. | Call Transmit()with a Token->Packet.TxData->DataLength which beyond the maximum udp6 packet size, the return status should be EFI\_BAD\_BUFFER\_SIZE. |
| 5.26.3.6.14 | 0xaf040d05, 0xf0e3, 0x4348, 0x8f, 0x1d, 0xd9, 0x99, 0x90, 0xc7, 0x3d, 0x06 | EFI\_UDP6 PROTOCOL.Transmit() - Transmit() returns EFI\_SUCCESS with valid parameters. | 5.26.3.6.14 to 5.26.3.6.17 belong to one case.  1. Call Transmit()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.3.6.15 | 0x930f3d18, 0x3261, 0x4d17, 0xa3, 0xc0, 0x0d, 0xd1, 0xa6, 0x5d, 0x10, 0xe1 | Token->Event should be signnaled | Token->Event should be signaled. |
| 5.26.3.6.16 | 0x93873bee, 0x2136, 0x432e, 0xb0, 0x8f, 0xd7, 0x9d, 0xd9, 0xf9, 0xcf, 0x04 | Token->Status should be EFI\_SUCCESS | Token->Status should be EFI\_SUCCESS. |
| 5.26.3.6.17 | 0x30ca402a, 0xed8a, 0x4c69, 0x94, 0x7f, 0xa0, 0x4c, 0xd1, 0xbb, 0xaa, 0x58 | The received packet content should be reasonable. | The received packet content should be reasonable. |

### Receive()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.7.1 | 0xb5c83b2c, 0x66c1, 0x4ea5, 0xba, 0x41, 0x6c, 0xc4, 0x85, 0xb2, 0x58, 0xaf | EFI\_UDP6 PROTOCOL.Receive() - Receive() returns EFI\_NOT\_STARTED with a not configured ChildHandle | Call Receive()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.26.3.7.2 | 0xc5c9fd31, 0xf095, 0x473f, 0xaf, 0x53, 0x87, 0x16, 0xc8, 0x51, 0x58, 0x9d | EFI\_UDP6 PROTOCOL.Receive() - Receive() returns EFI\_INVALID\_PARAMETER with a NULL Token | Call Receive()with a NULL Token, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.7.3 | 0xa8916a19, 0xecf7, 0x4392, 0xa1, 0x65, 0xc0, 0x6e, 0x1b, 0xff, 0xc1, 0xe6 | EFI\_UDP6 PROTOCOL.Receive() - Receive() returns EFI\_INVALID\_PARAMETER with a NULL Token->Event | Call Receive()with a NULL Token->Event, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.7.14 | 0x17a43441, 0x0701, 0x446b, 0xab, 0x37, 0x4c, 0xd9, 0x23, 0xcf, 0xc1, 0x43 | EFI\_UDP6 PROTOCOL.Receive() – Receive() returns EFI\_ACCESS\_DENIED with a Token->Event which has already been in the transmit queue. | Call Receive()with a Token->Event which has already been in the transmit queue, the return status should be EFI\_ACCESS\_DENIED. |
| 5.26.3.7.5 | 0x3166ca55, 0x6f3f, 0x4748, 0xbc, 0x48, 0xf7, 0xb6, 0x86, 0x35, 0x9d, 0xcc | EFI\_UDP6 PROTOCOL.Receive() – Receive() returns EFI\_SUCCESS with valid parameters. | 5.26.3.7.5 to 5.26.3.7.8 belong to one case.  1. Call Receive()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.3.7.6 | 0xb5e37f49, 0xc13a, 0x4c80, 0x9d, 0x37, 0x9b, 0xb6, 0x96, 0xb8, 0x14, 0xe7 | Token->Event should be signaled | Token->Event should be signaled. |
| 5.26.3.7.7 | 0x96a78bb2, 0x8d5d, 0x4ed1, 0x9e, 0xc5, 0xc7, 0x34, 0x28, 0x61, 0x1e, 0x7d | The received packet content should be reasonable. | The received packet content should be reasonable. |
| 5.26.3.7.8 | 0x90b87634, 0x1da5, 0x4f26, 0x8c, 0x78, 0x82, 0xba, 0xd5, 0x4a, 0xc8, 0xfe | Token->Status should be EFI\_SUCCESS | Token->Status should be EFI\_SUCCESS. |

### Cancel()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.3.8.1 | 0xd0aafd24, 0xa340, 0x40f4, 0xba, 0x48, 0xe1, 0x59, 0x86, 0xc7, 0x78, 0x79 | EFI\_UDP6 PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_STARTED with a not configured ChildHandle | Call Cancel()with a not configured ChildHandle, the return status should be EFI\_NOT\_STARTED. |
| 5.26.3.8.2 | 0x063478c3, 0x207d, 0x4b82, 0x96, 0xf5, 0x0f, 0xbf, 0xee, 0x2f, 0xac, 0x5f | EFI\_UDP6 PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which hasn’t been inserted into both transmit and receive queue. | Call Cancel()with a Token which hasn’t been inserted into both transmit and receive queue, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.8.3 | 0xed1466df, 0xccc6, 0x412e, 0xbe, 0xda, 0xb9, 0x87, 0xc8, 0x37, 0x2b, 0x6f | EFI\_UDP6 PROTOCOL.Cancel() – Cancel() returns EFI\_NOT\_FOUND with a Token which has been removed into both transmit and receive queue. | Call Cancel()with a Token which has been removed into both transmit and receive queue, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.3.8.4 | 0xebe8e81e, 0x632c, 0x4aa9, 0xa8, 0x50, 0x27, 0xb7, 0x32, 0x63, 0xd0, 0x62 | EFI\_UDP6 PROTOCOL.Cancel() – Cancel() returns EFI\_SUCCESS with valid parameters. | 5.26.3.8.4 to 5.26.3.8.6 belong to one case.  1. Call Cancel()with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.3.8.5 | 0x616b87c1, 0xa5f9, 0x4195, 0x81, 0x38, 0x9c, 0xb8, 0xcd, 0x3c, 0x64, 0x50 | Token->Event should be signaled | Token->Event should be signaled. |
| 5.26.3.8.6 | 0x1280bba6, 0x5d60, 0x43ae, 0xba, 0x36, 0x2d, 0xce, 0x08, 0x79, 0x5e, 0x57 | Token->Status should be EFI\_SUCCESS | Token->Status should be EFI\_SUCCESS. |

## EFI\_MTFTP6\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_MTFTP6\_PROTOCOL Section.

### CreateChild()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.1.1 | 0xed279b2f, 0x0fb1, 0x4f84, 0x8c, 0x11, 0x69, 0x36, 0x88, 0x0f, 0x94, 0x48 | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild()returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle. | Call CreateChild()with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.1.2 | 0x758b358d, 0x4bf0, 0x4bcc, 0x82, 0x6c, 0xe4, 0xad, 0x40, 0xe8, 0x29, 0x6e | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with the 1st validChildHandle. | 5.26.4.1.2 to 5.26.4.1.5 belong to one case.  1. Call CreateChild()with the 1st valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.26.4.1.3 | 0x5446dbb2, 0xbf0b, 0x4685, 0x88, 0xf4, 0x3b, 0x14, 0x3e, 0x2b, 0xdd, 0x1b | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL.CreateChild() - CreateChild() returns EFI\_SUCCESS with the 2nd validChildHandle. | 2. Call CreateChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.26.4.1.4 | 0x6a61e0bd, 0xd760, 0x4788, 0x85, 0xc9, 0x4b, 0x45, 0xe2, 0x9e, 0x7e, 0x02 | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with the 2nd validChildHandle. | 3. Call DestroyChild()with the 2nd valid ChildHandle, the return status should be EFI\_SUCCESS. |
| 5.26.4.1.5 | 0x0403eeee, 0x34d6, 0x47f4, 0x80, 0xcf, 0x28, 0x44, 0xa1, 0x7e, 0xfb, 0x7a | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL.DestroyChild() - DestroyChild() returns EFI\_SUCCESS with the 1st validChildHandle. | 4. Call DestroyChild()with the 1st valid ChildHandle, the return status should be EFI\_SUCCESS. |

### DestroyChild ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.2.1 | 0xc4bdecde, 0xc89f, 0x4402, 0x9e, 0x9b, 0x2e, 0xac, 0xdd, 0xd6, 0xf7, 0xa6 | EFI\_MTFTP6\_SERVICE\_BINDING\_PROTOCOL. DestroyChild() - DestroyChild() returns EFI\_INVALID\_PARAMETER with a NULL ChildHandle*.* | Call DestroyChild() with a NULL ChildHandle, the return status should be EFI\_INVALID\_PARAMETER. |

### GetModeData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.3.1 | 0x2d5eae25, 0x9fda, 0x47c9, 0x80, 0x14, 0xf3, 0x34, 0xf0, 0x1e, 0x67, 0x12 | EFI\_MTFTP6\_PROTOCOL.GetModeData() - GetModeData()returns EFI\_INVALID\_PARAMETER with **NULL** **ModeData** | Call GetModeData()with **NULL** **ModeData,** the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.3.2 | 0x2a17e0f5, 0x6eab, 0x4528, 0xb1, 0xef, 0x4e, 0x99, 0x77, 0xd0, 0xc4, 0xa7 | EFI\_MTFTP6\_PROTOCOL.GetModeData() - GetModeData()returns EFI\_SUCCESS with the valid parameters. | 5.26.4.3.2 to 5.26.4.3.3 belong to one case.  1. Call CreateChild() to create an MTFTP6 instance.  2. Call Configure() to initialize the MTFTP6 instance.  3. Call GetModeData() with the valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.3.3 | 0x51c6056a, 0x9582, 0x444a, 0xba, 0x84, 0x0d, 0xd5, 0xe4, 0x93, 0xb3, 0xa0 | Mtftp6ModeData.ConfigData should be the same as previous set ConfigData. | 4. Mtftp6ModeData.ConfigData should be the same as previous set ConfigData.  5. Call DestroyChild() to destroy the MTFTP6 instance. |

### Configure()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.4.1 | 0x2a946231, 0xa817, 0x45ed, 0x88, 0x59, 0x44, 0x42, 0xd5, 0x6d, 0x53, 0x45 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER when StationIP is neither zero nor a configured IP address. | Call Configure() when StationIP is neither zero nor a configured IP address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.4.2 | 0x02caf586, 0xff1c, 0x41e6, 0xb6, 0x5b, 0x6f, 0xd0, 0x22, 0xa4, 0x60, 0x14 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER when ServerIp is an invalid unicast IPv6 address. | Call Configure() when ServerIp is an invalid unicast IPv6 address, such as ff02::1, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.4.3 | 0x9e06f1d5, 0xb888, 0x4976, 0x9c, 0x39, 0x6a, 0xcf, 0x26, 0x94, 0x2d, 0x76 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_INVALID\_PARAMETER when ServerIp is an invalid unicast IPv6 address. | Call Configure() when ServerIp is an invalid unicast IPv6 address, such as ::, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.4.4 | 0xe5efe42a, 0x6539, 0x487d, 0x89, 0xe3, 0xb2, 0x88, 0x2a, 0xb1, 0xd7, 0xd4 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_ACCESS\_DENIED when StationIp and LocalPort have already been used. | Call Configure() when StationIp and LocalPort have already been used, the return status should be EFI\_ACCESS\_DENIED. |
| 5.26.4.4.5 | 0xcde4ae63, 0x74f6, 0x46fc, 0xa2, 0xae, 0x23, 0x2b, 0x39, 0x3a, 0x02, 0xd3 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_ACCESS\_DENIED when call Configure() again to update the Configure Data without call Configure() with NULL. | Call Configure() again to update the Configure Data without call Configure() with NULL, the return status should be EFI\_ACCESS\_DENIED. |
| 5.26.4.4.6 | 0x90337601, 0x85ca, 0x4152, 0x9f, 0x54, 0xdc, 0xac, 0x13, 0x87, 0x28, 0xdb | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_SUCCESS with valid Mtftp6ConfigData. | 5.26.4.4.6 to 5.26.4.4.9 belong to one case.  1. Call CreateChild() to create an MTFTP6 instance.  2. Call Configure() with valid Mtftp6ConfigData, the return status should be EFI\_SUCCESS. |
| 5.26.4.4.7 | 0x85bceaa3, 0x377a, 0x4847, 0x93, 0x4c, 0xa7, 0xea, 0x95, 0x1a, 0x4e, 0x57 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_SUCCESS when Mtftp6ConfigData is NULL. | 3. Call Configure() when Mtftp6ConfigData is NULL, the return status should be EFI\_SUCCESS. |
| 5.26.4.4.8 | 0x62c85a93, 0x029d, 0x4bb2, 0xb5, 0x82, 0x25, 0x63, 0xae, 0x63, 0xba, 0xd7 | EFI\_MTFTP6\_PROTOCOL.Configure() - Configure()returns EFI\_SUCCESS with valid Mtftp6ConfigData in the second time. | 4. Call Configure() with the valid Mtftp6ConfigData in the second time, the return status should be EFI\_SUCCESS. |
| 5.26.4.4.9 | 0xef42aa6a, 0x1c66, 0x4768, 0x8c, 0x4f, 0xc1, 0x18, 0x8a, 0xdc, 0x69, 0xfb | Call GetModeData() with the valid parameters, the Mtftp6ModeData.ConfigData should be the same as previous set ConfigData. | 5. Call GetModeData() with the valid parameters, the Mtftp6ModeData.ConfigData should be the same as previous set ConfigData.  6. Call DestroyChild() to destroy the MTFTP6 instance. |

### GetInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.5.1 | 0xed2fb03d, 0x8422, 0x46dc, 0xa4, 0xda, 0x31, 0xbe, 0x84, 0xa2, 0xf5, 0x0d | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_NOT\_STARTED when the instance hasn't been configured. | Call GetInfo() when the instance hasn't been configured, the return status should be EFI\_NOT\_STARTED. |
| 5.26.4.5.2 | 0xae921a1d, 0x1d87, 0x40a0, 0x90, 0x09, 0xe1, 0xc3, 0x30, 0x45, 0xd7, 0x7d | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when filename is NULL. | Call GetInfo() when filename is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.5.3 | 0x99321cf6, 0x6591, 0x4b71, 0xbd, 0xbe, 0x5a, 0xcb, 0xbe, 0x97, 0x32, 0x51 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when OptionCount isn't zero and OptionList is NULL. | Call GetInfo() when OptionCount isn't zero and OptionList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.5.4 | 0x807e6ac5, 0x5ff8, 0x4e9c, 0x9f, 0xb0, 0x21, 0x9d, 0x3c, 0xf6, 0xae, 0x1c | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when one or more options in OptionList is wrong format. | Call GetInfo() when one or more options in OptionList is wrong format, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.5.5 | 0xdddb451a, 0x2d08, 0x45f2, 0xb4, 0x3c, 0x63, 0xde, 0xfc, 0xcc, 0x29, 0x42 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when PacketLength is NULL. | Call GetInfo() when PacketLength is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.5.6 | 0x1b915cd6, 0x34eb, 0x4a87, 0x8f, 0x18, 0x63, 0x25, 0x91, 0x1b, 0x80, 0x85 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when OverrideData.ServerIp is invalid unicast address. | Call GetInfo() when OverrideData.ServerIp is invalid unicast address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.5.7 | 0x890ecac1, 0xd029, 0x4a8f, 0x99, 0x10, 0x57, 0x73, 0xa0, 0x70, 0xba, 0xff | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when one or more options in OptionList is unsupported. | Call GetInfo() when one or more options in OptionList is unsupported, the return status should be EFI\_UNSUPPORTED. |
| 5.26.4.5.8 | 0xa807dd98, 0x8d94, 0x42cd, 0x9b, 0x38, 0x2c, 0x4d, 0xa1, 0x43, 0xc1, 0xbc | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_TFTP\_ERROR when a mtftp6 error packet received from the other side. | Call GetInfo() when a mtftp6 error packet received from the other side, the return status should be EFI\_TFTP\_ERROR. |
| 5.26.4.5.9 | 0x8ea63309, 0x2824, 0x4186, 0x93, 0x39, 0xd4, 0x10, 0x44, 0xef, 0xf2, 0x36 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_TIMEOUT when there is no response from the other side. | Call GetInfo() when no response is sent from the other side, the return status should be EFI\_TIMEOUT. |
| 5.26.4.5.10 | 0x29b90725, 0x6662, 0x43f5, 0xa4, 0xe5, 0xb0, 0xb5, 0xfa, 0x26, 0x55, 0x38 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo()returns EFI\_PORT\_UNREACHABLE when an ICMP port unreachable error packet was received. | Call GetInfo()when an ICMP port unreachable error packet was received, the return status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.5.11 | 0x01b2ee0f, 0xb879, 0x4475, 0x9e, 0x58, 0x7d, 0xff, 0x51, 0x13, 0x88, 0x87 | EFI\_MTFTP6\_PROTOCOL. GetInfo () - GetInfo ()returns EFI\_SUCCESS with valid parameters. | 5.26.4.5.11 to 5.26.4.5.12 belong to one case.  1. Call CreateChild() to create an MTFTP6 instance.  2. Call Configure() with valid Mtftp6ConfigData, the return status should be EFI\_SUCCESS.  3. Call GetInfo() with valid parameters.  4. Host send MTFTP6 OACK packet.  5. Host receive the Ack for OACK  6. The return status of GetInfo() should be EFI\_SUCCESS. |
| 5.26.4.5.12 | 0x9ddd227a, 0x0734, 0x4d6b, 0xaf, 0xa9, 0xdb, 0xc1, 0xad, 0x10, 0xb7, 0xd3 | Call ParseOptions() to parse the Packet, the content of EFI\_MTFTP6\_OPTION should be right. | 7. Call ParseOptions() to parse the Packet, the content of EFI\_MTFTP6\_OPTION should be right. |
| 5.26.4.5.13 | 0x1257a949,  0xb84d, 0x43f6, 0x89,0x2b, 0x48,0x5f, 0x33,0x65, 0x82,0x12 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo() returns  EFI\_PORT\_UNREACHABlE when an ICMP port  unreachable error packet  was received. | Call GetInfo() when an ICMP port  unreachable error packet was received,  the return status should be  EFI\_PORT\_UNREACHABLE. |
| 5.26.4.5.14 | 0xd3688340, 0x7b29, 0x46cb, 0x98,0x05, 0x76,0xf0, 0xab,0xef, 0x78,0xc0 | EFI\_MTFTP6\_PROTOCOL  .GetInfo() - GetInfo() returns  EFI\_NETWORK\_UNREACHABLE when an ICMP net  unreachable error packet  was received. | Call GetInfo() when an ICMP net  unreachable error packet was received,  the return status should be  EFI\_NETWORK\_UNREACHABLE. |
| 5.26.4.5.15 | 0x8cffd8f0,0xf8e7, 0x4e6c, 0x8e,0x2f, 0xbe,0xf5, 0xff,0xd8, 0xd4,0x8c | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo() returns  EFI\_HOST\_UNREACHABLE when an ICMP host  unreachable error packet  was received. | Call GetInfo() when an ICMP host  unreachable error packet was received,  the return status should be  EFI\_HOST\_UNREACHABLE. |

### ParseOptions()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.6.1 | 0x165bba38, 0x2cc8, 0x4c86, 0xb5, 0x9a, 0x82, 0xd5, 0x33, 0xe0, 0x3d, 0x12 | EFI\_MTFTP6\_PROTOCOL.ParseOptions() - ParseOptions()returns EFI\_INVALID\_PARAMETER when PacketLen is zero. | Call ParseOptions() when PacketLen is zero, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.6.2 | 0x46feb505, 0x82fd, 0x4d84, 0x98, 0x9f, 0x2a, 0x24, 0x70, 0xff, 0xf9, 0x1f | EFI\_MTFTP6\_PROTOCOL. ParseOptions() - ParseOptions()returns EFI\_INVALID\_PARAMETER when Packet is NULL. | Call ParseOptions() when Packet is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.6.3 | 0x2c5276ba, 0x0fed, 0x474f, 0x91, 0x79, 0x9d, 0xa1, 0xdb, 0x8e, 0x32, 0x19 | EFI\_MTFTP6\_PROTOCOL. ParseOptions() - ParseOptions()returns EFI\_INVALID\_PARAMETER when Packet isn't a valid Mtftp6 packet. | Call ParseOptions() when Packet isn't a valid Mtftp6 packet, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.6.4 | 0x3bd37c27, 0xeaea, 0x474c, 0x92, 0xf7, 0xd4, 0x90, 0x68, 0x50, 0xb5, 0x54 | EFI\_MTFTP6\_PROTOCOL. ParseOptions() - ParseOptions()returns EFI\_INVALID\_PARAMETER when when OptionCount is NULL. | Call ParseOptions() when OptionCount is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.6.5 | 0xd5918b06, 0x88cd, 0x4321, 0x90, 0x18, 0x3e, 0x3e, 0x1a, 0xd2, 0xcd, 0xa1 | EFI\_MTFTP6\_PROTOCOL. ParseOptions() - ParseOptions()returns EFI\_NOT\_FOUND when no Options is found. | Call ParseOptions() when no Options is found, the return status should be EFI\_NOT\_FOUND. |
| 5.26.4.6.6 | 0xad87d495, 0x9738, 0x4c86, 0x97, 0x2c, 0x63, 0xdb, 0xcd, 0x2b, 0xda, 0x84 | EFI\_MTFTP6\_PROTOCOL. ParseOptions() - ParseOptions()returns EFI\_PROTOCOL\_ERROR when one or more of the option fields are not valid. | Call ParseOptions() when one or more of the option fields are not valid, the return status should be EFI\_PROTOCOL\_ERROR. |

### ReadFile()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.7.1 | 0x33346d27, 0x213b, 0x4137, 0xa0, 0x4e, 0xff, 0x79, 0xc3, 0x40, 0x82, 0x2a | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_NOT\_STARTED when the instance hasn’t been configured. | Call ReadFile()when the instance hasn’t been configured. The return status should be EFI\_NOT\_STARTED. |
| 5.26.4.7.2 | 0xfa4a5e44, 0x3823, 0x4273, 0xa8, 0x86, 0x7d, 0x95, 0xb4, 0xd9, 0x0d, 0xa1 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when Token is NULL. | Call ReadFile() when Token is NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.3 | 0x2e09fd86, 0xfe91, 0x4490, 0x9f, 0x33, 0xa9, 0xdf, 0x38, 0x65, 0xf0, 0xdf | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when Token.Filename is NULL. | Call ReadFile() when Token.Filename is NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.4 | 0x197e3225, 0xc6ba, 0x43ee, 0x8d, 0xf7, 0x31, 0x31, 0xbd, 0x71, 0x5e, 0x2e | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when OptionCount isn't zero and OptionList is NULL. | Call ReadFile() when OptionCount isn't zero and OptionList is NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.5 | 0x983411c5, 0x040b, 0x4995, 0xbb, 0x0e, 0x80, 0xb8, 0x69, 0x3b, 0x6b, 0x9e | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is wrong format. | Call ReadFile() when one or more options in Token.OptionList is wrong format. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.6 | 0x7fff6983, 0x39e5, 0x421f, 0x93, 0xb8, 0x3a, 0x16, 0x4d, 0x3a, 0x95, 0x34 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.Buffer and Token.CheckPacket are both NULL. | Call ReadFile() when one or more options in Token.Buffer and Token.CheckPacket are both NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.7 | 0xbdb9aaa3, 0x4efa, 0x41dc, 0x91, 0x22, 0xf9, 0x15, 0x04, 0x4f, 0x34, 0xac | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address. | Call ReadFile() when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.7.8 | 0xf410b1c3, 0x5e50, 0x4389, 0x99, 0xac, 0x5f, 0x9f, 0xe7, 0xed, 0x47, 0x9d | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is not supported. | Call ReadFile() when one or more options in Token.OptionList is not supported. The return status should be EFI\_UNSUPPORTED. |
| 5.26.4.7.9 | 0xb5b845cf, 0x1ac2, 0x4ba6, 0x88, 0x13, 0x35, 0xdc, 0xe6, 0x07, 0xec, 0x82 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_BUFFER\_TOO\_SMALL when Token.BufferSize isn't large enough to hold the download data in download process. | Call ReadFile() when Token.BufferSize isn't large enough to hold the download data in download process. The return status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.26.4.7.10 | 0x79f11d98, 0x4a0c, 0x4c2a, 0x8f, 0x48, 0x58, 0xa6, 0x04, 0x6c, 0x11, 0x94 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_ABORTED when current operation is aborted by user. | Call ReadFile() when current operation is aborted by user. The return status should be EFI\_ABORTED. |
| 5.26.4.7.11 | 0x99d1d01e, 0x23f4, 0x4877, 0x98, 0xe9, 0x6e, 0xa3, 0xb9, 0x98, 0x8e, 0x9d | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_TFTP\_ERROR when a mtftp6 error packet received. | Call ReadFile() when a mtftp6 error packet was received. The return status should be EFI\_TFTP\_ERROR. |
| 5.26.4.7.12 | 0x2e222488, 0xcab8, 0x40d5, 0xa6, 0x71, 0xac, 0xa6, 0x6c, 0x76, 0x58, 0x59 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_PORT\_UNREACHABLE when a icmp6 port unreachable error packet was received. | Call ReadFile() when a icmp6 port unreachable error packet was received. The return status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.7.13 | 0x36a6ebe2,0xdb79, 0x423f, 0xad,0x53, 0x9b,0xf1, 0x7d,0x1b, 0x4c,0x20 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo() returns  EFI\_NETWORK\_UNREACHABLEwhen an ICMP net unreachable error packet was received. | Call GetInfo() when an ICMP net  unreachable error packet was received. The return status should be  EFI\_NETWORK\_UNREACHABLE. |
| 5.26.4.7.14 | 0x3215f20a, 0xec4f, 0x4666, 0x8d,0x6b, 0x e7,0x09, 0x21,0x65, 0x7a,0xa2 | EFI\_MTFTP6\_PROTOCOL.GetInfo() - GetInfo() returns  EFI\_HOST\_UNREACHABLE when an ICMP host  unreachable error packet was received. | Call GetInfo() when an ICMP host unreachable error packet was received. The return status should be  EFI\_HOST\_UNREACHABLE. |
| 5.26.4.7.15 | 0x0d5a4c2a, 0xc87e, 0x41e4, 0xa8, 0x6b, 0xce, 0x62, 0x30, 0x7c, 0x84, 0x06 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_TIMEOUT when no response was received. | Call ReadFile() when no response was received. The return status should be EFI\_TIMEOUT. |
| 5.26.4.7.16 | 0xa29fb61f, 0x4f6c, 0x4e15, 0xaf, 0x96, 0xb7, 0x0c, 0xf2, 0x1c, 0xd7, 0x71 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters. | 5.26.4.7.16 to 5.26.4.7.17 belong to one case.  1. Call ReadFile() with valid parameters. The return status should be EFI\_SUCCESS. |
| 5.26.4.7.17 | 0xea84cd69, 0x5550, 0x44a0, 0xbb, 0xe7, 0x0f, 0xc1, 0x5d, 0x08, 0xb8, 0x35 | The Token.Status should be EFI\_SUCCESS. | 2. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.7.18 | 0x789c0d97, 0x68d8, 0x4a72, 0xa8, 0x7f, 0x66, 0x37, 0xcb, 0x6b, 0xb8, 0xe0 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters. | 5.26.4.7.18 to 5.26.4.7.20 belong to one case.  1. Call ReadFile() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.19 | 0x9a991ff0, 0x84af, 0x4290, 0x85, 0x3b, 0x02, 0xe0, 0xb7, 0xe4, 0xe0, 0x28 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.20 | 0xd90350a1, 0x7e65, 0x435f, 0xa3, 0x8f, 0x24, 0x27, 0xf1, 0x08, 0x8f, 0x5f | The Token.Status should be EFI\_SUCCESS. | 3. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.7.21 | 0xdf7f3d8e, 0x492e, 0x46ef, 0xb9, 0x8e, 0x26, 0x06, 0x9e, 0x85, 0x7a, 0x73 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and Token.BufferSize is not large enough. | 5.26.4.7.21 to 5.26.4.7.23 belong to one case.  1. Call ReadFile() with valid parameters, Token.Event is not NULL and Token.BufferSize is not large enough, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.22 | 0x5ff92824, 0x75a9, 0x4e39, 0xa3, 0xa0, 0xc6, 0x2d, 0x42, 0x09, 0x48, 0x78 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.23 | 0x5bd23489, 0xc9df, 0x4ce5, 0x84, 0xe9, 0x51, 0xa1, 0x88, 0xe2, 0x96, 0x3f | The Token.Status should be EFI\_BUFFER\_TOO\_SMALL. | 3. The Token.Status should be EFI\_BUFFER\_TOO\_SMALL. |
| 5.26.4.7.24 | 0x4f23a070, 0xd01c, 0x441c, 0x88, 0x36, 0x26, 0xc4, 0x00, 0x05, 0xda, 0x0b | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and current operation is aborted by user. | 5.26.4.7.24 to 5.26.4.7.26 belong to one case.  1. Call ReadFile() with valid parameters, Token.Event is not NULL and current operation is aborted by user, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.25 | 0xb22cb194, 0xd7db, 0x4141, 0x87, 0x8d, 0xab, 0xb7, 0x76, 0x9a, 0x12, 0xf6 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.26 | 0x8a946d5c, 0xa820, 0x47c1, 0x83, 0xdf, 0x4b, 0x73, 0x9f, 0x52, 0x89, 0x53 | The Token.Status should be EFI\_ABORTED. | 3. The Token.Status should be EFI\_ABORTED. |
| 5.26.4.7.27 | 0x11b9ec6c, 0xff52, 0x4279, 0x9a, 0x07, 0x64, 0x1b, 0xcb, 0xe5, 0x37, 0x73 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received. | 5.26.4.7.27 to 5.26.4.7.29 belong to one case.  1. Call ReadFile() with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.28 | 0x70e67e7f, 0x0a67, 0x4402, 0xa2, 0x63, 0x9a, 0xe9, 0x75, 0xcb, 0x7c, 0x71 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.29 | 0x35b45761, 0x9657, 0x4211, 0xb4, 0xfb, 0xed, 0x68, 0xe1, 0x98, 0xf4, 0x02 | The Token.Status should be EFI\_TFTP\_ERROR. | 3. The Token.Status should be EFI\_TFTP\_ERROR. |
| 5.26.4.7.30 | 0x6aa2ecf0, 0xb01e, 0x4a8e, 0xb3, 0xdc, 0xd0, 0x54, 0xce, 0xb6, 0xa0, 0x83 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.7.30 to 5.26.4.7.32 belong to one case.  1. Call ReadFile() with valid parameters, Token.Event is not NULL and a icmp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.31 | 0x6794533c, 0xf4f6, 0x4972, 0x8c, 0xf4, 0x3a, 0xc6, 0x20, 0x20, 0x19, 0x4e | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.32 | 0xda706911, 0x98fd, 0x49a3, 0xa6, 0x55, 0x74, 0x75, 0xb5, 0x5a, 0x0d, 0x4f | The Token.Status should be EFI\_PORT\_UNREACHABLE. | 3. The Token.Status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.7.33 | 0xc80090b9, 0x0876, 0x4959, 0xbd, 0x80, 0x6c, 0x41, 0x40, 0x92, 0xac, 0x48 | EFI\_MTFTP6\_PROTOCOL.ReadFile() - ReadFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.7.33 to 5.26.4.7.35 belong to one case.  1. Call ReadFile() with valid parameters, Token.Event is not NULL and no response was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.7.34 | 0xa8ce4013, 0x648f, 0x46d5, 0xa4, 0x89, 0xd3, 0x33, 0x1a, 0xee, 0x1d, 0x57 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.7.35 | 0xbb028e8c, 0xf45a, 0x4052, 0x83, 0x3b, 0x45, 0x81, 0xec, 0x1b, 0x62, 0x0f | The Token.Status should be EFI\_TIMEOUT. | 3. The Token.Status should be EFI\_TIMEOUT. |

### WriteFile()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.8.1 | 0x3123cc65, 0x7cea, 0x4b5e, 0x92, 0xd9, 0x7d, 0x8c, 0xe4, 0x95, 0x3f, 0x4f | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_NOT\_STARTED when the instance hasn’t been configured. | Call WriteFile()when the instance hasn’t been configured, the return status should be EFI\_NOT\_STARTED. |
| 5.26.4.8.2 | 0x6738f74e, 0x3f6f, 0x48db, 0xaa, 0x1b, 0x8d, 0x38, 0xf8, 0x19, 0x4a, 0x61 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - Writeile()returns EFI\_INVALID\_PARAMETER when Token is NULL. | Call WriteFile() when Token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.3 | 0x637d7d38, 0x102d, 0x4382, 0x9f, 0x95, 0x0f, 0xc3, 0x97, 0x84, 0x29, 0xcf | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when Token.Filename is NULL. | Call WriteFile() when Token.Filename is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.4 | 0xf39cdb05, 0xd139, 0x4dd7, 0x8c, 0x15, 0x41, 0x2f, 0x8b, 0xde, 0x04, 0xb3 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when Token.OptionCount isn't zero and Token.OptionList is NULL. | Call WriteFile() when Token.OptionCount isn't zero and Token.OptionList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.5 | 0x9d3fcbac, 0xbc54, 0x46d9, 0x85, 0x41, 0x64, 0xe3, 0xaa, 0x41, 0x25, 0x58 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is wrong format. | Call WriteFile() when one or more options in Token.OptionList is wrong format, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.6 | 0x181a05aa, 0xcd53, 0x4ba1, 0xb8, 0xf3, 0x98, 0x09, 0x9b, 0xd4, 0xa7, 0xe1 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.Buffer and Token.PacketNeeded are both NULL. | Call WriteFile() when one or more options in Token.Buffer and Token.PacketNeeded are both NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.7 | 0xb820e6cb, 0x5290, 0x4748, 0x94, 0x66, 0x8d, 0xc1, 0x99, 0x2e, 0x12, 0xc1 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address. | Call WriteFile() when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.8.8 | 0x3854186d, 0x550e, 0x4006, 0xbe, 0xff, 0x1c, 0x52, 0x5b, 0xa4, 0x3e, 0xcf | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is not supported. | Call WriteFile() when one or more options in Token.OptionList is not supported, the return status should be EFI\_UNSUPPORTED. |
| 5.26.4.8.9 | 0x54ae8e18, 0xd428, 0x48c1, 0xad, 0x32, 0xb5, 0x51, 0xda, 0x1e, 0x90, 0x7f | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters. | 5.26.4.8.9 to 5.26.4.8.10 belong to one case.  1. Call WriteFile() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.10 | 0xc2e70601, 0xb8d5, 0x4aa6, 0xbb, 0x5c, 0x6e, 0xda, 0x2a, 0xd0, 0xa6, 0x6a | The Token.Status should be EFI\_SUCCESS. | 2. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.8.11 | 0x9e572894, 0x38da, 0x4039, 0x96, 0xc9, 0xaa, 0xfe, 0xa6, 0x48, 0x60, 0x74 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters. | 5.26.4.8.11 to 5.26.4.8.13 belong to one case.  1. Call WriteFile() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.12 | 0xeba41d25, 0x03d7, 0x41d7, 0xa0, 0x58, 0xa8, 0x90, 0xad, 0x68, 0xa7, 0x0b | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.8.13 | 0x39afac2f, 0xb620, 0x45e9, 0x8d, 0x82, 0x7a, 0xec, 0x36, 0x9d, 0x19, 0xfb | The Token.Status should be EFI\_SUCCESS. | 3. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.8.14 | 0x98410f1a, 0x6f26, 0x45f4, 0x8c, 0x5d, 0x9e, 0x11, 0x19, 0x53, 0xd3, 0xf8 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and current operation is aborted by user. | 5.26.4.8.14 to 5.26.4.8.16 belong to one case.  1. Call WriteFile() with valid parameters, Token.Event is not NULL and current operation is aborted by user, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.15 | 0xbb6d10b9, 0x4466, 0x4f97, 0x9a, 0x3f, 0xa9, 0xa0, 0x7a, 0x49, 0x88, 0x5d | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.8.16 | 0x87eff284, 0x80a4, 0x48ae, 0xa1, 0x87, 0x54, 0xa5, 0xf6, 0xd8, 0xcc, 0xcf | The Token.Status should be EFI\_ABORTED. | 3. The Token.Status should be EFI\_ABORTED. |
| 5.26.4.8.17 | 0x84cf72a7, 0x0d57, 0x4519, 0x8d, 0x94, 0x5a, 0x63, 0xeb, 0xff, 0x8c, 0x73 | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received. | 5.26.4.8.17 to 5.26.4.8.19 belong to one case.  1. Call WriteFile() with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.18 | 0x35003a00, 0x715d, 0x4f05, 0x80, 0x0d, 0xec, 0xcc, 0x92, 0xed, 0x19, 0x51 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.8.19 | 0x11ce4fd8, 0x7d75, 0x49ec, 0x8a, 0x2b, 0x98, 0x57, 0xd9, 0xce, 0x5d, 0x66 | The Token.Status should be EFI\_TFTP\_ERROR. | 3. The Token.Status should be EFI\_TFTP\_ERROR. |
| 5.26.4.8.20 | 0xb1d3d500, 0x4afa, 0x465f, 0x8e, 0xac, 0x79, 0x0d, 0xf9, 0xef, 0x3f, 0xea | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.8.20 to 5.26.4.8.22 belong to one case.  1. Call WriteFile() with valid parameters, Token.Event is not NULL and a icmp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.21 | 0x42093ba6, 0x54ce, 0x408c, 0x82, 0x0f, 0xce, 0xba, 0xf4, 0x56, 0x58, 0xe9 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.8.22 | 0xc7ba7541, 0x6d62, 0x4143, 0x8e, 0x18, 0x6e, 0xbb, 0xfe, 0x2c, 0x42, 0xd8 | The Token.Status should be EFI\_PORT\_UNREACHABLE. | 3. The Token.Status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.8.23 | 0x08fffd13, 0x7cfb, 0x49ec, 0x8b, 0x02, 0x2a, 0x45, 0xb9, 0x78, 0x1d, 0xcd | EFI\_MTFTP6\_PROTOCOL.WriteFile() - WriteFile()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.8.23 to 5.26.4.8.25 belong to one case.  1. Call WriteFile() with valid parameters, Token.Event is not NULL and no response was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.8.24 | 0xeb45268b, 0xa856, 0x4ab8, 0xb4, 0xba, 0x38, 0xf9, 0x35, 0xd7, 0x99, 0x2c | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.8.25 | 0xa93f3a80, 0xeb22, 0x4ad8, 0xb5, 0x7c, 0xf5, 0x39, 0x7d, 0xe5, 0x39, 0x33 | The Token.Status should be EFI\_TIMEOUT. | 3. The Token.Status should be EFI\_TIMEOUT. |

### ReadDirectory()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.9.1 | 0x1947060b, 0x44a2, 0x4e22, 0x9b, 0xe9, 0x20, 0xf4, 0xa2, 0x9e, 0xb4, 0x2e | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_NOT\_STARTED when the instance hasn’t been configured. | Call ReadDirectory()when the instance hasn’t been configured, the return status should be EFI\_NOT\_STARTED. |
| 5.26.4.9.2 | 0x9d2a2470, 0x98de, 0x425a, 0xbb, 0x3f, 0xab, 0x01, 0x84, 0x13, 0xe6, 0x9c | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when Token is NULL. | Call ReadDirectory() when Token is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.3 | 0x6288a172, 0xbc68, 0x49c1, 0xa8, 0x85, 0x56, 0x5a, 0x9e, 0xf9, 0x5c, 0x46 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when Token.Filename is NULL. | Call ReadDirectory() when Token.Filename is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.4 | 0xe95a938b, 0x7d16, 0x4b40, 0xbd, 0x23, 0x81, 0x7b, 0xf6, 0xf1, 0xff, 0xb4 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when Token.OptionCount isn't zero and Token.OptionList is NULL. | Call ReadDirectory() when Token.OptionCount isn't zero and Token.OptionList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.5 | 0x4ec4e899, 0x9f53, 0x461a, 0xb3, 0xe4, 0x21, 0xe4, 0x1e, 0x66, 0x56, 0x21 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is wrong format. | Call ReadDirectory() when one or more options in Token.OptionList is wrong format, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.6 | 0xbb6ac976, 0xbe0b, 0x4329, 0x98, 0xe3, 0x1f, 0x2d, 0xc8, 0x63, 0x8f, 0x9a | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when one or more options in Token.Buffer and Token.CheckPacket are both NULL. | Call ReadDirectory() when one or more options in Token.Buffer and Token.CheckPacket are both NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.7 | 0xa41fa6b3, 0xc128, 0x451f, 0x82, 0xf4, 0xf8, 0x92, 0x8e, 0xa8, 0x61, 0xfd | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address. | Call ReadDirectory() when one or more options in Token.OverrideData.ServerIp is not valid unicast IPv6 address, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.26.4.9.8 | 0xed4d5f77, 0x7856, 0x4c4a, 0x9a, 0x6b, 0x19, 0x66, 0xc7, 0xf6, 0x80, 0xfb | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_INVALID\_PARAMETER when one or more options in Token.OptionList is not supported. | Call ReadDirectory() when one or more options in Token.OptionList is not supported, the return status should be EFI\_UNSUPPORTED. |
| 5.26.4.9.9 | 0xf6439066, 0xb46e, 0x484e, 0x9a, 0x99, 0xfe, 0xa9, 0xaf, 0x72, 0xf9, 0xce | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_ABORTED when current operation is aborted by user. | Call ReadDirectory() when current operation is aborted by user, the return status should be EFI\_ABORTED. |
| 5.26.4.9.10 | 0xd8f2b214, 0xbfc2, 0x4344, 0x85, 0x13, 0xfc, 0x07, 0x04, 0x3f, 0x63, 0x6f | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_TFTP\_ERROR when a mtftp6 error packet was received. | Call ReadDirectory() when a mtftp6 error packet was received, the return status should be EFI\_TFTP\_ERROR. |
| 5.26.4.9.11 | 0x74cbaed3, 0x1521, 0x4677, 0x83, 0xb0, 0xca, 0xac, 0x84, 0x92, 0x27, 0x68 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_PORT\_UNREACHABLE when a icmp6 port unreachable error packet was received. | Call ReadDirectory() when a icmp6 port unreachable error packet was received, the return status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.9.12 | 0x71038101, 0x41ba, 0x416e, 0xa7, 0xb3, 0xd6, 0x12, 0x27, 0x8f, 0xb9, 0xe5 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_TIMEOUT when no response was received. | Call ReadDirectory() when no response was received, the return status should be EFI\_TIMEOUT. |
| 5.26.4.9.13 | 0x177b35e7, 0x8e93, 0x48c4, 0x8f, 0x19, 0x7e, 0xe7, 0xf9, 0x9d, 0x65, 0x60 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters. | 5.26.4.9.13 to 5.26.4.9.14 belong to one case.  1. Call ReadDirectory() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.14 | 0x63dd12dd, 0x62e4, 0x40d3, 0x88, 0x30, 0xac, 0x2e, 0x61, 0xd2, 0x08, 0xb8 | The Token.Status should be EFI\_SUCCESS. | 2. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.9.15 | 0xbc2d0220, 0xa92b, 0x4281, 0x82, 0xf1, 0x45, 0xf1, 0x98, 0x10, 0x33, 0x05 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters. | 5.26.4.9.15 to 5.26.4.9.17 belong to one case.  1. Call ReadDirectory() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.16 | 0xc495566f, 0x31a5, 0x47d3, 0x97, 0x50, 0xdf, 0xe9, 0xed, 0xfd, 0xe7, 0xfc | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.9.17 | 0xb734f8cc, 0x91c2, 0x4ce8, 0xa3, 0x11, 0x70, 0x70, 0xb8, 0x27, 0x6b, 0x03 | The Token.Status should be EFI\_SUCCESS. | 3. The Token.Status should be EFI\_SUCCESS. |
| 5.26.4.9.18 | 0xce7b5436, 0x3e80, 0x46d1, 0xbc, 0x6a, 0x04, 0x05, 0x91, 0xd8, 0xf2, 0x00 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and current operation is aborted by user. | 5.26.4.9.18 to 5.26.4.9.20 belong to one case.  1. Call ReadDirectory() with valid parameters, Token.Event is not NULL and current operation is aborted by user, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.19 | 0x06cc2106, 0x12e0, 0x4b26, 0x82, 0x84, 0xb6, 0x45, 0x26, 0x56, 0xb7, 0x67 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.9.20 | 0x2f8d4207, 0xcaa0, 0x4fe8, 0xae, 0x18, 0x09, 0xfc, 0xd8, 0x1f, 0x60, 0xb1 | The Token.Status should be EFI\_ABORTED. | 3. The Token.Status should be EFI\_ABORTED. |
| 5.26.4.9.21 | 0xf19e2441, 0x2e9d, 0x4754, 0xaa, 0x1c, 0x9d, 0xff, 0x5d, 0xac, 0x7b, 0xfb | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received. | 5.26.4.9.21 to 5.26.4.9.23 belong to one case.  1. Call ReadDirectory() with valid parameters, Token.Event is not NULL and a mtftp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.22 | 0x6d29ada4, 0xb541, 0x4ed1, 0x9c, 0x54, 0x42, 0x97, 0xc6, 0x99, 0xa9, 0x2f | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.9.23 | 0x7ee4d2f0, 0x43a5, 0x4730, 0x88, 0x00, 0x7f, 0x72, 0xcd, 0x76, 0x6e, 0xb5 | The Token.Status should be EFI\_TFTP\_ERROR. | 3. The Token.Status should be EFI\_TFTP\_ERROR. |
| 5.26.4.9.24 | 0x24b159a5, 0x0d03, 0x408d, 0x84, 0x3d, 0x5b, 0xfd, 0xb8, 0xf7, 0x10, 0xc4 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.9.24 to 5.26.4.9.26 belong to one case.  1. Call ReadDirectory() with valid parameters, Token.Event is not NULL and a icmp6 error packet was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.25 | 0x450a81e4, 0xf424, 0x4399, 0x9a, 0xb9, 0xef, 0x2e, 0xa9, 0x4a, 0x7e, 0x46 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.9.26 | 0xc2b9002f, 0x9183, 0x4a4b, 0xba, 0x26, 0x3f, 0x72, 0x93, 0xed, 0xf0, 0xa4 | The Token.Status should be EFI\_PORT\_UNREACHABLE. | 3. The Token.Status should be EFI\_PORT\_UNREACHABLE. |
| 5.26.4.9.27 | 0x1aef9df8, 0xcf77, 0x449a, 0xa1, 0x6b, 0x0b, 0x8d, 0x8e, 0x4a, 0xf9, 0x06 | EFI\_MTFTP6\_PROTOCOL. ReadDirectory() - ReadDirectory()returns EFI\_SUCCESS with valid parameters, Token.Event is not NULL and a icmp6 error packet was received. | 5.26.4.9.27 to 5.26.4.9.29 belong to one case.  1. Call ReadDirectory() with valid parameters, Token.Event is not NULL and no response was received, the return status should be EFI\_SUCCESS. |
| 5.26.4.9.28 | 0xb5398e7d, 0x02cb, 0x4fd2, 0xa9, 0xdd, 0xd9, 0x75, 0x8f, 0x32, 0xd9, 0x26 | The Token.Event should be signaled. | 2. The Token.Event should be signaled. |
| 5.26.4.9.29 | 0x279e1bfa, 0x5db9, 0x44ba, 0xbb, 0x3c, 0xe4, 0x3b, 0xf1, 0xeb, 0xa8, 0x70 | The Token.Status should be EFI\_TIMEOUT. | 3. The Token.Status should be EFI\_TIMEOUT. |

### Poll()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.26.4.10.1 | 0xdfb24a28, 0xc61c, 0x4ec0, 0x9e, 0x78, 0x3a, 0xcf, 0x85, 0x9f, 0xa8, 0x0e | EFI\_MTFTP6\_PROTOCOL. Poll() – Poll()returns EFI\_NOT\_STARTED when the instance hasn’t been configured. | Call Poll()when the instance hasn’t been configured, the return status should be EFI\_NOT\_STARTED. |

# Network Protocols VLAN and EAP

## EFI\_VLAN\_CONFIG\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_VLAN\_CONFIG\_PROTOCOL Section.

### Set()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.27.1.1.1 | 0xedbb5f4f, 0x4de7, 0x43ff, 0x82, 0x1c, 0x13, 0x80, 0x98, 0x95, 0xd1, 0x76 | EFI\_VLAN\_CONFIG\_PROTOCOL.SET - SET() returns EFI\_INVALID\_PARAMETER with an invalid VlanId. | Call Set() with valid parameters except an invalid VlanId, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.1.2 | 0x9c1292c2, 0xe03a, 0x438d, 0x9d, 0xab, 0x4e, 0xd0, 0xa9, 0xa8, 0xb6, 0x83 | EFI\_VLAN\_CONFIG\_PROTOCOL.SET - SET() returns EFI\_INVALID\_PARAMETER with an invalid Priority. | Call Set() with valid parameters except an invalid Priority, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.1.3 | 0xe3584990, 0x0b04, 0x48ea, 0x96, 0x3d, 0x36, 0xf7, 0x62, 0x29, 0x9f, 0x42 | EFI\_VLAN\_CONFIG\_PROTOCOL.SET - SET() returns EFI\_SUCCESS with a valid VlanId and a valid Priority. | 5.27.1.1.3 – 5.27.1.1.6 belong to one case  1. Call Set()with a valid VlanId and a valid Priority, The return status should be EFI\_SUCCESS. |
| 5.27.1.1.4 | 0xc14eb533, 0xc076, 0x4a9e, 0xb5, 0x6d, 0xea, 0x00, 0xce, 0xac, 0x7b, 0x2d | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_SUCCESS with the same VlanId, a valid NumberOfVlan and a valid Priority. | 2. Call Find()with the same VlanId, a valid NumberOfVlan and a valid Priority. The return status should be EFI\_SUCCESS. The NumberOfVlan should be 1. The output VlanId and Priority in the Entries should be the same value of VlanId/Priority which are set in step1. |
| 5.27.1.1.5 | 0x48deb1ad, 0xd59b, 0x404e, 0x88, 0xe7, 0x42, 0x53, 0xac, 0x0e, 0xce, 0x22 | EFI\_VLAN\_CONFIG\_PROTOCOL.SET - SET() returns EFI\_SUCCESS with the same VlanId and a different Priority. | 3. Call Set()with the same VlanId and a different Priority, The return status should be EFI\_SUCCESS. |
| 5.27.1.1.6 | 0x98f1580a, 0xa2b6, 0x4e61, 0x8b, 0xc9, 0x31, 0xb1, 0xac, 0xb0, 0x20, 0xb5 | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_SUCCESS with the same VlanId, a valid NumberOfVlan and a valid Priority. | 4. Call Find()with the same VlanId, a valid NumberOfVlan and a valid Priority. The return status should be EFI\_SUCCESS. The NumberOfVlan should be 1. The output VlanId and Priority in the Entries should be the same value of VlanId/Priority which are set in step2. |

### Find()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.27.1.2.1 | 0x07f07b52, 0x93e8, 0x43fe, 0xa7, 0x84, 0x01, 0x71, 0x02, 0x37, 0x66, 0x82 | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_INVALID\_PARAMETER with an invalid VlanId. | Call Find() with valid parameters except an invalid VlanId, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.2.2 | 0xedb0b22d, 0xa6b5, 0x497d, 0xbb, 0x9b, 0x75, 0x85, 0x47, 0x11, 0x35, 0xc5 | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_INVALID\_PARAMETER with NumberOfVlan been NULL. | Call Find() with valid parameters except NumberOfVlan being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.2.3 | 0x57d7d76b, 0x6b88, 0x44c9, 0x85, 0x0c, 0x0f, 0xb6, 0xcb, 0xe1, 0x9c, 0xd9 | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_INVALID\_PARAMETER with Entries been NULL. | Call Find() with valid parameters(a valid NumberOfVlan and an NULL VlanId) except Entries being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.2.4 | 0x1de50bab, 0x1f3a, 0x4c62, 0x82, 0x93, 0x6e, 0x9a, 0x11, 0x03, 0xce, 0x6f | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_INVALID\_PARAMETER with Entries been NULL. | Call Find() with valid parameters(a valid NumberOfVlan and a valid VlanId) except Entries being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.2.5 | 0x49d1f535, 0x3b53, 0x4892, 0x98, 0x02, 0x5c, 0x19, 0xa3, 0x6d, 0xd1, 0x53 | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_SUCCESS or EFI\_NOT\_FOUND with valid parameters. | Call Find() with valid parameters(a valid NumberOfVlan, a valid Entries and NULL VlanId), The return status should be EFI\_SUCCESS or EFI\_NOT\_FOUND. If EFI\_SUCCESS. NumberOfVlan should be greater than 0 and Entries should not be NULL. If EFI\_NOT\_FOUND, NumberOfVlan should be 0 and Entries should be NULL. |
| 5.27.1.2.6 | 0x2f95fed6, 0xed1b, 0x4ac0, 0x9a, 0xa8, 0x97, 0x81, 0x76, 0xac, 0xcf, 0x8d | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_SUCCESS with valid parameters. | 5.27.1.2.6 – 5.27.1.2.7 belong to one case  1. Call Set() to config a Vlan  2. Call Find() with the same VlanId The return status should be EFI\_SUCCESS. The NumberOfVlan should be 1. The output VlanId and Priority in the Entries should be the same value of VlanId/Priority which are set in step 1. |
| 5.27.1.2.7 | 0xf4d6c7d9, 0x21bf, 0x48b5, 0xb0, 0x1d, 0x10, 0xf4, 0xfa, 0x11, 0xf7, 0x8d | EFI\_VLAN\_CONFIG\_PROTOCOL.Find - Find() returns EFI\_NOT\_FOUND with valid parameters. | 3. Call Remove() to delete the same VlanId  4. Call Find() with the same VlanId The return status should be EFI\_NOT\_FOUND. The NumberOfVlan should be 0. The Entries should be NULL. |

### Remove()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.27.1.3.1 | 0x1adaa7a4, 0xd1d3, 0x49d5, 0x97, 0xb4, 0xe4, 0x0f, 0x63, 0x1b, 0x68, 0xd0 | EFI\_VLAN\_CONFIG\_PROTOCOL.Remove - Remove() returns EFI\_INVALID\_PARAMETER with an invalid VlanId. | Call Remove()with valid parameters except an invalid VlanId, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.27.1.3.2 | 0xaa94b834, 0xf247, 0x4530, 0xb0, 0x6a, 0x49, 0x4e, 0x10, 0x37, 0xb5, 0xe5 | EFI\_VLAN\_CONFIG\_PROTOCOL.Remove - Remove() returns EFI\_NOT\_FOUND with an not set VlanId. | Call Remove()with valid parameters except an not set VlanId, The return status should be EFI\_NOT\_FOUND. |
| 5.27.1.3.3 | 0x30991f39, 0x7410, 0x46ed, 0xa5, 0xe6, 0xdb, 0xc9, 0xf7, 0x86, 0x4f, 0xd3 | EFI\_VLAN\_CONFIG\_PROTOCOL.Remove - Remove() returns EFI\_SUCCESS with valid parameters. | 5.27.1.3.3 – 5.27.1.3.4 belong to one case  1. Call Set() to configure a VlanId  2. Call Remove() with the same VlanId. The return status should be EFI\_SUCCESS. |
| 5.27.1.3.4 | 0x28b96fd8, 0xc729, 0x4906, 0xa6, 0xbd, 0xda, 0xe4, 0xd0, 0x2a, 0x82, 0x1e | EFI\_VLAN\_CONFIG\_PROTOCOL.Remove - Remove() returns EFI\_NOT\_FOUND with valid parameters. | 3. Call Remove() with the same VlanId. The return status should be EFI\_NOT\_FOUND. |

# EFI Tape IO to Test

## EFI\_TAPE\_IO\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_TAPE\_IO\_PROTOCOL Section.

Configuration

Before testing of TapeRead() and TapeSapce(), we must make tape ready by calling TapeWrite() and TapeWriteFM() to write some blocks and some FileMarks.

Required Elements

### TapeRead()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.1.0.1 | 0xc42dcb51, 0x5101, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeRead()**.** | Check interface/environment valid. |
| 12.5.1.1.1 | 0xc42dcb51, 0x5102, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRead() read some data from the tape. | Call TapeRead() with (bufferSize=16384) should return EFI\_SUCCESS.  Exit testing when error occurred.  Please note the configuration. |
| 12.5.1.1.2 | 0xc42dcb51, 0x512f, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | Verify the data getting from step **(12.5.1.1.1)**. | After success of step **(12.5.1.1.1)** check reading data is all correctly or not. |
| 12.5.1.2.1 | 0xc42dcb51, 0x5103, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRead() Buffer invalid checking test. | Call TapeRead() with (bufferSize!=0,Buffer=NULL) should return EFI\_INVALID\_PARAMETER. |
| 12.5.1.2.2 | 0xc42dcb51, 0x5104, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRead() This=NULLchecking test. | Call TapeRead()with (This =NULL) should return EFI\_INVALID\_PARAMETER. |
| 12.5.1.3.1 | 0xc42dcb51, 0x5105, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRead()parameters valid checking test. | Call TapeRead() with (bufferSize=0,buffer=NULL) should return EFI\_SUCCESS. |
| 12.5.1.3.2 | 0xc42dcb51, 0x5107, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRead()parameters valid checking test. | Call TapeRead() with (bufferSize=0,buffer!=NULL) should return EFI\_SUCCESS. |

### TapeWrite()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.2.0.1 | 0xc42dcb51, 0x5108, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeWrite(). | Check interface/environment valid. |
| 12.5.2.1.1 | 0xc42dcb51, 0x5109, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWrite() write some data to the tape. | Call TapeWrite() with (bufferSize=16384) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.2.2.1 | 0xc42dcb51, 0x510a, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWrite() Buffer invalid checking test. | Call TapeWrite() with (bufferSize!=0,Buffer=NULL) should return EFI\_INVALID\_PARAMETER. |
| 12.5.2.2.2 | 0xc42dcb51, 0x510b, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWrite()This invalid checking test. | Call TapeWrite() with (This =NULL) should return EFI\_INVALID\_PARAMETER. |
| 12.5.2.3.1 | 0xc42dcb51, 0x510c, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWrite() parameters valid checking test A. | Call TapeWrite() with (bufferSize=0,buffer=NULL**)** should return EFI\_SUCCESS. |
| 12.5.2.3.2 | 0xc42dcb51, 0x510e, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWrite()parameters valid checking test B. | Call TapeWrite() with (bufferSize=0,buffer!=NULL) should return EFI\_SUCCESS. |

### TapeRewind()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.3.0.1 | 0xc42dcb51, 0x5110, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeRewind(). | Check interface/environment valid. |
| 12.5.3.1.1 | 0xc42dcb51, 0x5111, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRewind() rewind the tape. | Call TapeRewind() should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.3.2.1 | 0xc42dcb51, 0x5112, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeRewind()parameters Thisinvalid checking test. | Call TapeRewind(NULL) should return EFI\_INVALID\_PARAMETER. |

### TapeSpace()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.4.0.1 | 0xc42dcb51, 0x5118, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeSpace(). | Check interface/environment valid. |
| 12.5.4.1.0 | 0xc42dcb51, 0x511f, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() make the tape testing ready. | Call TapeRewind() for tape ready.  Exit testing when error occurred.  Please note the configuration. |
| 12.5.4.1.1 | 0xc42dcb51, 0x5119, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() space some BLOCKs | Call TapeSpace() with (spaceType = TAPE\_SPACE\_TYPE\_BLOCK) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.4.1.2 | 0xc42dcb51, 0x511e, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() space some FILEMARKs | Call TapeSpace() with (spaceType = TAPE\_SPACE\_TYPE\_FILEMARK) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.4.2.1 | 0xc42dcb51, 0x511a, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() spaceDir < 0 testing | Call TapeSpace() with (spaceDir < 0) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.4.3.1 | 0xc42dcb51, 0x511b, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() spaceDir = 0 testing | Call TapeSpace() with(spaceDir = 0)should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.4.4.1 | 0xc42dcb51, 0x511c, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace() spaceDir > 0 testing | Call TapeSpace() with (spaceDir > 0)should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.4.5.1 | 0xc42dcb51, 0x511d, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeSpace()parameter spaceType invalid checking test. | Call TapeSpace() with invalid spaceType should return EFI\_INVALID\_PARAMETER. |

### TapeWriteFM()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.5.0.1 | 0xc42dcb51, 0x5120, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeWriteFM(). | Check interface/environment valid. |
| 12.5.5.1.1 | 0xc42dcb51, 0x5121, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWriteFM(**)** write some FileMarks to the tape. | Call TapeWriteFM() with **(**Count=1) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 12.5.5.2.1 | 0xc42dcb51, 0x5122, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeWriteFM() parameter Thisinvalid checking test. | Call TapeWriteFM(NULL) should return EFI\_INVALID\_PARAMETER. |

### TapeReset()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 12.5.6.0.1 | 0xc42dcb51, 0x5128, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | check input parameters of testing EFI\_TAPE\_IO\_PROTOCOL.TapeReset(). | Check interface/environment valid. |
| 12.5.6.1.1 | 0xc42dcb51, 0x5129, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeReset() reset the tape. | Call TapeReset() with **(**extendReset=TRUE) should return EFI\_SUCCESS. |
| 12.5.6.1.2 | 0xc42dcb51, 0x512a, 0x4d36, 0xba,0x07, 0x9e,0xfc, 0x66,0xd1, 0x00,0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeReset() reset the tape. | Call TapeReset() with (extendReset=FALSE) should return EFI\_SUCCESS. |
| 12.5.6.2.1 | 0xc42dcb51, 0x5122, 0x4d36, 0xba, 0x07, 0x9e, 0xfc, 0x66, 0xd1, 0x00, 0xde | EFI\_TAPE\_IO\_PROTOCOL.TapeReset()parameter This invalid checking test. | Call TapeReset() with invalid parameters (This=NULL) should return EFI\_INVALID\_PARAMETER. |

# Protocols Security Test

## HASH Protocol Test

Reference Document:

*UEFI Specification*, EFI\_HASH\_PROTOCOL Section.

Configuration

* Call “EFI\_HASH\_SERVICE\_BINDING\_PROTOCOL.CreateChild()” before testing.
* Call “EFI\_HASH\_SERVICE\_BINDING\_PROTOCOL.DestoryChild” after testing.
* Execute testing of 25.4.1.1~25.4.1.3 and 25.4.2.1.1~25.4.2.5.2 for every hash protocol(SHA-x/MD5).

Required Elements

### GetHashSize()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.4.1.0.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xae | check input parameters of testing EFI\_HASH\_PROTOCOL.GetHashSize(). | Check interface/environment valid. |
| 25.4.1.1.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa2 | EFI\_HASH\_PROTOCOL.GetHashSize() HashSize invalid checking test. | Call GetHashSize() with (Hashsize=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.4.1.2.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa3 | EFI\_HASH\_PROTOCOL.GetHashSize() HashAlgorithm invalid checking test A. | Call GetHashSize() with (HashAlgorithm=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.4.1.2.2 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa4 | EFI\_HASH\_PROTOCOL.GetHashSize() HashAlg invalid checking test B. | Call GetHashSize() with (HashAlgorithm invalid) should return EFI\_INVALID\_PARAMETER. |
| 25.4.1.3.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa5 | EFI\_HASH\_PROTOCOL.GetHashSize() get HashSize of the special HashAlgorithm. | Call GetHashSize() with (HashAlgorithm =SHA-x/MD5) should return EFI\_SUCCESS.  Exit testing when error occurred. |

### Hash()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.4.2.0.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xae | check input parameters of testing EFI\_HASH\_PROTOCOL. Hash(). | Check interface/environment valid. |
| 25.4.2.1.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa6 | EFI\_HASH\_PROTOCOL. Hash() Message invalid checking test. | Call Hash() with (Message=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.4.2.1.2 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa7 | EFI\_HASH\_PROTOCOL. Hash() Hash invalid checking test. | Call Hash() with (Hash=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.4.2.2.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa8 | EFI\_HASH\_PROTOCOL. Hash() HashAlgorithm invalid checking test. | Call Hash() with (HashAlgorithm=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.4.2.2.2 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa9 | EFI\_HASH\_PROTOCOL. Hash()HashAlgorithm invalid checking test. | Call Hash() with invalid HashAlgorithm should return EFI\_INVALID\_PARAMETER. |
| 25.4.2.3.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xaa | EFI\_HASH\_PROTOCOL. Hash() Extend invalid checking test. | Call Hash() with (HashAlgorithm=NULL and Extend=TRUE) should return EFI\_INVALID\_PARAMETER. |
| 25.4.2.4.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xab | EFI\_HASH\_PROTOCOL. Hash() hash some testing data. | Call Hash() with (Extend=FALSE) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 25.4.2.4.2 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xac | Verify hash result getting from EFI\_HASH\_PROTOCOL. Hash() (25.4.2.4.1) | check hash result getting from (25.4.2.4.1) correct or not. |
| 25.4.2.5.1 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xad | EFI\_HASH\_PROTOCOL. Hash() hash some extend testing data. | Call Hash() with (Extend=TRUE) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 25.4.2.5.2 | 0xf2db2578, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xae | Verify hash result getting from EFI\_HASH\_PROTOCOL. Hash() (25.4.2.5.1) | check extend hash result getting from (25.4.2.5.1) correct or not. |

## 

## AUTHENTICATION\_INFO Protocol Test

Reference Document:

*UEFI* *Specification*, EFI\_AUTHENTICATION\_INFO\_PROTOCOL Section.

Configuration

Required: prepare testing data by calling EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Set() before testing of Get().

Required Elements

### Get()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.1.1.1.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa3 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Get() get authentication\_info of the special ControllerHandle. | Call Get() with (valid ControllerHandle) should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 25.1.1.2.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa4 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Get() ControllerHandle invalid checking test. | Call Get() with (ControllerHandle=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.1.1.3.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa5 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Get()parameter *Buffer* invalid checking test. | Call Get() with **(**Buffer=NULL) should return EFI\_INVALID\_PARAMETER. |

### Set()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.1.2.1.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa6 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Set() set authentication\_info of the special ControllerHandle. | Call Set() with (valid ControllerHandleand Buffer**)** should return EFI\_SUCCESS.  Exit testing when error occurred. |
| 25.1.2.2.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa7 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Set() ControllerHandle invalid checking test. | Call Set() with (ControllerHandle=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.1.2.3.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa8 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Set()parameter *Buffer* invalid checking test. | Call Set() with (Buffer=NULL) should return EFI\_INVALID\_PARAMETER. |
| 25.1.2.4.1 | 0xf2db2579, 0xdc54, 0x4896, 0x83, 0x7f, 0x8d, 0xab, 0x41, 0xfb, 0xde, 0xa9 | EFI\_AUTHENTICATION\_INFO\_PROTOCOL.Set()parameter *length* invalid checking test. | Call Set() with (GenericAuthenticationNodeStruct.length<18) should return EFI\_INVALID\_PARAMETER. |

## EFI\_HASH2\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HASH2\_PROTOCOL Section.

### GetHashSize ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.2.1.1.1 | 0xf70cb8e0, 0x2c12, 0x4976, 0xaf, 0xc9, 0xac, 0x90, 0xda, 0xae, 0x6e, 0x20 | EFI\_HASH2\_PROTOCOL. GetHashSize() - GetHashSize()returns EFI\_SUCCESSwith valid parameters and HashSize match the HashAlgorithm. | 1. Call GetHashSize() with the valid parameters, the return status should be EFI\_SUCCESS and returned HashSize should match the HashAlgorithm. |
| 25.2.1.1.2 | 0xb86858d8, 0xcb57, 0x4978, 0x9d, 0xed, 0xe7, 0xc7, 0xb1, 0x6, 0x75, 0xd7 | EFI\_HASH2\_PROTOCOL. GetHashSize() - GetHashSize()returns EFI\_UNSUPPORTEDwith unsupportedHashAlgorithm or HashAlgorithm being NULL. | 1. Call GetHashSize() with unsupported HashAlgorithm or HashAlgorithm being NULL, the return status should be EFI\_UNSUPPORTED. |
| 25.2.1.1.3 | 0x9a001932, 0x3abd, 0x4cca, 0x88, 0xb5, 0xdb, 0xa1, 0x58, 0xc5, 0xdb, 0xef | EFI\_HASH2\_PROTOCOL. GetHashSize() - GetHashSize()returns EFI\_INVALID\_PARAMETER when HashSize is NULL. | 1. Call GetHashSize() when HashSize is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
|  |  |  |  |

### Hash()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.2.1.2.1 | 0xf6905190, 0x3664, 0x4ff9, 0xac, 0x68, 0xce, 0x78, 0x24, 0x6b, 0x2a, 0x51 | EFI\_HASH2\_PROTOCOL. Hash() -  Hash() returns EFI\_SUCCESS with valid parameters and Hash2Out should be correct. | 1. Call GetHashSize() to get the  supported HashAlgorithm.  2. Call Hash() with the supported  HashAlgorithm. The return status should be EFI\_SUCCESS. Hash ourput should be correct. |
| 25.2.1.2.2 | 0x89690c0c, 0x63c1, 0x40ab, 0x9b, 0x91, 0xfe, 0xd2, 0x32, 0x1a, 0x3e, 0x99 | EFI\_HASH2\_PROTOCOL. Hash() - Hash()  returns EFI\_UNSUPPORTED with unsupported HashAlgorithm or HashAlgorithm being NULL. | 1. Call Hash() with unsupported HashAlgorithm or HashAlgorithm being NULL, the return status should be EFI\_UNSUPPORTED. |
| 25.2.1.2.3 | 0xb9cceaa1, 0x3b8f, 0x45e3, 0x8a, 0x27, 0x99, 0x45, 0x3e, 0xb4, 0xd1, 0xbb | EFI\_HASH2\_PROTOCOL. Hash() - Hash()  returns EFI\_INVALID\_PARAMETER when Hash is NULL. | 1. Call Hash() when Hash is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
|  |  |  |  |

### HashInit()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.2.1.3.1 | 0x644e5fa7, 0x3d9b, 0x4a7b, 0xb1, 0x4e, 0x43, 0x34, 0x28, 0xf1, 0x60, 0xdb | EFI\_HASH2\_PROTOCOL. HashInit() -HashInit()returns EFI\_UNSUPPORTEDwith unsupported HashAlgorithm or HashAlgorithm being NULL. | 1. Call HashInit() with unsupported HashAlgorithm or HashAlgorithm being NULL, the return status should be EFI\_UNSUPPORTED. |
| 25.2.1.3.2 | 0x622e2357, 0xc5ff, 0x46b7, 0xab, 0xe7, 0xdb, 0x5e, 0x76, 0xbd, 0xca, 0xa9 | EFI\_HASH2\_PROTOCOL. HashInit() -HashInit()returns EFI\_ALREADY\_STARTED when it follows the call to HashInit(). | 1. Call HashInit() when it follows the call to HashInit(), the return status should be EFI\_ALREADY\_STARTED. |
| 25.2.1.3.3 | 0x69c8ed23, 0xf7fd, 0x4122, 0xb3, 0x1a, 0x46, 0xf8, 0x48, 0x11, 0xa5, 0x77 | EFI\_HASH2\_PROTOCOL. HashInit() - HashInit()returns EFI\_ALREADY\_STARTED when it follows the call to HashUpdate(). | 1. Call HashInit() when it follows the call to HashUpdate(), the return status should be EFI\_ALREADY\_STARTED. |
|  |  |  |  |

### HashUpdate()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.2.1.4.1 | 0xa6a79ffd, 0x7e93, 0x4302, 0xb5, 0xaf, 0xe5, 0x43, 0xc5, 0x16, 0x35, 0x95 | EFI\_HASH2\_PROTOCOL. HashUpdate() -HashUpdate()returns EFI\_NOT\_READY when it is not preceded by a call to HashInit(). | 1. Call HashUpdate() when it is not preceded by the call to HashInit(),the return status should be EFI\_NOT\_READY. |
| 25.2.1.4.2 | 0x4021bf59, 0x8fab, 0x4a5e, 0xa8, 0x6b, 0x3e, 0xad, 0xa2, 0x78, 0xb3, 0x72 | EFI\_HASH2\_PROTOCOL. HashUpdate() - HashUpdate()returns EFI\_NOT\_READY when it follows the call to Hash(). | 1. Call HashUpdate() when it follows the call to Hash(), the return status should be EFI\_NOT\_READY. |
| 25.2.1.4.3 | 0xf7cd2a58, 0x18f9, 0x4285, 0xb9, 0x2b, 0x22, 0x76, 0x7e, 0xff, 0xc8, 0xf5 | EFI\_HASH2\_PROTOCOL. HashUpdate() - HashUpdate()returns EFI\_NOT\_READY when it follows the call to HashFinal(). | 1. Call HashUpdate() when it follows the call to HashFinal(), the return status should be EFI\_NOT\_READY. |
|  |  |  |  |

### HashFinal()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.2.1.5.1 | 0xd66d9eb8, 0x52a9, 0x415d, 0xa9, 0x15, 0x7b, 0x50, 0xb8, 0x53, 0x34, 0x5a | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_SUCCESSwith valid parameters. | 1. Call GetHashSize()to get thesupported HashAlgorithm.2. Call HashInit() with the supported HashAlgorithm, the return status should be EFI\_SUCCESS.3. Call HashInit() with the supported HashAlgorithm, the return status should be EFI\_ALREADY\_STARTED.4. Call HashUpdate() with the updated message, the return status should be EFI\_SUCCESS.5. Call HashUpdate() with the updated message, the return status should be EFI\_SUCCESS.6. Call HashFinal() to get the Hash output. The return status should be EFI\_SUCCESS. Hash output should be correct. |
| 25.2.1.5.2 | 0x459f2e7e, 0x1a98, 0x44c6, 0x97, 0xe, 0x38, 0x92, 0x67, 0xdb, 0xe1, 0x57 | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_NOT\_READY when it is not preceded by the call to HashInit()/HashUpdate(). | 1. Call HashFinal() when it is not preceded by the call to HashInit()/HashUpdate(),the return status should be EFI\_NOT\_READY. |
| 25.2.1.5.3 | 0x57baa339, 0xab9b, 0x4cb7, 0x8e, 0xed, 0xeb, 0x97, 0x68, 0x82, 0xaf, 0x6b | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_NOT\_READY when it is not preceded by the call to HashUpdate(). | 1. Call HashFinal() when it is not preceded by the call to HashUpdate(),the return status should be EFI\_NOT\_READY. |
| 25.2.1.5.4 | 0x69af3be6, 0x3ac2, 0x467c, 0x8c, 0x41, 0x74, 0xd4, 0x53, 0x2f, 0x66, 0xa6 | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_NOT\_READY when it follows the call to Hash(). | 1. Call HashFinal() when it follows the call to Hash(), the return status should be EFI\_NOT\_READY. |
| 25.2.1.5.5 | 0x6022b449, 0x9fe1, 0x4bd9, 0x84, 0x9c, 0x67, 0x9e, 0x7f, 0x7, 0xa5, 0xfe | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_INVALID\_PARAMETER when Hash is NULL. | 1. Call HashFinal() when Hash is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 25.2.1.5.6 | 0x2a6201e8, 0xe536, 0x4e92, 0xb6, 0x4e, 0x8e, 0xbd, 0xc6, 0xfe, 0xe0, 0x25 | EFI\_Hash2\_PROTOCOL.HashFinal() -HashFinal()returnsEFI\_NOT\_READY when it follows the call to HashFinal(). | 1. Call HashFinal() when it follows the call to HashFinal(), the return status should be EFI\_NOT\_READY. |

## EFI\_PKCS7\_VERIFY\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_PKCS7\_VERIFY\_PROTOCOL Section.

### VerifyBuffer()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 25.3.1.1.1 | 0x5c0eec50, 0xa6ea, 0x413c, 0x8a, 0x46, 0x4a, 0xd1, 0x4a, 0x77, 0x76, 0xf1 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SUCCESSwhen content signature was verified against hash of content, the signer's certificate was not found in RevokedDb, and was found in AllowedDb. | 1. Call VerifyBuffer() when content signature was verified against hash of content, the signer's certificate was not found in RevokedDb, and was found in AllowedDb, the return status should be EFI\_SUCCESS. |
| 25.3.1.1.2 | 0x6ea61fbd, 0x1e46, 0x4854, 0x83, 0xf8, 0x22, 0x93, 0x24, 0x1a, 0x38, 0x67 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_BUFFER\_TOO\_SMALLwhen the size of buffer indicated by ContentSize is too small to hold the content. ContentSize should be updated to required size. | 1. Call VerifyBuffer() when the size of buffer indicated by ContentSize is too small to hold the content, the return status should be EFI\_BUFFER\_TOO\_SMALL. ContentSize should be updated to required size. |
| 25.3.1.1.3 | 0x51af2845, 0x1bfe, 0x4bc3, 0x90, 0x69, 0x7b, 0x29, 0xbc, 0x7c, 0xc3, 0xc6 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SUCCESSwhen the size of buffer indicated by ContentSize is big enough to hold the content, and retrive the correct content. | 1. Call VerifyBuffer() when the size of buffer indicated by ContentSize is big enough to hold the content, and retrive the correct content, the return status should be EFI\_SUCCESS. |
| 25.3.1.1.4 | 0x912e23ef, 0x299c, 0x41ab, 0xa0, 0xf5, 0xfc, 0xbc, 0xf6, 0xfd, 0xd3, 0x32 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SUCCESSwhen the content signature was verified against hash of content, signer is found in both AllowedDb and RevokedDb, the signing was allowed by reference to TimeStampDb. | 1. Call VerifyBuffer() when the content signature was verified against hash of content, signer is found in both AllowedDb and RevokedDb, the signing was allowed by reference to TimeStampDb, the return status should be EFI\_SUCCESS. |
| 25.3.1.1.5 | 0x5ccc7dff, 0xc397, 0x4733, 0xb6, 0xc7, 0x88, 0xc4, 0x3e, 0x80, 0x6a, 0x67 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_UNSUPPORTEDwhen SignedData is NULL or SignedDataSize is 0 or AllowedDb is NULL or Content is not NULL and ContentSize is NULL. | 1. Call VerifyBuffer() when SignedData is NULL or SignedDataSize is 0 or AllowedDb is NULL or Content is not NULL and ContentSize is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 25.3.1.1.6 | 0xb1f546c3, 0x4e, 0x4e33, 0xb1, 0x81, 0x76, 0xf3, 0xf8, 0xb1, 0xd6, 0x5b | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_UNSUPPORTED when SignedData buffer is not correctly formatted for processing. | 1. Call VerifyBuffer() when SignedData buffer is not correctly formatted for processing, the return status should be EFI\_UNSUPPORTED. |
| 25.3.1.1.7 | 0xf9382c57, 0xd51d, 0x4ba9, 0x91, 0x41, 0x30, 0xc6, 0x28, 0x8b, 0xd3, 0x64 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_ABORTED when AllowedDb is invalid format. | 1. Call VerifyBuffer() when AllowedDb is invalid format, the return status should be EFI\_ ABORTED. |
| 25.3.1.1.8 | 0x3b322e30, 0x8378, 0x441a, 0xba, 0x1d, 0xee, 0xe5, 0x53, 0xda, 0x21, 0x49 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_ABORTED when RevokedDb is invalid format. | 1. Call VerifyBuffer() when RevokedDb is invalid format, the return status should be EFI\_ ABORTED. |
| 25.3.1.1.9 | 0xdfe02003, 0xb2ad, 0x46bc, 0xae, 0xe0, 0xf9, 0xb8, 0xd0, 0xec, 0xd3, 0x4a | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_ABORTED when TimeStampDb is invalid format. | 1. Call VerifyBuffer() when TimeStampDb is invalid format, the return status should be EFI\_ ABORTED. |
| 25.3.1.1.10 | 0x8de626c4, 0x7112, 0x4a57, 0xb2, 0xbb, 0x30, 0xc, 0x5f, 0x2a, 0xc1, 0x8e | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SECURITY\_VIOLATION when Buffer is correctly formatted but signer is not in AllowedDb. | 1. Call VerifyBuffer() when Buffer is correctly formatted but signer is not in AllowedDb, the return status should be EFI\_SECURITY\_VIOLATION. |
| 25.3.1.1.11 | 0x399e1246, 0xd15a, 0x491a, 0xbb, 0x82, 0x99, 0xa4, 0xda, 0xb3, 0xac, 0x28 | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SECURITY\_VIOLATION when Buffer is correctly formatted but signer is in RevokedDb. | 1. Call VerifyBuffer() when Buffer is correctly formatted but signer is in RevokedDb, the return status should be EFI\_SECURITY\_VIOLATION. |
| 25.3.1.1.12 | 0x670b4eab, 0xf28d, 0x42db, 0xa7, 0xbc, 0xad, 0xd, 0x59, 0x80, 0x49, 0xaf | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_SECURITY\_VIOLATION when Buffer is correctly formatted but the content hash is in RevokedDb. | 1. Call VerifyBuffer() when Buffer is correctly formatted but the content hash is in RevokedDb, the return status should be EFI\_SECURITY\_VIOLATION. |
| 25.3.1.1.13 | 0xfd98e4e5, 0xf8af, 0x4dcf, 0x81, 0x1a, 0x6c, 0xf4, 0x99, 0x8a, 0x3, 0x9d | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_UNSUPPORTEDwhen Signed data embedded in SignedData but InData is not NULL. | 1. Call VerifyBuffer() when Signed data embedded in SignedData but InData is not NULL, the return status should be EFI\_UNSUPPORTED. |
| 25.3.1.1.14 | 0xb136e016, 0x4f80, 0x44bd, 0xba, 0xb0, 0x1c, 0x34, 0x8a, 0x2d, 0xa1, 0x8a | EFI\_PKCS7\_VERIFY\_PROTOCOL.VerifyBuffer() - VerifyBuffer()returns EFI\_ NOT\_FOUNDwhen InData is NULL and no content embedded in SignedData. | 1. Call VerifyBuffer() when InData is NULL and no content embedded in SignedData, the return status should be EFI\_NOT\_FOUND. |

# Protocols EFI Firmware Management Test Case

## EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL

Reference Document:

*UEFI 2.3 Specification*, Chapter 32.

### GetImageInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.1.1.1 | 0xd02b40ae, 0x62f, 0x4155,  0xbb, 0xdd, 0x4, 0x29, 0x18, 0x94, 0xea, 0x31 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImageInfo()**returns  EFI\_SUCCESS | Call function with all valid parameters. The function should return **EFI\_SUCCESS**.  Check for expected return code.  Check *\*DescriptorVersion* is equal to 1.  Check *ImageIndex* is between 1 and *\*DescriptorCount*.  Check *AttributesSupported* has no bits set beyond bit 3.  Check *AttributesSetting* has no bits set beyond bit 3.  Check Compatibilities bits 1 thru 15 are 0s. |
| 32.1.2.1.1 | 0x3789b80e, 0xab70, 0x4dc9, 0xbb, 0xbd, 0x70, 0x63, 0x76, 0x36, 0xab, 0x52 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImageInfo()**returns  EFI\_BUFFER\_TOO\_SMALL | Call function with valid parameters, except *\*ImageInfoSize* = 1. The function should return **EFI\_BUFFER\_TOO\_SMALL** and *\*ImageInfoSize* > 1. |
| 32.1.2.1.2 | 0xca1d7706, 0x256b, 0x464e, 0xb6, 0xee, 0x50, 0x34, 0x1e, 0xec, 0x3c, 0x83 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImageInfo()**returns  EFI\_INVALID\_PARAMETER | Call function with valid parameters, except *ImageInfoSize* is NULL. The function should return **EFI\_INVALID\_PARAMETER**. |

### GetImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.2.1.1.1 | 0xff704c46, 0x3999, 0x4a28, 0xa3, 0x6e, 0x76, 0x8a, 0xb6, 0xad, 0x89, 0xd8 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImage()**returns  **EFI\_SUCCESS** or  **EFI\_UNSUPPORTED** | Authentication not required.  Call function with all valid parameters. The function should return **EFI\_SUCCESS** or **EFI\_UNSUPPORTED**. |
| 32.2.2.1.1 | 0x3c8d87b2, 0x6a89, 0x4a6c,  0xbc, 0x75, 0xe6, 0x86, 0xa1, 0x49, 0x13, 0xf0 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImage()**returns  EFI\_BUFFER\_TOO\_SMALL | Function is supported.  Authentication not required.  Call function with valid parameters, except *\*ImageSize* = 1. The function, if supported, should return **EFI\_BUFFER\_TOO\_SMALL** and *\*ImageSize* > 1. |
| 32.2.2.1.2 | 0x88031c96, 0x99bf, 0x4d2c,  0x9f, 0x57, 0xa7, 0x2, 0x6a, 0xbc, 0xd3, 0x51 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImage()**returns  EFI\_INVALID\_PARAMETER | Function is supported.  Authentication not required.  Call function with valid parameters, except *Image* is NULL. The function should return **EFI\_INVALID\_PARAMETER**. |
| 32.2.2.1.3 | 0x7a386361, 0x3a5d, 0x4e58, 0x8a, 0x51, 0x4d, 0x93, 0xb6, 0x55, 0x95, 0xf4 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImage()**returns  **EFI\_INVALID\_PARAMETER** or  **EFI\_NOT\_FOUND** | Function is supported.  Authentication not required.  Call function with valid parameters, except *ImageIndex* = 0 or *ImageIndex* = *\*DescriptorCount* + 1. The function should return **EFI\_INVALID\_PARAMETER** or **EFI\_NOT\_FOUND**. |
| 32.2.2.1.4 | 0xd6a77629, 0x5afd, 0x4854, 0x87, 0xc8, 0xee, 0x9f, 0xc5, 0x3d, 0xbe, 0x3d | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetImage()**returns  EFI\_SECURITY\_VIOLATION | Function is supported.  Authentication required.  Call function with valid parameters, except *Image* has a dummy authentication data. The function should return **EFI\_SECURITY\_VIOLATION**. |

### SetImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.3.2.1.1 | 0x4ea24764, 0xa6b1, 0x43b5, 0xb8, 0xa0, 0xd3, 0x3f, 0xdc, 0x8b, 0xc6, 0xe4 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetImage()**returns  EFI\_INVALID\_PARAMETER | Function is supported.  Authentication not required.  Call function with valid parameters, except *Image* is NULL. The function should return **EFI\_INVALID\_PARAMETER**. |
| 32.3.2.1.2 | 0xc82d1373,  0x1f87,  0x45f4,  0xaf, 0xfc,  0x10, 0xa7,  0xf7, 0xb0,  0x9c, 0xb0 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetImage()**returns  **EFI\_INVALID\_PARAMETER** or **EFI\_ABORTED** | Function is supported.  Authentication not required.  Call function with valid parameters, except *ImageIndex* = 0 or *ImageIndex* = *\*DescriptorCount* + 1. The function should return **EFI\_INVALID\_PARAMETER** or **EFI\_ABORTED**. |
| 32.3.2.1.3 | 0x2410a859,  0xdf6f,  0x4857, 0x92,  0x4a, 0x26,  0x37, 0x7,  0x11, 0xf,  0x1c | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetImage()**returns    **EFI\_SECURITY\_VIOLATION** | Function is supported.  Authentication not required.  Call function with valid parameters, except *ImageIndex* = 0 or *ImageIndex* = *\*DescriptorCount* + 1. The function should return **EFI\_INVALID\_PARAMETER** or **EFI\_ABORTED**.  Image has dummy authentication data.  The function should return  EFI\_SECURITY\_VIOLATION. |

### CheckImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.4.2.1.1 | 0x3987172c, 0xe6a0, 0x4099, 0xb1, 0x2b, 0xd8, 0xef, 0xf2, 0x62, 0x75, 0x93 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.CheckImage()**returns  EFI\_INVALID\_PARAMETER | Function is supported.  Authentication not required.  Call function with valid parameters, except *Image* is NULL. The function should return **EFI\_INVALID\_PARAMETER**. |
| 32.4.2.1.2 | 0xd6dad28e, 0x7f0f, 0x4f56,  0x9a, 0x93, 0x14, 0x7d, 0xb3, 0x74, 0x0, 0xc9 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.CheckImage()**returns  EFI\_SECURITY\_VIOLATION | Function is supported.  Authentication required.  Call function with valid parameters, except *Image* has a dummy authentication data. The function should return **EFI\_SECURITY\_VIOLATION**. |

### GetPackageInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.5.1.1.1 | 0x70884539, 0x9a34, 0x4146, 0x83, 0x3a, 0x4d, 0x89, 0x8b, 0x9c, 0x7e, 0xa4 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.GetPackageInfo()**returns  **EFI\_SUCCESS** or  **EFI\_UNSUPPORTED** | Call function with all valid parameters. The function should return **EFI\_SUCCESS** or **EFI\_UNSUPPORTED**.  Check *\*AttributesSupported* has no bits set beyond bit 2.  Check *\*AttributesSetting* has no bits set beyond bit 2. |

### SetPackageInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.6.2.1.1 | 0xb5288fc3, 0xe906, 0x4468, 0x83, 0x3d, 0xd4, 0xa6, 0x58, 0xa5, 0x4f, 0xbd | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetPackageInfo()**returns  EFI\_INVALID\_PARAMETER | Function is supported.  Authentication not required.  Call function with valid parameters, except *\*\*PackageVersionName* is longer than the value returned in *\*PackageVersionNameMaxLen*. The function should return **EFI\_INVALID\_PARAMETER**. |
| 32.6.2.1.2 | 0x57355301, 0x1343, 0x497f,  0xbe, 0xe0, 0x8e, 0x5c, 0x27, 0xd2, 0x40, 0x2 | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetPackageInfo()**returns  EFI\_SECURITY\_VIOLATION | Function is supported.  Authentication is required.  Call function with valid parameters, except *Image* is NULL. The function should return **EFI\_SECURITY\_VIOLATION**. |
| 32.6.2.1.3 | 0xadeab82d, 0x7592, 0x40fe,  0x87, 0xa8, 0x93, 0x2b, 0xad, 0x97, 0xff, 0x5e | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetPackageInfo()**returns  EFI\_SECURITY\_VIOLATION | Function is supported.  Authentication is required.  Call function with valid parameters, except *ImageSize* is 0. The function should return **EFI\_SECURITY\_VIOLATION**. |
| 32.6.2.1.4 | 0x9be658d2, 0x1312, 0x4254, 0x91, 0x10, 0x59, 0x0, 0xd5, 0xfd, 0x6c, 0x6c | **EFI\_FIRMWARE\_MANAGEMENT\_PROTOCOL.SetPackageInfo()**returns  EFI\_SECURITY\_VIOLATION | Function is supported.  Authentication is required.  Call function with valid parameters, except *Image* has a dummy authentication data. The function should return **EFI\_SECURITY\_VIOLATION**. |

# Protocols HII Test

## EFI\_HII\_FONT\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_FONT\_PROTOCOL Section.

### StringToImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.1.1.1 | 0x6fca8706, 0x7d83, 0x4914,  0x8a, 0x16, 0x92, 0x0b, 0x07, 0xb1, 0x68, 0xb9 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with String been NULL. | Call StringToImage() with valid parameters except String being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.1.2 | 0x80ee2790, 0x9ff7, 0x4abe,  0x90, 0xaf, 0x05, 0x4a, 0x86, 0x69, 0xba, 0x51 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with Blt been NULL. | Call StringToImage() with valid parameters except Blt being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.1.3 | 0xe2f66ec3, 0x585a, 0x45ba,  0x8f, 0x7a, 0xd5, 0x18, 0x5f, 0xeb, 0x4e, 0x9a | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with wrong flag combination. | Call StringToImage() with Flag being EFI\_HII\_OUT\_FLAG\_CLEAN\_X with EFI\_HII\_OUT\_FLAG\_WRAP. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.1.4 | 0xabf68512, 0x0bb8, 0x4ef8,  0x97, 0xc1, 0xda, 0x93, 0x55,0xda, 0x1b, 0x07 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with wrong flag combination. | Call StringToImage() with Flag being EFI\_HII\_OUT\_FLAG\_CLEAN\_X without EFI\_HII\_OUT\_FLAG\_CLIP. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.1.5 | 0x6ff9c8b4, 0xeb8f, 0x4e0b, 0x9a, 0x97, 0x82, 0x94, 0x37, 0x0c, 0xdd, 0x3c | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with valid parameters. | Call StringToImage() with valid paramenters and use EFI\_GRAPHICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure. |
| 5.18.1.1.6 | 0x182cc281, 0xb462, 0x458f, 0xaa, 0xb6, 0xca, 0x98, 0xb5, 0x27, 0x37, 0x31 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with valid parameters. | Call StringToImage() with valid paramenters and use EFI\_GRAPHICS\_OUTPUT\_PROTOCOL in EFI\_IMAGE\_OUTPUT structure. |
| 5.18.1.1.7 | 0xcdf439d0, 0xe471, 0x4fe7, 0x86, 0x98, 0xf5, 0xb0, 0x5c, 0xcd, 0xa6, 0xae | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with valid parameters for all ASCII visible characters. Each images must equal to sys default glyph. | Call StringToImage() with valid paramenters and StringInfo = NULL..  Compare image output with system default font glyph image |
| 5.18.1.1.8 | 0xa8f40eac, 0x8633, 0x40ca, 0x95, 0x6d, 0x75, 0xb2, 0x81, 0x50, 0x75, 0x39 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with valid parameters for all ASCII visible characters. Each image must equal to the specific font glyph. | Register a specific font package  Call StringToImage() with valid paramenters and StringInfo = specific font. Compare image output with specific font glyph image registered |
| 5.18.1.1.9 | 0x42dc1626, 0x36ce, 0x421b, 0x8d, 0x66, 0x21, 0xb8, 0xaa, 0x43, 0x6c, 0x7b | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameters EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Call StringToImage() with EFI\_HII\_DIRECT\_TO\_SCREEN. For the final row, the RowInfoArray.LineHeight and RowInfoArray.BaseLine may describe pixels which are outside the limit specified by Blt. Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn. 2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.10 | 0xf8b5b9b6, 0xc3c6, 0x4993, 0x9b, 0x3c, 0xbc, 0x8d, 0x91, 0xee, 0x8c, 0x20 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Call StringToImage with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_DIRECT\_TO\_SCREEN. For the final row, the RowInfoArray.LineHeight and RowInfoArray.BaseLine 'May' describe pixels which are outside the limit specified by Blt. Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn. 2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.11 | 0x4c70adb5, 0xcc05, 0x435a,  0x8c, 0xc4, 0xce, 0xd1, 0x54, 0x6e, 0xd7, 0xf6 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN. If a character's right-most on pixel cannot fit, then it will not be drawn at all. 2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.12 | 0xa000d36f, 0x2918, 0x448c,  0xad, 0x6d, 0x15, 0x77, 0xb5, 0x2f, 0xdc, 0x66 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN. If a row's bottom-most pixel exceed screen Height, then it will not be drawn at all.  2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.13 | 0x266f881, 0x409b, 0x47e5,  0x8f, 0x22, 0x21, 0x7d, 0x14, 0xa4, 0x8a, 0xab | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity | 1.Call StringToImage() with EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity (SPACE is a line break opportunity). Check display will wrapper at right place.  2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.14 | 0x2fa4edd2, 0xa193, 0x4882,  0xae, 0x1e, 0xeb, 0xfe, 0xf5, 0x57, 0x42, 0xcc | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity | 1.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity. String is designed to display as if EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X is set.  2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.15 | 0x57300788, 0xba79, 0x4727, 0xb5, 0xe6, 0xe9, 0x20, 0xcd, 0x7e, 0xd6, 0x93 | HII\_FONT\_PROTOCOL.StringToImage -StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Call StringToImage() with EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN. If a row's bottom-most pixel cannot fit, then it will not be drawn at all. This flag requires that EFI\_HII\_OUT\_FLAG\_CLIP be set. 2.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.16 | 0xf3b0daef, 0xab51, 0x4ebc, 0x93, 0x51, 0x74, 0xf6, 0x18, 0xaa, 0x9f, 0x9f | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_DIRECT\_TO\_SCREEN. 3.Check EFI\_HII\_DIRECT\_TO\_SCREEN only case If Blt is not NULL, then EFI\_HII\_OUT\_FLAG\_CLIP is implied String is designed to displayed with one full line 4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.17 | 0x23ab3935, 0x483c, 0x4d75,  0xab, 0x3, 0xef, 0x50, 0x32, 0xea, 0x30, 0xbf | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_CLIP.  3. For the final row, the RowInfoArray.LineHeight and RowInfoArray.BaseLine may describe pixels which are outside the limit specified by Blt. Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn. 4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.18 | 0x9e992f5a, 0x4a3b, 0x44d8, 0x89, 0x47, 0xca, 0x30, 0x92, 0x2b, 0x69, 0xa5 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN. 3. If a character's right-most on pixel cannot fit, then it will not be drawn at all.  4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.19 | 0xc8999c53, 0xd56, 0x4545, 0xbc, 0x55, 0x91, 0xf0, 0xd1, 0x1, 0x60, 0x4a | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN. 3.If a row's bottom-most pixel exceed screen Height, then it will not be drawn at all.  4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.20 | 0x9b71db4d, 0x5a06, 0x4246, 0x83, 0xd2, 0x9d, 0x31, 0x70, 0x73, 0x63, 0xd0 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity (SPACE is a line-break). 3.Check if the display is right. 4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.21 | 0xb0e526b1, 0xc399, 0x4e31, 0xb2, 0x97, 0xc1, 0x29, 0x18, 0x37, 0x95, 0x79 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity.  3. String is designed to display as if EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X is set.  4.The return code should be EFI\_SUCCESS . |
| 5.18.1.1.22 | 0xcbdae1b4, 0xc99b, 0x4a08, 0x9b, 0xf9, 0x76, 0x69, 0x77, 0x71, 0x66, 0x30 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN. 3. If a row's bottom-most pixel cannot fit, then it will not be drawn at all. This flag requires that EFI\_HII\_OUT\_FLAG\_CLIP is set. 4. The return code should be EFI\_SUCCESS . |
| 5.18.1.1.23 | 0x36a9a186, 0x363f, 0x4b4b, 0xa3, 0xaf, 0xa9, 0x9b, 0x29, 0x7a, 0x6d, 0x41 | HII\_FONT\_PROTOCOL.StringToImage - StringToImage() returns EFI\_SUCCESS with parameter EFI\_HII\_OUT\_FLAG\_TRANSPARENT | 1.Register a new font package  2.Call StringToImage() with EFI\_HII\_OUT\_FLAG\_TRANSPARENT.  3. Check output buffer StringInfo background should be ignored according to EFI spec.  4. The return code should be EFI\_SUCCESS . |

### StringIdToImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.1.2.1 | 0xf4e2c51e, 0x92a3, 0x4752, 0x92, 0x64, 0x27, 0xb1, 0x54, 0x21, 0x70, 0x3a | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_INVALID\_PARAMETER with Blt been NULL. | Call StringIdToImage() with valid parameters except Blt being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.2.2 | 0x9aecc9b3, 0x3bff, 0x4c7c, 0x96, 0x6b, 0xa9, 0x64, 0x84, 0xfe, 0xd9, 0x89 | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call StringIdToImage() with valid parameters except PackageList being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.2.3 | 0x479e2e87, 0xf833, 0x4d2b, 0xbb, 0x47, 0x16, 0x77, 0x7b, 0x52, 0xb6, 0x6a | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call StringIdToImage() with valid parameters except an invalid PackageList, The return status should be EFI\_NOT\_FOUND. |
| 5.18.1.2.4 | 0xe1d5168a, 0x26da, 0x4000, 0xa9, 0xc8, 0x15, 0x85, 0xee, 0xea, 0x38, 0x33 | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_NOT\_FOUND with StringId not in PackageList. | Call StringIdToIamge() with a StringId which isn’t in PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.1.2.5 | 0xfba0a646, 0x9942, 0x4790, 0x86, 0xef, 0xe8, 0x52, 0x32, 0xf1, 0xb5, 0xeb | HII\_FONT\_PROTOCOL.StringIdToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with invalid Flags combination. | Call StringIdToImage() with Flag being EFI\_HII\_OUT\_FLAG\_CLEAN\_X with EFI\_HII\_OUT\_FLAG\_WRAP. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.2.6 | 0xd9b59551, 0xa799, 0x4c87, 0x89, 0xb3, 0x89, 0xc5, 0x6a, 0xb8, 0x43, 0x9f | HII\_FONT\_PROTOCOL.StringIdToImage - StringToImage() returns EFI\_INVALID\_PARAMETER with invalid Flags combination. | Call StringIdToImage() with Flag being EFI\_HII\_OUT\_FLAG\_CLEAN\_X without EFI\_HII\_OUT\_FLAG\_CLIP. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.2.7 | 0x3df4b27f, 0x7b07, 0x4a3d, 0xaa, 0x09, 0x60, 0xfa, 0xbe, 0x82, 0x99, 0x9f | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_SUCCESS with valid parameters. | Call StringIdToImage() with valid paramenters and use EFI\_GRAPHICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure. The return status should EFI\_SUCCESS. |
| 5.18.1.2.8 | 0xedcca70f, 0xcb25, 0x4d22, 0x98, 0x5e, 0x18, 0x86, 0x66, 0x8c, 0xc1, 0x9c | HII\_FONT\_PROTOCOL.StringIdToImage - StringIdToImage() returns EFI\_SUCCESS with valid parameters. | Call StringIdToImage() with valid paramenters and use EFI\_GRAPHICS\_OUTPUT\_PROTOCOL in EFI\_IMAGE\_OUTPUT structure. The return status should EFI\_SUCCESS. |

### GetGlyph()

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| 5.18.1.3.1 | 0xb94b394f, 0x8e3e, 0x4adc, 0x8f, 0x5c, 0x64, 0x12, 0x69, 0xa2, 0xed, 0xfe | HII\_FONT\_PROTOCOL.GetGlyph - GetGlyph() returns EFI\_INVALID\_PARAMETER with Blt being NULL. | Call GetGlyph() with Blt being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.3.2 | 0xee445b90, 0xf370, 0x43fd, 0x83, 0xff, 0x00, 0x2d, 0x29, 0x1e, 0xcd, 0x42 | HII\_FONT\_PROTOCOL.GetGlyph - GetGlyph() returns EFI\_INVALID\_PARAMETER with non NULL \*Blt. | Call GetGlyph() with non NULL Blt. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.3.3 | 0x0687a598, 0xa2a6, 0x4073, 0xa7, 0x4f, 0x05, 0xae, 0x9c, 0xe2, 0x1e, 0x33 | HII\_FONT\_PROTOCOL.GetGlyph - GetGlyph() returns EFI\_SUCCESS with valid parameters. | Call GetGlyph() with valid parameters. The return status should be EFI\_SUCCESS. |

### GetFontInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.1.4.1 | 0xf43589d3, 0xfccd, 0x413f, 0xb7, 0x50, 0xf8, 0xb4, 0x00, 0xd2, 0x92, 0x7b | HII\_FONT\_PROTOCOL.GetFontInfo - GetFontInfo() returns EFI\_INVALID\_PARAMETER with invalid EFI\_FONT\_INFO\_MASK Combination. | Call GetFontInfo() with StringInfoIn->FontInfoMask being invalid combination. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.1.4.2 | 0x6e5210d4, 0xead5, 0x4042, 0xac, 0x30, 0xa4, 0xfb, 0x8f, 0x9f, 0xf1, 0x9a | HII\_FONT\_PROTOCOL.GetFont - GetFont() returns EFI\_SUCCESS with valid parameters | Call GetFontInfo() with valid parameters. The return status should be EFI\_SUCCESS. |
| 5.18.1.4.3 | 0x88294411, 0x3dd7, 0x4030, 0xb6, 0x40, 0x65, 0xa3, 0x85, 0x7b, 0x2f, 0x46 | HII\_FONT\_PROTOCOL.GetFont - GetFont() returns EFI\_SUCCESS with valid parameters(StringInfoIn is NULL) | Call GetFontInfo() with valid parameters(StringInfoIn is NULL). The return status should be EFI\_SUCCESS. |

## 

## EFI\_HII\_STRING\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_STRING\_PROTOCOL Section.

### NewString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.2.1.1 | 0xb0eb04d6, 0x3328, 0x4157, 0xa8, 0x8e, 0xe9, 0x9a, 0x15, 0x62, 0x6b, 0x88 | HII\_STRING\_PROTOCOL.NewString - NewString() returns EFI\_INVALID\_PARAMETER with StringId being NULL. | Call NewString() with StringId being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.1.2 | 0x9223196c, 0xadf1, 0x4181, 0xbc, 0xc3, 0x1d, 0x9e, 0xa4, 0xcf, 0x7a, 0x8e | HII\_STRING\_PROTOCOL.NewString - NewString() returns EFI\_INVALID\_PARAMETER with Language being NULL. | Call NewString() with Language being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.1.3 | 0x8d9e83aa, 0x9bf1, 0x4466, 0xba, 0xba, 0xec, 0x14, 0xfd, 0xb3, 0x82, 0x14 | HII\_STRING\_PROTOCOL.NewString - NewString() returns EFI\_INVALID\_PARAMETER with String being NULL. | Call NewString() with String being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.1.4 | 0x23b3df9d, 0x2330, 0x4db7, 0xa1, 0x71, 0x0c, 0x2a, 0x61, 0xb7, 0xd2, 0x24 | HII\_STRING\_PROTOCOL.NewString - NewString() returns EFI\_INVALID\_PARAMETER with PackageList beinf NULL. | Call NewString() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.1.5 | 0x2077cb3b, 0xb8b4, 0x4ba9, 0xab, 0x49, 0x36, 0xc4, 0xe3, 0xb7, 0x1e, 0xb5 | HII\_STRING\_PROTOCOL.NewString - NewString() returns EFI\_SUCCESS with valid parameters and result checked. | Part 1: Call NewString() with valid parameters. The return Status should be EFI\_SUCCESS. |
| 5.18.2.1.6 | 0x8cd4cc42, 0xe5f0, 0x4f6f, 0x9f, 0x7d, 0x60, 0x47, 0x95, 0xd5, 0x05, 0x36 | HII\_STRING\_PROTOCOL.NewString - output the string and compare with the original string. | Part2: Call GetString() to check the output string with the original string. They should be same. |

### GetString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.2.2.1 | 0x640acc2d, 0x1174, 0x4735,  0x94, 0xb3, 0xbc, 0xe2, 0xca, 0xbb, 0x92, 0xc1 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_NOT\_FOUND with StringId being invalid. | Call GetString() with an invalid StringId. The return status should be EFI\_NOT\_FOUND. |
| 5.18.2.2.2 | 0x3c0c9dfe, 0xe56e, 0x43ee, 0x80, 0x26, 0x55, 0xb1, 0x14, 0x29, 0x2c, 0x38 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call GetString() with an invalid PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.2.2.3 | 0x0460a672, 0xcba9, 0x4ee8, 0x9e, 0x43, 0x9d, 0xba, 0x85, 0x52, 0x3f, 0xab | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_BUFFER\_TOO\_SMALL with StringSize indicates the String is too small. | Call GetString() with StringSize which indicates the String buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. The StringSize is updated with the required size. |
| 5.18.2.2.4 | 0xeed5460f, 0x826e, 0x4e1b, 0xad, 0x79, 0xb7, 0x3b, 0x58, 0xc9, 0x57, 0x01 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_INVALID\_LANGUAGE with string is not in the specified Language. | Call GetString() with string specified by StringId is available but not in the specified Language. The return status should be EFI\_INVALID\_LANGUAGE. |
| 5.18.2.2.5 | 0xafd0b70c, 0xe1b4, 0x43c1, 0x94, 0x60, 0x96, 0xf5, 0x3e, 0xe9, 0xaa, 0xe9 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_INVALID\_PARAMETER with Language being NULL. | Call GetString() with Language being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.2.6 | 0xcf15f5f5, 0x7eaf, 0x4e63, 0x80, 0xd2, 0x5c, 0x9b, 0x89, 0x02, 0x1b, 0xf8 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_INVALID\_PARAMETER with String being NULL. | Call GetString() with String being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.2.7 | 0xc37a209f, 0xaeab, 0x4152, 0xbf, 0x74, 0x27, 0x27, 0xea, 0x48, 0x4f, 0x38 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_INVALID\_PARAMETER with StringSize being NULL. | Call GetString() with StringSize being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.2.8 | 0x62a545c3, 0x3da2, 0x4f46, 0xb9, 0x07, 0xd4, 0xfe, 0x3e, 0xdf, 0x59, 0xc0 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call GetString() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.2.9 | 0x276f380d, 0x96d6, 0x46d5, 0x8a, 0xbb, 0x2a, 0xf3, 0xb7, 0x3c, 0x2d, 0x43 | HII\_STRING\_PROTOCOL.GetString - GetString() returns EFI\_SUCCESS with valid parameters and the result checked. | Step1: Call NewString() with valid parameters.  Step2: Call GetString() with valid parameters. The return status should be EFI\_SUCCESS. The output string should be same with the original one. |

### SetString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.2.3.1 | 0xb7d699ce, 0xb3e9, 0x4327,  0x8b, 0x52, 0xdd, 0xd5, 0xa2, 0xff, 0xb9, 0x0c | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_NOT\_FOUND with StringId been invalid. | Call SetString() with an invalid StringId which is not in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.2.3.2 | 0xfda7ec68, 0xbf34, 0x4086, 0xad, 0x72, 0x26, 0xe1, 0xd6, 0xdd, 0x45, 0x48 | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_INVALID\_PARAMETER with Language been NULL. | Call SetString() with Language being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.3.3 | 0xb66221c2, 0xc6e7, 0x4129, 0xb3, 0x83, 0xa6, 0x51, 0x26, 0x2b, 0xcf, 0x57 | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_INVALID\_PARAMETER with String been NULL. | Call SetString() with String being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.3.4 | 0x7439d8aa, 0xe2f6, 0x4c3b, 0x98, 0x0c, 0x13, 0xbd, 0xab, 0x97, 0xff, 0x95 | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call SetString() with an invalid PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.2.3.5 | 0x66495376, 0x042b, 0x460a, 0xbb, 0x45, 0x19, 0xfd, 0x13, 0xf2, 0xe0, 0x2c | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call SetString() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.3.6 | 0xf346d13b, 0xcbd0, 0x451f, 0xa6, 0x93, 0x75, 0xf1, 0xe9, 0xdd, 0x1f, 0x74 | HII\_STRING\_PROTOCOL.SetString - SetString() returns EFI\_SUCCESS with valid parameters and result checked | Part 1: Call SetString() with valid parameters. The return status should be EFI\_SUCCESS. |
| 5.18.2.3.7 | 0xbf8f4ae6, 0xf506, 0x43d2, 0xa6, 0x43, 0xa7, 0xb4, 0xb2, 0x33, 0xe8, 0xe0 | HII\_STRING\_PROTOCOL.SetString - output the string and compare with the reset string. | Part2: Call GetString() to check the output string with the original string. They should be same. |

### GetLanguages()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.2.4.1 | 0x7a983202, 0x322e, 0x4d12, 0x90, 0xb3, 0xcf, 0x8b, 0x6e, 0xc4, 0x97, 0x5b | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_INVALID\_PARAMETER with Languages been NULL. | Call GetLanguages() with Languages being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.4.2 | 0xa9299182, 0xcd9a, 0x4014, 0xb4, 0x03, 0xe2, 0x67, 0xc7, 0xf4, 0x80, 0x7f | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_INVALID\_PARAMETER with LanguagesSize been NULL. | Call GetLanguages() with LanguagesSize being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.4.3 | 0x83a0f73c, 0xdd2c, 0x4652, 0x8e, 0xbe, 0x32, 0xd5, 0xf9, 0x8e, 0x24, 0xef | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call GetLanguages() with an invalid PackageList. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.4.4 | 0x696870ed, 0xfff5, 0x4b76, 0x9f, 0x82, 0xbe, 0x78, 0xf6, 0x58, 0x9b, 0x8b | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call GetLanguages() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.2.4.5 | 0x65dca7c5, 0x85a0, 0x48a0, 0x9a, 0x49, 0xa9, 0xbb, 0xae, 0xa2, 0x55, 0xf3 | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_BUFFER\_TOO\_SMALL with LanguagesSize indicates the Languages is too small. | Call GetLanguages() with LanguagesSize which indicates the Languages buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. The LanguagesSize is updated with the required size. |
| 5.18.2.4.6 | 0xba61367b, 0x33b6, 0x41cc, 0x94, 0x60, 0x54, 0x75, 0xf1, 0xe5, 0x81, 0x89 | HII\_STRING\_PROTOCOL.GetLanguages - GetLanguages() returns EFI\_SUCCESS with valid parameters. | Call GetLanguages() with valid parameters. The return status should be EFI\_SUCCESS. |

### GetSecondaryLanguages()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.2.5.1 | 0xff558856, 0xcf19, 0x47b2, 0x89, 0xc0, 0xdb, 0xdf, 0x0e, 0xf5, 0x31, 0xe2 | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_INVALID\_PARAMETER with FirstLanguage been NULL. | Call GetSecondaryLanguages() with FirstLanguage being NULL. The return status should EFI\_INVALID\_PARAMETER. |
| 5.18.2.5.2 | 0x05c043da, 0xd0dd, 0x4833, 0xa1, 0x27, 0x92, 0x3b, 0x6a, 0x58, 0x05, 0xdc | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_INVALID\_PARAMETER with SecondLanguages been NULL. | Call GetSecondaryLanguages() with SecondLanguages being NULL. The return status should EFI\_INVALID\_PARAMETER. |
| 5.18.2.5.3 | 0xa891d992, 0x6296, 0x4670, 0xa5, 0xbe, 0x5c, 0x53, 0xaa, 0xc0, 0x34, 0x48 | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_INVALID\_PARAMETER with SecondLanguagesSize been NULL. | Call GetSecondaryLanguages() with SecondLanguagesSize being NULL. The return status should EFI\_INVALID\_PARAMETER. |
| 5.18.2.5.4 | 0x050d991f, 0xd6f0, 0x4a07, 0x91, 0x6d, 0x58, 0xde, 0xc2, 0xec, 0xf3, 0x2f | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call GetSecondaryLanguages() with an invalid PackageList. The return status should EFI\_NOT\_FOUND. |
| 5.18.2.5.5 | 0x68d1489e, 0x587b, 0x44e5, 0xb8, 0x72, 0x17, 0xc1, 0x1e, 0xc9, 0xd3, 0xf7 | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call GetSecondaryLanguages() with PackageList being NULL. The return status should EFI\_INVALID\_PARAMETER. |
| 5.18.2.5.6 | 0xa25ea8dd, 0x5681, 0x4912, 0xb5, 0xda, 0xe3, 0x04, 0x36, 0x7c, 0x23, 0x89 | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_NOT\_FOUND with FirstLanguage is not present in the PackageList. | Call GetSecondaryLanguages() with FirstLanguagewhich is not in the specified PackageList. The return status should EFI\_NOT\_FOUND. |
| 5.18.2.5.7 | 0x6750c8c6, 0x54b5, 0x4a95, 0xa4, 0x15, 0x44, 0xbc, 0x64, 0xb1, 0x9f, 0x81 | HII\_STRING\_PROTOCOL.GetLanguages - GetSecondaryLanguages() returns EFI\_BUFFER\_TOO\_SMALL with SecondLanguagesSize indicates the SecondLanguages is too small. | Call GetSecondaryLanguages() with SecondLanguagesSize which indicates the SecondLanguages buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. The SecondLanguagesSize is updated with the required size. |
| 5.18.2.5.8 | 0x302b21ca, 0xbc47, 0x4c26, 0xa0, 0x21, 0x24, 0x2d, 0xba, 0x57, 0x42, 0x65 | HII\_STRING\_PROTOCOL.GetSecondaryLanguages - GetSecondaryLanguages() returns EFI\_SUCCESS with SecondLanguagesSize is large enough. | Call GetSecondaryLanguages() with valid parameters. The return status should be EFI\_SUCCESS. |

## 

## EFI\_HII\_IMAGE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_IMAGE\_PROTOCOL Section.

### NewImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.3.1.1 | 0x20eafa16, 0xc9cd, 0x41b3, 0x96, 0x81, 0x46, 0x7b, 0x7f, 0x17, 0x3d, 0x71 | HII\_IMAGE\_PROTOCOL.NewImage - NewImage() returns EFI\_INVALID\_PARAMETER with ImageId been NULL. | Call NewImage() with ImageId being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.1.2 | 0x0227338d, 0xb459, 0x4209, 0xb1, 0xa0, 0x10, 0x3c, 0xe8, 0x3e, 0x71, 0xf5 | HII\_IMAGE\_PROTOCOL.NewImage - NewImage() returns EFI\_INVALID\_PARAMETER with Image been NULL. | Call NewImage() with Image being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.1.3 | 0x4930f94e, 0x6bdb, 0x42aa, 0xaf, 0xde, 0x87, 0x55, 0x55, 0x2c, 0x77, 0x1d | HII\_IMAGE\_PROTOCOL.NewImage - NewImage() returns EFI\_NOT\_FOUND with PackageList been NULL. | Call NewImage() with PackageList being NULL, The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.1.4 | 0x170bc177, 0xa2f7, 0x46ba, 0xa8, 0xd6, 0x09, 0xe5, 0xa4, 0xb1, 0x81, 0x8f | HII\_IMAGE\_PROTOCOL.NewImage - NewImage() returns EFI\_SUCCESS with valid parameters and result checked. | Call NewImage() with valid parameters, The return status should be EFI\_SUCCESS. |

### GetImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.3.2.1 | 0x55488ca5, 0x2a0c, 0x4dcb, 0xbc, 0x7d, 0xca, 0xaf, 0x05, 0x2f, 0xac, 0x13 | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_NOT\_FOUND with ImageId been invalid. | Call GetImage() with an invalid ImageId which is not in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.2.2 | 0xdde7e63e, 0xa889, 0x47ce, 0xad, 0xe1, 0x15, 0x0b, 0xb8, 0xa3, 0x8e, 0x10 | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_BUFFER\_TOO\_SMALL with ImageSize is small. | Call GetImage() with ImageSize which indicates the Image buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. The ImageSize is updated with the required size. |
| 5.18.3.2.3 | 0xa1f286a0, 0x26da, 0x4919, 0xa3, 0xc4, 0x90, 0x5b, 0x18, 0x03, 0x6c, 0x36 | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_INVALID\_PARAMETER with Image been NULL. | Call GetImage() with Image being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.2.4 | 0x17a11dcc, 0x8d3d, 0x40dc, 0xb0, 0x9c, 0x37, 0xfc, 0x8e, 0x72, 0x46, 0xab | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_INVALID\_PARAMETER with ImageSize been NULL. | Call GetImage() with ImageSize being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.2.5 | 0x51363bef, 0x2eb6, 0x4eef, 0x86, 0xdf, 0x48, 0xf1, 0x87, 0x75, 0x6f, 0x9e | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call GetImage() with an invalid PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.2.6 | 0x05fc7f10, 0xe1ef, 0x4fd0, 0x91, 0x3d, 0x86, 0x46, 0x53, 0x7e, 0x4c, 0xbd | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_NOT\_FOUND with PackageList been NULL. | Call GetImage() with PackageList being NULL. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.2.7 | 0x14cd0647, 0x3fd7, 0x4831, 0x9e, 0xa5, 0x9b, 0x3d, 0xd7, 0xc8, 0xeb, 0xb7 | HII\_IMAGE\_PROTOCOL.GetImage - GetImage() returns EFI\_SUCCESS with valid parameters and the result checked. | Call GetImage() with valid parameters, The return status should be EFI\_SUCCESS. |

### SetImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.3.3.1 | 0x9af36ab7, 0x8bd2, 0x417b, 0xa5, 0x10, 0x1f, 0x22, 0x99, 0x13, 0x72, 0x64 | HII\_IMAGE\_PROTOCOL.SetImage - SetImage() returns EFI\_NOT\_FOUND with ImageId been invalid | Call SetImage() with an invalid ImageId which is not in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.3.2 | 0x5d9b72d9, 0x01f4, 0x47cd, 0x96, 0xbb, 0xb1, 0xf2, 0xf2, 0x1f, 0xf7, 0x2a | HII\_IMAGE\_PROTOCOL.SetImage - SetImage() returns EFI\_INVALID\_PARAMETER with Image been NULL. | Call SetImage() with Image being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.3.3 | 0xa411c5ef, 0x0eeb, 0x4a9a, 0x85, 0x9a, 0x4a, 0x64, 0x0d, 0xa6, 0x16, 0xf7 | HII\_IMAGE\_PROTOCOL.SetImage - SetImage() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call SetImage() with an invalid PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.3.4 | 0x870c9c4c, 0xe099, 0x4024, 0xac, 0x3a, 0x7b, 0x8c, 0x30, 0x98, 0x8c, 0x2e | HII\_IMAGE\_PROTOCOL.SetImage - SetImage() returns EFI\_NOT\_FOUND with PackageList been NULL. | Call SetImage() with PackageList being NULL. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.3.5 | 0xc99ad1a4, 0x3f5b, 0x46dc, 0xb4, 0x85, 0xb2, 0x23, 0x9d, 0xef, 0xbc, 0x2c | HII\_IMAGE\_PROTOCOL.SetImage - SetImage() returns EFI\_SUCCESS with valid parameters and result checked. | Call SetImage() with valid parameters, The return status should be EFI\_SUCCESS. |

### DrawImage()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.3.4.1 | 0x4bb8ee94, 0x8a57, 0x470f, 0x9d, 0xd5, 0xef, 0x81, 0xea, 0xd9, 0xd6, 0xad | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with Image been NULL. | Call DrawImage() with Image being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.4.2 | 0xd9034d5d, 0xde07, 0x4458,  0x92, 0xb7, 0x4c, 0xd1, 0x50, 0x1c, 0xe8, 0x90 | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt been NULL. | Call DrawImage() with Flags being EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.4.3 | 0x5c232904, 0x23f8, 0x4b0f, 0x9c, 0x85, 0xb7, 0xe8, 0xa5, 0xc9, 0x80, 0x05 | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DIRECT\_TO\_SCREEN and no screen. | Call DrawIamge() with Flags being EFI\_HII\_DIRECT\_TO\_SCREEN and use EFI\_GRAPHICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.4.4 | 0xf9e86ff1, 0x611c, 0x41b8,  0xb0, 0x8d, 0x2a, 0xe2, 0x5e, 0x34, 0x2a, 0x1d | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL. | Call DrawImage() with Flags being EFI\_HII\_DRAW\_FLAG\_CLIP and Blt being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.4.5 | 0x11ae81e8, 0xfe20, 0x472d, 0x8c, 0xdb, 0x40, 0xb7, 0x56, 0x09, 0xd9, 0xdc | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_DEFAULT, Blt points to NULL and Image->Flags is EFI\_IMAGE\_TRANSPARENT. | Call DrawImage() with Blt being NULL, Flags being EFI\_HII\_DRAW\_FLAG\_DEFAULT and Image->Flags being EFI\_IMAGE\_TRANSPARENT. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.4.6 | 0x6e409e86, 0x16d3, 0x4b31, 0x96, 0x71, 0xf9, 0x2c, 0xe6, 0x26, 0x1b, 0xcf | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_SUCCESS with valid parameter. | Call DrawImage() with Flags being EFI\_HII\_DRAW\_FLAG\_FORCE\_OPAQUE, Blt being NULL and other valid parameters. The return status should be EFI\_SUCCESS. |
| 5.18.3.4.7 | 0xedbef6eb, 0xf68f, 0x4154, 0xb0, 0x12, 0xb9, 0xd7, 0x55, 0x3b, 0xa6, 0x0a | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_SUCCESS with valid parameter. | Call DrawImage() with Flags being valid combination, Blt being not NULL and other valid parameters. The return status should be EFI\_SUCCESS. |

### DrawImageId()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.3.5.1 | 0xcb1936c7, 0x53c7, 0x4a65, 0xa5, 0x3d, 0x85, 0xc2, 0x35, 0x72, 0xff, 0x29 | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_NOT\_FOUND with an invalid PackageList. | Call DrawImageId() with an invalid PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.5.2 | 0xb1372c26, 0x3de4, 0x4a5c, 0x8a, 0x1f, 0x71, 0x4a, 0x7b, 0x07, 0x0e, 0x67 | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_NOT\_FOUND with PackageList been NULL. | Call DrawImageId() with PackageList being NULL. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.5.3 | 0x23a7fcfd, 0x4d0f, 0x4460, 0xb8, 0xcc, 0x7a, 0xfa, 0xf7, 0x4d, 0xe5, 0xaa | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_NOT\_FOUND with invalid ImageId. | Call DrawImageId() with an invalid ImageId which is not in the specified PackageList. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.5.4 | 0x5433fcf6, 0x06f4, 0x45f3,  0x91, 0x23, 0x79, 0x5f, 0x49, 0x69, 0x77, 0x4d | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_NOT\_FOUND with invalid PackageList. | Call DrawImageId() with an invalid PackageList which is not in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.3.5.5 | 0x2df19349, 0xec8c, 0x42f7,  0x9f, 0x8e, 0x1d, 0x56, 0x13, 0x6c, 0x95, 0xbc | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt been NULL. | Call DrawImageId() with Flags being EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.5.6 | 0x059732f0, 0x431e, 0x4ad3, 0x92, 0xa0, 0x4b, 0xda, 0xaa, 0x8d, 0x98, 0x92 | HII\_IMAGE\_PROTOCOL.DrawImage - DrawImage() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DIRECT\_TO\_SCREEN and no screen. | Call DrawIamgeId() with Flags being EFI\_HII\_DIRECT\_TO\_SCREEN and use EFI\_GRAPHICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.5.7 | 0xd12320fa, 0x063e, 0x48e3, 0x85, 0xd5, 0x1c, 0x9b, 0x7c, 0x48, 0x71, 0x13 | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL. | Call DrawImageId() with Flags being EFI\_HII\_DRAW\_FLAG\_CLIP and Blt being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.5.8 | 0xb3e326cb, 0x67bc, 0x49a7, 0x8c, 0xb6, 0xc3, 0xec, 0x3b, 0x83, 0x20, 0x1e | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_INVALID\_PARAMETER with EFI\_HII\_DRAW\_FLAG\_DEFAULT, Blt points to NULL and Image->Flags is EFI\_IMAGE\_TRANSPARENT. | Call DrawImageId() with Blt being NULL, Flags being EFI\_HII\_DRAW\_FLAG\_DEFAULT and Image->Flags being EFI\_IMAGE\_TRANSPARENT. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.3.5.9 | 0xaeeb761e, 0x1b38, 0x4b06, 0x8d, 0x26, 0xf3, 0x6f, 0xde, 0xa4, 0x3d, 0x88 | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_SUCCESS with valid parameter. | Call DrawImageId() with Flags being EFI\_HII\_DRAW\_FLAG\_FORCE\_OPAQUE, Blt being NULL and other valid parameters. The return status should be EFI\_SUCCESS. |
| 5.18.3.5.10 | 0x2b844dec, 0xc8cf, 0x442c, 0x89, 0xc0, 0x9f, 0x44, 0xe0, 0x96, 0x4b, 0xcb | HII\_IMAGE\_PROTOCOL.DrawImageId - DrawImageId() returns EFI\_SUCCESS with valid parameter. | Call DrawImage() with Flags being valid combination, Blt being not NULL and other valid parameters. The return status should be EFI\_SUCCESS. |

## EFI\_HII\_DATABASE\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_DATABASE\_PROTOCOL Section.

### NewPackageList()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.1.1 | 0x17364518, 0x35c4, 0x481a, 0x82, 0x45, 0xdd, 0x8b, 0x85, 0xbf, 0x01, 0x7c | HII\_DATABASE\_PROTOCOL.NewPackageList - NewPackageList() returns EFI\_INVALID\_PARAMETER with PackageList being NULL. | Call NewPackageList() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.1.2 | 0xd12127b3, 0x3a61, 0x498d, 0xbb, 0x8f, 0x9f, 0x9e, 0xb3, 0x9a, 0xfd, 0x95 | HII\_DATABASE\_PROTOCOL.NewPackageList - NewPackageList() returns EFI\_INVALID\_PARAMETER with Handle being NULL. | Call NewPackageList() with Handle being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.1.3 | 0x3ee6503d, 0x5fab, 0x4f51, 0x9a, 0xee, 0xc9, 0x0f, 0x9d, 0x73, 0xe5, 0xd7 | HII\_DATABASE\_PROTOCOL.NewPackageList - NewPackageList() returns EFI\_SUCCESS with valid inputs | Call NewPackageList() with valid parameters. The return status should be EFI\_SUCCESS. |

### RemovePackageList ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.2.1 | 0x244e5792, 0x471b, 0x456b, 0x8b, 0xfe, 0x1f, 0x68, 0xeb, 0x8f, 0xcd, 0xd0 | HII\_DATABASE\_PROTOCOL.RemovePackageList - RemovePackageList() returns EFI\_NOT\_FOUND with Handle being NULL. | Call RemovePackageList() with Handle being NULL. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.2.2 | 0x4f2588b4, 0xadb6, 0x48ba, 0xac, 0x53, 0x97, 0x3e, 0x05, 0x64, 0x5d, 0x4f | HII\_DATABASE\_PROTOCOL.RemovePackageList - RemovePackageList() returns EFI\_NOT\_FOUND with Handle has already been removed once. | Call RemovePackageList() with Handle which has been removed. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.2.3 | 0x28c05503, 0x33ce, 0x41ae, 0x90, 0x2e, 0xbc, 0x34, 0xe0, 0xb8, 0x0e, 0x9d | HII\_DATABASE\_PROTOCOL.RemovePackageList - RemovePackageList() returns EFI\_NOT\_FOUND with an invalid Handle. | Call RemovePackageList() with an invalid Handle. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.2.4 | 0xb4a3a9ac, 0x0dfa, 0x4025, 0xa6, 0x36, 0xac, 0x53, 0x19, 0x7a, 0x5e, 0xd2 | HII\_DATABASE\_PROTOCOL.RemovePackageList - RemovePackageList() returns EFI\_SUCCESS with valid inputs. | Part1: Call RemovePackageList() with valid parameters. The return status should be EFI\_SUCCESS. |
| 5.18.4.2.5 | 0xad310e29, 0x2112, 0x485b, 0xa4, 0xdc, 0xc8, 0xec, 0xf8, 0x49, 0x7b, 0xc9 | HII\_DATABASE\_PROTOCOL.RemovePackageList - ExportPackageLists() returns EFI\_NOT\_FOUND when RemovePackageList work. | Part2: Call ExportPackageList() with Handle which has been removed. The return status should be EFI\_NOT\_FOUND. |

### UpdatePackageList ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.3.1 | 0xb4bf4c19, 0x64cc, 0x4efe, 0xa7, 0x21, 0x3f, 0xc2, 0x07, 0x88, 0x51, 0xb4 | HII\_DATABASE\_PROTOCOL.UpdatePackageList - UpdatePackageList() returns EFI\_NOT\_FOUND with Handle being NULL. | Call UpdatePackageList() with Handle being NULL. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.3.2 | 0xcd591535, 0x7df7, 0x4f99, 0x9d, 0x13, 0x3b, 0x8e, 0x39, 0x85, 0x39, 0x6f | HII\_DATABASE\_PROTOCOL.UpdatePackageList - UpdatePackageList() returns EFI\_NOT\_FOUND with Handle has already been removed before. | Call UpdatePackageList() with Handle which has been removed. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.3.3 | 0x2a2f8bf0, 0x0c27, 0x41f3, 0xae, 0x19, 0xb0, 0x66, 0x16, 0x92, 0x5c, 0x0b | HII\_DATABASE\_PROTOCOL.UpdatePackageList - UpdatePackageList() returns EFI\_NOT\_FOUND with an invalid handle. | Call UpdatePackageList() with an invalid Handle. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.3.4 | 0xfcb45969, 0x37f8, 0x430e, 0x86, 0x99, 0x7f, 0x89, 0xde, 0x52, 0x6f, 0x94 | HII\_DATABASE\_PROTOCOL.UpdatePackageList - UpdatePackageList() returns EFI\_INVALID\_PARAMETER with PackageList been NULL. | Call UpdatePackageList() with PackageList being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.3.5 | 0xe1f18c0b, 0xfa2f, 0x488a, 0x80, 0x25, 0x77, 0x35, 0x49, 0x55, 0x36, 0xe0 | HII\_DATABASE\_PROTOCOL.UpdatePackageList - UpdatePackageList() returns EFI\_SUCCESS with valid inputs | Call UpdatePackageList() with valid parameters. The return status should be EFI\_SUCCESS. |

### ListPackageLists()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.4.1 | 0x7b5c4246, 0xe6b3, 0x4eb0, 0xaf, 0xc4, 0x23, 0xb1, 0xbf, 0xfd, 0x46, 0x39 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_INVALID\_PARAMETER with Handle being NULL. | Call ListPackageList() with Handle being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.4.2 | 0x9268a2d0, 0xc922, 0x42bc, 0xb0, 0x5d, 0x3d, 0x18, 0xab, 0xf2, 0xe9, 0x37 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_INVALID\_PARAMETER with HandleBufferLength being NULL. | Call ListPackageList() with HandleBufferLength being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.4.3 | 0x7c577327, 0x562c, 0x4333, 0x9b, 0x81, 0x9b, 0xf6, 0xf2, 0x80, 0x83, 0xec | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_NOT\_FOUND when no matching handles were found. | Call ListPackageList() with no match Handle being found. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.4.4 | 0xf5771b8e, 0x6db5, 0x473d, 0xba, 0x32, 0x21, 0xfe, 0xf2, 0x7f, 0x05, 0xf2 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_BUFFER\_TOO\_SMALL when the HandleBufferLength indicates the buffer is too small. | Part1: Call ListPackageList() with HandleBufferLength which indicates the Handle buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. |
| 5.18.4.4.5 | 0x08c276ef, 0x185c, 0x4eac, 0xbe, 0x84, 0x7d, 0xb0, 0x8c, 0x38, 0x5f, 0xe7 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_BUFFER\_TOO\_SMALL when the HandleBufferLength indicates the buffer is too small and return the needed buffer length. | Part 2: The HandleBufferLength is updated with the required size. |
| 5.18.4.4.6 | 0x212bb7e2, 0xa998, 0x4ede, 0xba, 0x08, 0x8d, 0x8c, 0xda, 0x9d, 0xb7, 0xd4 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_INVALID\_PARAMETER with PackageType is not Guid and PackageGuid is not NULL. | Call ListPackageList() with no Guid PackageType and no NULL PackageGuid. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.4.7 | 0x9b711922, 0x06d3, 0x4ba4, 0x98, 0x5b, 0x50, 0x72, 0x46, 0x94, 0x8b, 0xb2 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_INVALID\_PARAMETER with PackageType is EFI\_HII\_DATABASE\_TYPE\_GUID and PackageGuid is NULL. | Call ListPackageList() with Guid PackageType and PackageGuid being NULL. The return status should EFI\_INVALID\_PARAMETER. |
| 5.18.4.4.8 | 0x1dd024a0, 0xc53b, 0x439e, 0x86, 0x43, 0xc3, 0xe2, 0x82, 0x1f, 0x34, 0x75 | HII\_DATABASE\_PROTOCOL.ListPackageLists - ListPackageLists() returns EFI\_SUCCESS with valid inputs and return length checked. | Call ListPackageList() with valid parameters. The return status should be EFI\_SUCCESS. |

### ExportPackageLists ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.5.1 | 0xdc1afed1, 0x5be4, 0x4488, 0xaf, 0xeb, 0x75, 0x70, 0xb6, 0x3d, 0xea, 0xc4 | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_INVALID\_PARAMETER with BufferSize being NULL. | Call ExportPackageList() with BufferSize being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.5.2 | 0xd25ed0fa, 0xe829, 0x4e68, 0xbb, 0xa3, 0xef, 0x82, 0x5a, 0xa0, 0xba, 0x85 | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_INVALID\_PARAMETER with Buffer being NULL | Call ExportPackageList() with Buffer being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.5.3 | 0x0462bf1f, 0xce31, 0x4314, 0xbd, 0x34, 0x40, 0x4a, 0x05, 0x04, 0xd3, 0x0c | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_BUFFER\_TOO\_SMALL with BufferSize indicates the buffer is too small. | Part1: Call ExportPackageList() with BufferSize which indicates the Buffer is small. The return status should EFI\_BUFFER\_TOO\_SMALL. |
| 5.18.4.5.4 | 0xf03af69e, 0x3bba, 0x4092, 0xb0, 0x40, 0x75, 0x4b, 0x42, 0x6b, 0x2f, 0xd0 | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_BUFFER\_TOO\_SMALL with BufferSize indicates the buffer is too small and return the needed BufferSize. | Part2: The BufferSize is updated with the required size. |
| 5.18.4.5.5 | 0x55ce12c1, 0x35eb, 0x4d8c, 0xbf, 0xd9, 0x9b, 0x0c, 0x52, 0x4d, 0xc0, 0x76 | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_NOT\_FOUND with handle has been already removed once. | Call ExportPackageList() with Handle which has been removed once. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.5.6 | 0x22a02d74, 0xc2a8, 0x439f, 0xbd, 0x4c, 0xf6, 0xb0, 0x1a, 0xbe, 0x03, 0xe4 | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_NOT\_FOUND with the invalid handle. | Call ExportPackageList() with an invalid Handle. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.5.7 | 0xc9741024, 0x3073, 0x4827,  0x92, 0x23, 0x06, 0x33, 0x96, 0x0b, 0x8d, 0x6d | HII\_DATABASE\_PROTOCOL.ExportPackageLists - ExportPackageLists() returns EFI\_SUCCESS with valid inputs and result checked. | Call ExportPackageList() with valid parameters. The return status should be EFI\_SUCCESS. |

### RegisterPackageNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.6.1 | 0x1665f366, 0x70af, 0x4348, 0xbb, 0xc8, 0xb1, 0xaf, 0x38, 0xe1, 0x2d, 0xfd | HII\_DATABASE\_PROTOCOL.RegisterPackageNotify - RegisterPackageNotify() returns EFI\_INVALID\_PARAMETER with NotifyHandle been NULL. | Call RegisterPackageNotify() with NotifyHandle being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.6.2 | 0x7541d67b, 0xe837, 0x46bf, 0x85, 0x7e, 0xbc, 0x22, 0xf2, 0xe1, 0x0d, 0x60 | HII\_DATABASE\_PROTOCOL.RegisterPackageNotify - RegisterPackageNotify() returns EFI\_INVALID\_PARAMETER with PackageType is not Guid and PackageGuid not been NULL. | Call RegisterPackageNotify() with no Guid PackageType and no NULL PackageGuid. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.6.3 | 0x625abf38, 0x2d02, 0x46b2, 0xae, 0xa9, 0xcc, 0x5b, 0x0c, 0x83, 0xf1, 0x69 | HII\_DATABASE\_PROTOCOL.RegisterPackageNotify - RegisterPackageNotify() returns EFI\_INVALID\_PARAMETER with PackageType is EFI\_HII\_PACKAGE\_TYPE\_GUID and PackageGuid been NULL. | Call RegisterPackageNotify() with Guid PackageType and NULL PackageGuid. The return status should be EFI\_INVALID\_PARAMETER. |

### UnregisterPackageNotify()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.7.1 | 0xef67f1ff, 0x9b53, 0x40ac, 0x8e, 0xec, 0xca, 0x5c, 0x59, 0xfd, 0xbd, 0x0d | HII\_DATABASE\_PROTOCOL.UnregisterPackageNotify - UnregisterPackageNotify() returns EFI\_NOT\_FOUND with the NotifyHandle has been removed already. | Call UnRegisterPackageNotify() with NotifyHandle which has been removed once. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.7.2 | 0xc5266e09, 0xe5e8, 0x4c85, 0xb3, 0x0a, 0xc9, 0x83, 0x04, 0x4f, 0x23, 0xfc | HII\_DATABASE\_PROTOCOL.UnregisterPackageNotify - UnregisterPackageNotify() returns EFI\_NOT\_FOUND with an invalid NotifyHandle. | Call UnRegisterPackageNotify() with NotifyHandle which can’t be found in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.7.3 | 0x51c64bb1, 0x3266, 0x4ccd, 0x82, 0xde, 0xed, 0x6b, 0xa7, 0x68, 0x35, 0xe5 | HII\_DATABASE\_PROTOCOL.UnregisterPackageNotify - UnregisterPackageNotify() returns EFI\_NOT\_FOUND with NotifyHandle been NULL. | Call UnRegisterPackageNotify() with NotifyHandle being NULL. The return status should be EFI\_NOT\_FOUND. |

### FindKeyboardLayouts()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.8.1 | 0xa61bf4b2, 0xb1e0, 0x4e62, 0x95, 0x2d, 0xa0, 0x68, 0x98, 0x48, 0x06, 0xb2 | HII\_DATABASE\_PROTOCOL.FindKeyboardLayouts - FindKeyboardLayouts() returns EFI\_INVALID\_PARAMETER with KeyGuidBufferLength been NULL. | Call FindKeyboardLayouts() with KeyGuidBufferLength being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.8.2 | 0x1ea6e881, 0x6f47, 0x4fdc, 0x8b, 0x8c, 0xba, 0x33, 0x9a, 0x13, 0xbe, 0xc0 | HII\_DATABASE\_PROTOCOL.FindKeyboardLayouts - FindKeyboardLayouts() returns EFI\_INVALID\_PARAMETER with KeyGuidBuffer been NULL. | Call FindKeyboardLayouts() with KeyGuidBuffer being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.8.3 | 0xc3bacca3, 0x901a, 0x49ad, 0xa9, 0x86, 0x41, 0x62, 0xff, 0xb3, 0xa1, 0x8f | HII\_DATABASE\_PROTOCOL.FindKeyboardLayouts - FindKeyboardLayouts() returns EFI\_BUFFER\_TOO\_SMALL with KeyGuidBufferLength indicates the buffer is too small. | Call FindKeyboardLayouts() with KeyGuidBufferLength which indicates KeyGuidBuffer is small. The return status should be EFI\_BUFFER\_TOO\_SMALL. The KeyGuidBufferLength should be updated with required length. |
| 5.18.4.8.4 | 0x1dc41f45, 0x9e3a, 0x41e2, 0x8f, 0x99, 0x8d, 0x4d, 0x39, 0x32, 0x12, 0x85 | HII\_DATABASE\_PROTOCOL.FindKeyboardLayouts - FindKeyboardLayouts() returns EFI\_SUCCESS with valid inputs. | Call FindKeyboardLayouts() with valid parameters. The return status should be EFI\_SUCCESS. The KeyGuidBufferLength should be updated with actual length. |

### GetKeyboardLayout()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.9.1 | 0xbc4b4ea1, 0x069c, 0x459c, 0x8c, 0x22, 0x68, 0x19, 0x01, 0x71, 0x78, 0x48 | HII\_DATABASE\_PROTOCOL.GetKeyboardLayout - GetKeyboardLayout() returns EFI\_INVALID\_PARAMETER with KeyboardLayoutLength been NULL. | Call GetKeyboardLayout() with KeyboardLayoutLength being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.9.2 | 0xe2aeca1e, 0x5c50, 0x4ee7, 0x8f, 0x69, 0x46, 0xa7, 0xb9, 0x01, 0x3e, 0x0d | HII\_DATABASE\_PROTOCOL.GetKeyboardLayout - GetKeyboardLayout() returns EFI\_INVALID\_PARAMETER with KeyboardLayout been NULL. | Call GetKeyboardLayout() with KeyboardLayout being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.9.3 | 0x0d41d349, 0xe5f4, 0x43d5, 0x85, 0x0e, 0xfe, 0x4f, 0x08, 0x5a, 0xbf, 0xb2 | HII\_DATABASE\_PROTOCOL.GetKeyboardLayout - GetKeyboardLayout() returns EFI\_BUFFER\_TOO\_SMALL with KeyboardLayoutLength not enough. | Call GetKeyboardLayout() with KeyboardLayoutLength which indicates KeyboardLayout is small. The return status should be EFI\_BUFFER\_TOO\_SMALL. The KeyboardLayoutLength should be updated with required length. |
| 5.18.4.9.4 | 0xc2732202, 0x48ca, 0x49f8, 0xbb, 0x18, 0xd3, 0x6c, 0xe1, 0xb4, 0x83, 0xfa | HII\_DATABASE\_PROTOCOL.GetKeyboardLayout - GetKeyboardLayout() returns EFI\_NOT\_FOUND with the requested keyboard layout not found. | Call GetKeyboardLayout() with a Guid which can’t be found in the database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.9.5 | 0x4ffc59ee, 0xefb8, 0x4533, 0x81, 0x4f, 0x85, 0xed, 0x90, 0x93, 0x44, 0xc7 | HII\_DATABASE\_PROTOCOL.GetKeyboardLayout - GetKeyboardLayout() returns EFI\_SUCCESS with valid inputs. | Call GetKeyboardLayout() with valid parameters. The return status should be EFI\_SUCCESS. |

### SetKeyboardLayout()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.10.1 | 0xad8c6cdc, 0xc749, 0x42e6, 0x88, 0xf7, 0x73, 0x44, 0x7c, 0x38, 0x9e, 0x4d | HII\_DATABASE\_PROTOCOL.SetKeyboardLayout - SetKeyboardLayout() returns EFI\_INVALID\_PARAMETER with KeyGuid set to be NULL. | Call SetKeyboardLayout() with KeyGuid being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.10.2 | 0x07018fe1, 0xdde0, 0x449b, 0xa5, 0xe2, 0xb1, 0x7a, 0xb5, 0x68, 0x7c, 0x97 | HII\_DATABASE\_PROTOCOL.SetKeyboardLayout - SetKeyboardLayout() returns EFI\_NOT\_FOUND with the referenced keyboard layout not found. | Call SetKeyboardLayout() with KeyGuid which can’t be found in database. The return status should be EFI\_NOT\_FOUND. |
| 5.18.4.10.3 | 0xe7a3dffa, 0x4cca, 0x4402,  0x8f, 0xf1, 0xe3, 0xf3, 0x16, 0xf5, 0x45, 0x1f | HII\_DATABASE\_PROTOCOL.SetKeyboardLayout - SetKeyboardLayout() returns EFI\_SUCCESS with valid inputs. | Call SetKeyboardLayout() with valid parameters. The return status should be EFI\_SUCCESS. |

### GetPackageListHandle()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.4.11.1 | 0x373b128d, 0x2216, 0x415b, 0xbb, 0xb1, 0x99, 0x0e, 0xe3, 0x79, 0xf2, 0x85 | HII\_DATABASE\_PROTOCOL.GetPackageListHandle - GetPackageListHandle() returns EFI\_INVALID\_PARAMETER with DriverHandle been NULL. | Call GetPackageListHandle () with DriverHandle being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.11.2 | 0xb50cffb8, 0x7b74, 0x4b93, 0xb4, 0x87, 0xb3, 0x39, 0xf4, 0x7e, 0xa6, 0x25 | HII\_DATABASE\_PROTOCOL.GetPackageListHandle - GetPackageListHandle () returns EFI\_INVALID\_PARAMETER with a PackageListHandle which has been removed. | Call GetPackageListHandle () with a PackageListHandle which has been removed. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.11.3 | 0x27a38687, 0x398a, 0x4d65, 0xab, 0x7b, 0x4d, 0xf2, 0xd1, 0x1f, 0x21, 0xa0 | HII\_DATABASE\_PROTOCOL.GetPackageListHandle - GetPackageListHandle() returns EFI\_INVALID\_PARAMETER with an invalid PackageListHandle. | Call GetPackageListHandle ()with an invalid PackageListHandle. The return status should be EFI\_INVALID\_PARAMETER . |
| 5.18.4.11.4 | 0x2bc2dae8, 0x2692, 0x487a, 0x94, 0x9d, 0xa7, 0x45, 0x08, 0x82, 0x65, 0x11 | HII\_DATABASE\_PROTOCOL. GetPackageListHandle - GetPackageListHandle() returns EFI\_INVALID\_PARAMETER with PackageListHandle being NULL . | Call GetPackageListHandle ()with PackageListHandle being NULL. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.4.11.5 | 0xa81329db, 0xcc91, 0x491c, 0xb1, 0x2a, 0x44, 0x0d, 0xf7, 0xed, 0x77, 0xc6 | HII\_DATABASE\_PROTOCOL. GetPackageListHandle - GetPackageListHandle() returns EFI\_SUCCESS with valid inputs. | Call GetPackageListHandle () with valid parameters. The return status should be EFI\_SUCCESS. |

## EFI\_HII\_CONFIG\_ROUTING\_PROTOCOL Test

Reference Document:

*UEFI Specification,* EFI\_HII\_CONFIG\_ROUTING\_PROTOCOL Section.

### ExtractConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.1.1 | 0x04697ed6, 0xcb4e, 0x4e02, 0xbb, 0x8e, 0x9b, 0x76, 0x0b, 0x90, 0xe2, 0xcd | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Request been NULL. | Call ExtractConfig() with valid parameters except Request being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.1.2 | 0x4a1e3525, 0x5247, 0x40dc, 0x93, 0xf7, 0x81, 0x30, 0x6a, 0xce, 0x20, 0xb5 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Progress been NULL. | Call ExtractConfig() with valid parameters except Progress being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.1.3 | 0x05b967d0, 0xe19d, 0x46d8, 0x87, 0xd8, 0x7d, 0x29, 0x65, 0x53, 0x61, 0xc7 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Results been NULL. | Call ExtractConfig() with valid parameters except Results being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.1.4 | 0xee200b58, 0x3714, 0x4cb6, 0x91, 0xc6, 0x31, 0xbe, 0xbd, 0xf4, 0x64, 0x96 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_NOT\_FOUND if Routing data doesn’t match any known driver. | Call ExtractConfig() with an invalid Request. The ConfigHdr of Request can’t be found in current system. The return status should be EFI\_NOT\_FOUND. Progress should be set to the “G” in the “GUID” of the routing header that doesn’t match. |
| 5.18.5.1.5 | 0xa18aebb6, 0x140f, 0x454f, 0x8f, 0xe5, 0x34, 0xdd, 0x38, 0xd8, 0xb0, 0xf0 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER if name in Request can’t match any known driver. | Call ExtractConfig() with an invalid Request. The name in Request can’t be found in current system. The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.1.6 | 0x67adfcdd, 0xda46, 0x4eb8, 0x82, 0x9d, 0xa4, 0x92, 0x8c, 0x10, 0xba, 0x68 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_SUCCESS with valid parameter and Progress points to the Request’s NULL terminator. | Call ExtractConfig() with valid parameters. The return status should be EFI\_SUCCESS and Progress points to the Request’s NULL terminator. |
| 5.18.5.1.7 | 0xf91ef5f3, 0xe0c6, 0x4aca, 0xa0, 0xd0, 0x5, 0xf9, 0xb1, 0x6a, 0x13, 0xbd | HII\_CONFIG\_ROUTING\_PROT OCOL.ExtractConfig - ExtractConfig() returns EFI\_SUCCESS & Check if Results is in <MultiConfigAltResp> format | 1.Call ExtractConfig() with valid parameters.  2.Check if Results is in <MultiConfigAltResp> format. The return status should be EFI\_SUCCESS |

### ExportConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.2.1 | 0x81f9658b, 0xbae2, 0x4e08, 0x87, 0xe3, 0x75, 0xe4, 0xe1, 0x47, 0x13, 0xba | HII\_CONFIG\_ROUTING\_PROTOCOL.ExportConfig - ExportConfig() returns EFI\_INVALID\_PARAMETER with Request been NULL. | Call ExportConfig() with Request being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.2.2 | 0xe23425ee, 0xaa38, 0x4074, 0xa1, 0xaa, 0xad, 0x5d, 0x98, 0x5a, 0x34, 0xe4 | HII\_CONFIG\_ROUTING\_PROTOCOL.ExportConfig - ExportConfig () returns EFI\_SUCCESS with valid parameter. | Call ExportConfig() with valid parameter, The return status should be EFI\_SUCCESS. |

### RouteConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.3.1 | 0x3a5c09d6, 0x0532, 0x4b4d, 0x87, 0xc8, 0x5e, 0x20, 0x33, 0x78, 0xbc, 0x3f | HII\_CONFIG\_ROUTING\_PROTOCOL.RouteConfig - RouteConfig() returns EFI\_INVALID\_PARAMETER with Configuration been NULL. | Call RouteConfig() with Configuration being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.3.2 | 0x18cdf3f8, 0xf9e6, 0x4128, 0xa4, 0xa6, 0x88, 0xea, 0x88, 0x5d, 0x59, 0x7c | HII\_CONFIG\_ROUTING\_PROTOCOL.RouteConfig - RouteConfig() returns EFI\_NOT\_FOUND if Routing data was not found. | Call RouteConfig() with an invalid Configuration. The ConfigHdr of Configuration can’t be found in current system. The return status should be EFI\_NOT\_FOUND. |
| 5.18.5.3.3 | 0x20833aeb, 0x9ff1, 0x4315, 0xb1, 0x0f, 0x31, 0x7c, 0x7b, 0x92, 0x45, 0x21 | HII\_CONFIG\_ROUTING\_PROTOCOL.RouteConfig - RouteConfig () returns EFI\_SUCCESS with valid parameter and Progresspoints to theConfiguration’s NULL terminator. | Call RouteConfig() with valid parameters. The return status should be EFI\_SUCCESS and Progresspoints to theConfiguration’s NULL terminator. |

### BlockToConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.4.1 | 0xb1dfee09, 0x73e5, 0x4659, 0x9a, 0xc6, 0x59, 0x46, 0xc1, 0xa1, 0x53, 0xcb | HII\_CONFIG\_ROUTING\_PROTOCOL.BlockToConfig - BlockToConfig() returns EFI\_INVALID\_PARAMETER with ConfigRequest been NULL. | Call BlockToConfig() with valid parameters except ConfigRequest being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.4.2 | 0x544bf56b, 0x3bdc, 0x46d5, 0x88, 0x4f, 0x19, 0xde, 0x76, 0x19, 0xef, 0xd3 | HII\_CONFIG\_ROUTING\_PROTOCOL.BlockToConfig - BlockToConfig() returns EFI\_INVALID\_PARAMETER with Block been NULL. | Call BlockToConfig() with valid parameters except Block being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.4.3 | 0xee6f8fd8, 0x951d, 0x4976, 0x86, 0xf0, 0xae, 0x7f, 0x5c, 0x69, 0x5b, 0x40 | HII\_CONFIG\_ROUTING\_PROTOCOL.BlockToConfig - BlockToConfig() returns EFI\_INVALID\_PARAMETER with <ConfigElement> in ConfigRequest being a <NvConfig>. | Call BlockToConfig() with valid parameters except <ConfigElement> in ConfigRequest being a <NvConfig>, The return status should be EFI\_INVALID\_PARAMETER and Progresspoints to ‘&’ of the first non-<BlockName>. |
| 5.18.5.4.4 | 0xd38890ec, 0xd43e, 0x4e28, 0xab, 0x47, 0xef, 0x67, 0xeb, 0x2d, 0x3d, 0x92 | HII\_CONFIG\_ROUTING\_PROTOCOL.BlockToConfig - BlockToConfig() returns EFI\_DEVICE\_ERROR if Block is not large enough. | Call BlockToConfig() with with valid parameters except Block is not large enough. The return status should be EFI\_DEVICE\_ERROR. |
| 5.18.5.4.5 | 0x8b1b960c, 0xda67, 0x423c, 0x85, 0x31, 0x76, 0x28, 0x0d, 0xb8, 0x2a, 0xc1 | HII\_CONFIG\_ROUTING\_PROTOCOL.BlockToConfig - BlockToConfig() returns EFI\_SUCCESS with valid parameter and Progresspoints to theConfigRequest’s NULL terminator**.** | Call BlockToConfig() with valid parameters. The return status should be EFI\_SUCCESS and Progresspoints to theConfigRequest’s NULL terminator. |

### ConfigToBlock ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.5.1 | 0x76ab8420, 0x7c61, 0x4ebc, 0x8b, 0x5b, 0x62, 0xa3, 0x35, 0x64, 0x6f, 0x8f | HII\_CONFIG\_ROUTING\_PROTOCOL. ConfigToBlock - ConfigToBlock() returns EFI\_INVALID\_PARAMETER with ConfigResp been NULL. | Call ConfigToBlock() with valid parameters except ConfigResp being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.5.2 | 0xcc284047, 0x45d6, 0x4fec, 0x88, 0x50, 0x70, 0x3f, 0x45, 0x22, 0x01, 0xdc | HII\_CONFIG\_ROUTING\_PROTOCOL. ConfigToBlock - ConfigToBlock() returns EFI\_INVALID\_PARAMETER with Block been NULL. Progressshouldpoint to the first character of ConfigResp. | Call ConfigToBlock() with valid parameters except Block being NULL, The return status should be EFI\_INVALID\_PARAMETER and Progressshouldpoint to the first character of ConfigResp. |
| 5.18.5.5.3 | 0x2d30da76, 0x9ec7, 0x480e, 0xb9, 0xe9, 0x6d, 0x50, 0x0d, 0x89, 0x21, 0xad | HII\_CONFIG\_ROUTING\_PROTOCOL. ConfigToBlock - ConfigToBlock() returns EFI\_INVALID\_PARAMETER with <RequestElement> in ConfigResp being a <Lable>. | Call ConfigToBlock() with valid parameters except < RequestElement > in ConfigResp being a <Lable>. The return status should be EFI\_INVALID\_PARAMETER and Progresspoints to ‘&’ of the first non-<BlockName>. |
| 5.18.5.5.4 | 0xa5b33ea4, 0x767b, 0x489a, 0xb3, 0x7b, 0xf9, 0xef, 0xfd, 0x62, 0xbc, 0x7b | HII\_CONFIG\_ROUTING\_PROTOCOL. ConfigToBlock - ConfigToBlock() returns EFI\_DEVICE\_ERROR if Block is not large enough. | Call ConfigToBlock() with valid parameters except Block is not large enough. The return status should be EFI\_DEVICE\_ERROR. |
| 5.18.5.5.5 | 0x59b759ff, 0x6c84, 0x407a, 0x9e, 0x24, 0x71, 0xe0, 0x65, 0x2d, 0xe3, 0x30 | HII\_CONFIG\_ROUTING\_PROTOCOL. ConfigToBlock - ConfigToBlock() returns EFI\_SUCCESS with valid parameter and Progresspoints to theConfigResp’s NULL terminator**.** | Call ConfigToBlock() with valid parameters. The return status should be EFI\_SUCCESS and Progresspoints to theConfigResp’s NULL terminator. |

### GetAltCfg ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.5.6.1 | 0x1ff2326a, 0x8e88, 0x45db, 0x94, 0x81, 0x02, 0x83, 0x80, 0x20, 0xad, 0x02 | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_INVALID\_PARAMETER with ConfigResp been NULL. | Call GetAltCfg() with valid parameters except ConfigResp being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.6.2 | 0xb9b88d34, 0x7479, 0x4807, 0xa4, 0xbf, 0x90, 0x35, 0x87, 0x0a, 0x3c, 0x1a | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_INVALID\_PARAMETER with AltCfgResp been NULL. | Call GetAltCfg() with valid parameters except AltCfgResp being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.5.6.3 | 0xfe1e4232, 0x8819,  0x4f52, 0xac, 0xaa, 0xb2, 0x02, 0x72, 0x86, 0xc8, 0xe4 | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_SUCCESS with NULL Guid, Name, DevicePath, except a valid AltCfgId. | Call GetAltCfg() with NULL Guid, Name, DevicePath, except a valid AltCfgId. The return status should be EFI\_SUCCESS and AltCfgRespshouldpoints to retrieved data. |
| 5.18.5.6.4 | 0xdf88e78e, 0x8f4d, 0x4027, 0xbb, 0xcd, 0xae, 0x10, 0x68, 0x58, 0xb6, 0x03 | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg()returns EFI\_SUCCESS with NULL Name, DevicePath, except a valid Guid, AltCfgId. | Call GetAltCfg()with NULL Name, DevicePath, except a valid Guid, AltCfgId. The return status should be EFI\_SUCCESS and AltCfgRespshouldpoints to retrieved data. |
| 5.18.5.6.5 | 0x2b56a57a, 0xd906, 0x416c, 0x89, 0x76, 0x43, 0x5f, 0xc7, 0x1c, 0xb7, 0x73 | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_SUCCESS with NULL Guid, DevicePath, except a valid Name, AltCfgId. | Call GetAltCfg() with NULL Guid, DevicePath, except a valid Name, AltCfgId. The return status should be EFI\_SUCCESS and AltCfgRespshouldpoints to retrieved data. |
| 5.18.5.6.6 | 0x17c575b3, 0x051f, 0x41eb, 0x89, 0xd1, 0x79, 0xb5, 0x8b, 0x0c, 0x92, 0x3c | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_SUCCESS with NULL DevicePath, except a valid Guid, Name, AltCfgId. | Call GetAltCfg() with NULL DevicePath, except a valid Guid,Name, AltCfgId. The return status should be EFI\_SUCCESS and AltCfgRespshouldpoints to retrieved data. |
| 5.18.5.6.7 | 0xb948d2f8, 0x5c45, 0x4b10, 0x97, 0xb4, 0x95, 0x96, 0x97, 0x98, 0xe5, 0x8b | HII\_CONFIG\_ROUTING\_PROTOCOL. GetAltCfg - GetAltCfg() returns EFI\_SUCCESS returns EFI\_SUCCESS with NULL DevicePath, AltCfgId, except a valid Guid, Name. | Call GetAltCfg()with NULL DevicePath, AltCfgId, except a valid Guid, Name. The return status should be EFI\_SUCCESS and AltCfgRespshouldpoints to retrieved data. |
| 5.18.5.6.8 | 0xf732d246, 0x9fa5, 0x4ed3, 0x88, 0x95, 0x28, 0x63, 0xba, 0xf4, 0x68, 0x5d | HII\_CONFIG\_ROUTING\_PROT OCOL.GetAltCfg - GetAltCfg() returns EFI\_SUCCESS with valid Name | 1.Call GetAltCfg() with NULL GUID DevicePath, AltCfgId, except a valid Name.  2. The return status should be EFI\_SUCCESS and AltCfgResp should points to right data. |

## �EFI\_HII\_CONFIG\_ACCESS\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_CONFIG\_ACCESS\_PROTOCOL Section.

### ExtractConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.6.1.1 | 0xa7173eb5, 0xf76a, 0x4ea1, 0x95, 0x0d, 0x14, 0x91, 0x1e, 0x49, 0x86, 0xc1 | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Request been <MultiConfigRequest> format. | Call ExtractConfig() with valid parameters except with Request being <MultiConfigRequest> format., The return status should be EFI\_INVALID\_PARAMETER. And Progress should point to the most recent ‘&’ before the error or beginning of the string. |
| 5.18.6.1.2 | 0xfa5973e2, 0x0d05, 0x44c2, 0xaf, 0x2d, 0x1b, 0x68, 0x33, 0x42, 0x6d, 0x76 | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Progress been NULL. | Call ExtractConfig() with valid parameters except Progress being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.6.1.3 | 0x6f6d1dd, 0x49b8, 0x488a, 0xa7, 0x75, 0xde, 0xbc, 0xc7, 0x60, 0xfd, 0x28 | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_INVALID\_PARAMETER with Results been NULL. | Call ExtractConfig() with valid parameters except Results being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.6.1.4 | 0x28652613, 0x6bf4, 0x4f42, 0xab, 0xe2, 0x84, 0x4f, 0x2f, 0x77, 0xec, 0x2f | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_NOT\_FOUND if Routing data doesn’t match any known driver or EFI\_INVALID\_PARAMETER if there is an unknown name in Request. | Call ExtractConfig() with an invalid Request. The ConfigHdr of Request can’t be found in current system. The return status should be EFI\_NOT\_FOUND. Progress should point to the error reason. If an unknown name in the Request, the return status should be EFI\_INVALID\_PARAMETER and Progress should point to the ‘&’ before the name in question. |
| 5.18.6.1.5 | 0x24dcf8bf, 0xbfbf, 0x4588, 0xba, 0x0f, 0x77, 0x1e, 0x24, 0x4e, 0x3e, 0x08 | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_SUCCESS with valid parameters and and Progresspoints to theRequest’s NULL terminator. | Call ExtractConfig() with valid parameters. The return status should be EFI\_SUCCESS and the Progress should point to Request’s NULL terminator. |
| 5.18.6.1.6 | 0x961a5268, 0x1998, 0x4a7e, 0x9d, 0x9d, 0xce, 0xdc, 0x67, 0xfb, 0xcc, 0x77 | HII\_CONFIG\_ACCESS\_PROTOCOL.ExtractConfig - ExtractConfig() returns EFI\_SUCCESS with valid parameter exceptRequest been NULL**.** | Call ExtractConfig() with valid parameters exceptRequest been NULL. The return status should be EFI\_SUCCESS. |
| 5.18.6.1.7 | 0xab163674, 0x6c27, 0x4169, 0xa6, 0xa9, 0xe1, 0x9c, 0x88, 0x14, 0x94, 0x96 | HII\_CONFIG\_ACCESS\_PROT OCOL.ExtractConfig - ExtractConfig() returns EFI\_SUCCESS. Check if Results is in **<**MultiConfigAltResp> format | Call ExtractConfig() with valid parameters. The return status should be EFI\_SUCCESS and Check if Results is in <MultiConfigAltResp> format. |

### RouteConfig()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.6.2.1 | 0xebba197a, 0x467f, 0x4736, 0x92, 0xf2, 0x11, 0xb1, 0x91, 0x2e, 0xe9, 0x90 | HII\_CONFIG\_ACCESS\_PROTOCOL.RouteConfig - RouteConfig() returns EFI\_INVALID\_PARAMETER with Configuration been NULL. | Call RouteConfig() with valid parameters except with Configuration being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.6.2.2 | 0x341fe3e0, 0xf688, 0x45f2, 0x91, 0x56, 0xc7, 0xae, 0x9f, 0x2c, 0xcb, 0xb0 | HII\_CONFIG\_ACCESS\_PROTOCOL. RouteConfig - RouteConfig() returns EFI\_INVALID\_PARAMETER with Progress been NULL. | Call RouteConfig() with valid parameters except Progress being NULL, The return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.6.2.3 | 0x1f99ebc8, 0x0253, 0x455f, 0x88, 0xac, 0x9e, 0x2b, 0xa6, 0xdc, 0xd7, 0x29 | HII\_CONFIG\_ACCESS\_PROTOCOL. RouteConfig - RouteConfig() returns EFI\_NOT\_FOUND if no target was found with the routing data. | Call RouteConfig() with no found target for the routing data. The return status should be EFI\_NOT\_FOUND. |
| 5.18.6.2.4 | 0x603e52f0, 0x2ce3, 0x4e7a, 0xa7, 0x2e, 0xdf, 0x8c, 0xa3, 0xfd, 0xb2, 0x0d | HII\_CONFIG\_ACCESS\_PROTOCOL. RouteConfig - RouteConfig()returns EFI\_SUCCESS with valid parameters and and Progresspoints to theConfiguration’s NULL terminator. | Call RouteConfig()with valid parameters. The return status should be EFI\_SUCCESS and the Progress should point to Configuration’s NULL terminator. |

## EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL Section.

### SetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.7.1.1 | 0xf046a19c, 0xffc1, 0x4fd9, 0x9d, 0x73, 0x92, 0x4f, 0x8c, 0x43, 0xcf, 0xfb | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() - SetData()  returns EFI\_NOT\_FOUNDwhen an element of the KeywordString was not found. Progress points to the most recent '&' before the first failing string element and ProgressErr should be KEYWORD\_HANDLER\_KEYWORD\_NOT\_FOUND. | 1. Call SetData() when an element of the KeywordString was not found, the return status should be EFI\_NOT\_FOUND. Progress points to the most recent '&' before the first failing string element and  ProgressErr should be KEYWORD\_HANDLER\_KEYWORD\_NOT\_FOUND. |
| 5.18.7.1.2 | 0x553c956c, 0x78c1, 0x44d4, 0x81, 0x8e, 0x98, 0xdf, 0xd2, 0x25, 0x8, 0xe5 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() - GetData()returns EFI\_SUCCESS, ProgressErr should be KEYWORD\_HANDLER\_ NO\_ERROR. Progress points to the string’s NULL terminator. | 2.  Check the system with GetData(), the storage associated with the earlier keywords is not modified when an EFI\_NOT\_FOUND error is generated during processing the second or later keyword element. |
| 5.18.7.1.3 | 0xe334ff21, 0x4005, 0x449a, 0x83, 0x1, 0x97, 0x44, 0xc1, 0xb0, 0xaf, 0xd5 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() -  SetData()returns EFI\_SUCCESSwhen an element of the KeywordString was found. Progress points to the string’s NULL terminator and ProgressErr should be KEYWORD\_HANDLER\_ NO\_ERROR. | 1. Call SetData() when an element of the KeywordString was found, the return status should be EFI\_SUCCESS. Progress points to the string’s NULL terminator and ProgressErr should be KEYWORD\_HANDLER\_ NO\_ERROR. |
| 5.18.7.1.4 | 0x8a4618b3, 0xa012, 0x40c4, 0xba, 0x6, 0xa, 0x93, 0x79, 0xb4, 0x64, 0x58 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() - GetData()returns EFI\_SUCCESS, ProgressErr should be KEYWORD\_HANDLER\_ NO\_ERROR. Progress points to the string’s NULL terminator. | 2.  Check the system with GetData(), the storage associated with the earlier keywords should be saved correctly. |
| 5.18.7.1.5 | 0xfe4f680c, 0xcbe, 0x4f85, 0xb3, 0x20, 0x5e, 0xcc, 0x9d, 0xce, 0xc5, 0x88 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() -  SetData()returns EFI\_INVALID\_PARAMETERwhen KeywordString was NULL. | 1. Call SetData() when KeywordString was found, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.7.1.6 | 0xe7966ef2, 0x941e, 0x4a59, 0x8e, 0x15, 0x2f, 0xde, 0x41, 0x9d, 0xfc, 0x91 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() -  SetData()returns EFI\_INVALID\_PARAMETERwhen parsing of the KeywordString resulted in an error and Progress points to the most recent '&' before the first failing string element. | 1. Call SetData() when parsing of the KeywordString resulted in an error, the return status should be EFI\_INVALID\_PARAMETER. Progress should point to the most recent '&' before the first failing string element. |
| 5.18.7.1.7 | 0x1eff122d, 0xa263, 0x43bd, 0x94, 0xfc, 0x82, 0xb, 0x8b, 0xc9, 0xfa, 0x7c | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() -  SetData()returns EFI\_NOT\_FOUNDwhen an element of the KeywordString was not found and Progress points to the most recent '&' before the first failing string element. | 1. Call SetData() when an element of the KeywordString was not found, the return status should be EFI\_NOT\_FOUND. Progress should point to the most recent '&' before the first failing string element. |
| 5.18.7.1.8 | 0x4bd58084, 0xb158, 0x43fe, 0xbb, 0x87, 0x31, 0x8f, 0xb2, 0x3f, 0x7a, 0xe9 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. SetData() -  SetData()returns EFI\_ACCESS\_DENIEDwhen the ReadOnly element is written and Progress points to the most recent '&' before the first failing string element. | 1. Call SetData() when the ReadOnly element is written, the return status should be EFI\_ACCESS\_DENIED. Progress should point to the most recent '&' before the first failing string element. |

### GetData()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.7.2.1 | 0x852b267e, 0xcbe, 0x4bd6, 0x85, 0x4d, 0x3b, 0xbd, 0xf0, 0xa0, 0xc, 0x49 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_SUCCESS when KeywordString and NameSpaceId are NULL. | 1. Call GetData()when KeywordString and NameSpaceId are NULL, the return status should be EFI\_SUCCESS. ProgressErr should be KEYWORD\_HANDLER\_NO\_ERROR. |
| 5.18.7.2.2 | 0x247b91db, 0xf60b, 0x457f, 0xb9, 0x10, 0xb3, 0xc3, 0x30, 0xa8, 0xaf, 0x88 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()should output the correct result as expected format. | 2. The preinstalled Str should be included in the Results outputted from the GetData(). |
| 5.18.7.2.3 | 0xf57e9ce0, 0x827a, 0x4d35, 0x89, 0xb8, 0xde, 0x24, 0x57, 0xe7, 0x94, 0xfb | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_SUCCESS when KeywordString is NULL and NameSpaceId is one valid expression. | 1. Call GetData()when KeywordString is NULL and NameSpaceId is one valid expression, the return status should be EFI\_SUCCESS. ProgressErr should be KEYWORD\_HANDLER\_NO\_ERROR. |
| 5.18.7.2.4 | 0x170ab626, 0x648c, 0x4088, 0x8b, 0x5d, 0xf8, 0xf2, 0x9d, 0x65, 0xaf, 0xba | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()should output the correct result as expected format. | 2. The preinstalled Str should be included in the Results outputted from the GetData(). |
| 5.18.7.2.5 | 0x60bcfe65, 0xe73a, 0x46dd, 0xa9, 0x42, 0x22, 0xb4, 0xeb, 0x30, 0xb8, 0x7c | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_SUCCESS when KeywordString is the valid expression (with PathHdr) and NameSpaceId is one valid expression. | 1. Call GetData() when KeywordString is the valid expression (with PathHdr) and NameSpaceId is one valid expression, the return status should be EFI\_SUCCESS. ProgressErr should be KEYWORD\_HANDLER\_NO\_ERROR and Progress points to the string’s NULL terminator. |
| 5.18.7.2.6 | 0x7cc0b84, 0x4128, 0x4c66, 0x91, 0x90, 0x76, 0x15, 0x81, 0xb, 0x95, 0x9d | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_SUCCESS when KeywordString is the valid expression (without PathHdr) and NameSpaceId is one valid expression. | 2. Call GetData() when KeywordString is the valid expression (without PathHdr) and NameSpaceId is one valid expression, the return status should be EFI\_SUCCESS. ProgressErr should be KEYWORD\_HANDLER\_NO\_ERROR and Progress points to the string’s NULL terminator. |
| 5.18.7.2.7 | 0x6114b15, 0xab62, 0x40f5, 0x86, 0xf6, 0x21, 0xd1, 0x81, 0x2b, 0x7f, 0x6c | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()should output the correct result as expected format. | 3. The Results outputted with PathHdr should be included in the Results outputted without PathHdr |
| 5.18.7.2.8 | 0x378ef819, 0x29ee, 0x4875, 0x8c, 0xb2, 0x94, 0x6a, 0x77, 0xb1, 0x48, 0x73 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_INVALID\_PARAMETER when Progress, ProgressErr, or Resuts is NULL. | 1. Call GetData() when Progress, ProgressErr, or Resuts is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.7.2.9 | 0xb90fe257, 0xf693, 0x4c3e, 0x89, 0x59, 0x14, 0xb, 0xcf, 0x44, 0x7b, 0x5d | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() - GetData()returns EFI\_INVALID\_PARAMETER when Parsing of the KeywordString resulted in an error. | 1. Call GetData() when Parsing of the KeywordString resulted in an error, the return status should be EFI\_INVALID\_PARAMETER. Progress should point to the most recent '&' before the first failing string element and ProgressErr should be KEYWORD\_HANDLER\_MALFORMED\_STRING. |
| 5.18.7.2.10 | 0x138298f2, 0x7b86, 0x49b7, 0x9c, 0xa7, 0x6d, 0x69, 0xbe, 0x8b, 0x52, 0xfd | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_NOT\_FOUND when an element of the KeywordString was not found. | 1. Call GetData() when an element of the KeywordString was not found, the return status should be EFI\_NOT\_FOUND. Progress should point to the most recent '&' before the first failing string element and ProgressErr should be KEYWORD\_HANDLER\_KEYWORD\_NOT\_FOUND. |
| 5.18.7.2.11 | 0x48dab3bf, 0xb3dc, 0x4960, 0xa6, 0xf8, 0xb5, 0x1c, 0xd3, 0xfa, 0xfa, 0xe0 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_NOT\_FOUND when the NamespaceId specified was not found. | 1. Call GetData() when the NamespaceId specified was not found, the return status should be EFI\_NOT\_FOUND. ProgressErr should be KEYWORD\_HANDLER\_KEYWORD\_NOT\_FOUND. |
| 5.18.7.2.12 | 0xab69961e, 0xd77d, 0x4781, 0x8e, 0xe5, 0xf9, 0x13, 0x55, 0xc7, 0xce, 0x91 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()returns EFI\_NOT\_FOUND when an element of the KeywordString was not found. | 1. Call GetData() when an element of the KeywordString was not found, the return status should be EFI\_NOT\_FOUND. Progress should point to the most recent '&' before the first failing string element and ProgressErr should be KEYWORD\_HANDLER\_KEYWORD\_NOT\_FOUND. |
| 5.18.7.2.13 | 0xc6b310c5, 0xdddf, 0x4e1d, 0x9d, 0x8c, 0x20, 0x16, 0xe7, 0x66, 0xa6, 0xae | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() -  GetData()should output Results string contains values returned for all keywords processed prior to the keyword generating the error. | 2. The returned Results string should contain values for all keywords processed prior to the keyword generating the error. |

## EFI\_HII\_FONT\_EX\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_FONT\_EX\_PROTOCOL Section.

### StringToImageEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.8.1.1 | 0x81b18c28, 0x7d09, 0x4794, 0xab, 0x4e, 0x92, 0x9b, 0xb7, 0x2f, 0x19, 0x67 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_INVALID\_PARAMETER when String is NULL. | 1. Call StringToImageEx() when String is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.1.2 | 0xeba34749, 0x9763, 0x4203, 0x9f, 0xd, 0x26, 0x3a, 0xa4, 0xe9, 0xd6, 0x9a | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_INVALID\_PARAMETER when Blt is NULL. | 1. Call StringToImageEx() when Blt is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.1.3 | 0xd6514302, 0x4b34, 0x4bae, 0xa0, 0xcd, 0x37, 0x77, 0xb8, 0x43, 0xc, 0x26 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_INVALID\_PARAMETER with invalid Flags combination. | 1. Call StringToImageEx() when Flags is the combination of EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X and EFI\_HII\_OUT\_FLAG\_WRAP, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.1.4 | 0xf711f218, 0x8987, 0x4fa9, 0xb4, 0xb6, 0x64, 0x1e, 0xc1, 0x76, 0xe1, 0xc8 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_INVALID\_PARAMETER with invalid Flags combination. | 1. Call StringToImageEx() when Flags is EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X without EFI\_HII\_OUT\_FLAG\_CLIP, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.1.5 | 0x4dd0210d, 0x87b1, 0x4352, 0xa6, 0x16, 0x57, 0x91, 0x78, 0x73, 0xe0, 0xa0 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with valid Flags combination. | 1. Call StringToImageEx() with the valid Flags combination and use EFI\_GRAPUICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure, the return status should be EFI\_SUCCESS. |
| 5.18.8.1.6 | 0x2af74a94, 0xed7, 0x4b68, 0x9c, 0xdd, 0xfa, 0xdf, 0xfe, 0x6, 0x68, 0x1f | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with valid Flags combination. | 1. Call StringToImageEx() with the valid Flags combination and use EFI\_GRAPUICS\_OUTPUT\_PROTOCOL in EFI\_IMAGE\_OUTPUT structure, the return status should be EFI\_SUCCESS. |
| 5.18.8.1.7 | 0x7047fe55, 0x6c8c, 0x4062, 0x8a, 0x24, 0x26, 0xb5, 0x33, 0x88, 0x62, 0x81 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with valid parameters for all ASCII visible characters. Each image must equal to sys default glyph. | 1. Call StringToImageEx() with the valid parameters and StringInfo is NULL. Compare image output with system default font glyph image. |
| 5.18.8.1.8 | 0xf09da704, 0x352, 0x4afa, 0x90, 0x8f, 0x83, 0x73, 0xf2, 0xe9, 0xe6, 0x2c | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with valid parameters for all ASCII visible characters. Each image must equal to the specific font glyph. | 1. Register a specific font package. Call StringToImageEx() with the valid parameters and StringInfo is the specific font. Compare image output with specific font glyph image registered. |
| 5.18.8.1.9 | 0xbee39111, 0x1e5b, 0x4574, 0xae, 0xeb, 0x2, 0xdd, 0xaa, 0x17, 0x42, 0xbf | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Call StringToImageEx() with  EFI\_HII\_DIRECT\_TO\_SCREEN. For the final row, the RowInfoArray.LineHeight and RowInfoArray.BaseLine may describe pixels which are outside the limit specified by Blt.Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.10 | 0x2c36e6b5, 0x983f, 0x4e05, 0x90, 0xdd, 0xfa, 0x79, 0xfd, 0xdb, 0x15, 0xcd | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_DIRECT\_TO\_SCREEN. For the final row, the RowInfoArray.LineHeight and RowInfoArray.BaseLine may describe pixels which are outside the limit specified by Blt.Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.11 | 0x7dd51e66, 0xf38f, 0x4412, 0xa6, 0xd8, 0x32, 0x37, 0x85, 0xb9, 0x8, 0x31 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN. If a character’s right-most pixel can’t fit, then it will not be drawn at all.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.12 | 0x76805500, 0x3e74, 0x44cb, 0x95, 0x9b, 0x63, 0xf7, 0xb7, 0x78, 0x92, 0x17 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN. If a row’s bottom-most pixel exceeds screen Height, then it will not be drawn at all.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.13 | 0xe18566cf, 0x619d, 0x454c, 0x85, 0x6b, 0xe, 0x4e, 0xd3, 0x1c, 0x4a, 0xf1 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity. | 1. Call StringToImageEx() with EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity (SPACE is a line break opportunity). Check display with wrapper at right place.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.14 | 0xacba2f9a, 0x1052, 0x478d, 0x96, 0x99, 0x78, 0xa1, 0x1e, 0x65, 0x5, 0x5d | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity. | 1. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity. String is designed to display as if EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X is set.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.15 | 0x82482a71, 0x2a32, 0x4104, 0xb7, 0x32, 0x91, 0xa0, 0x95, 0x81, 0x50, 0x49 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Call StringToImageEx() with EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN. If a row’s bottom-most pixel can’t fit, then it will not be drawn at all. This flag requires that EFI\_HII\_OUT\_FLAG\_CLIP be set.  2. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.16 | 0xf1c89a03, 0x5b7a, 0x4d1d, 0xbe, 0x9, 0x5c, 0xf7, 0xe5, 0x67, 0xe, 0x77 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_DIRECT\_TO\_SCREEN.  3. Check EFI\_HII\_DIRECT\_TO\_SCREEN only case if Blt is not NULL, then EFI\_HII\_OUT\_FLAG\_CLIP is implied. String is designed to display with full line.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.17 | 0x2154d7a2, 0x37e2, 0x43a3, 0xb4, 0xaf, 0xb3, 0x74, 0x8a, 0x6c, 0x54, 0xf0 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP.  3. For the final row, the RowInfoArray.LineHeight andRowInfoArray.BaseLine may describe pixels which are outside the limit specified by Blt.Height (unless EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y is specified) even though those pixels were not drawn.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.18 | 0x6206dfcf, 0x6fb3, 0x4020, 0xba, 0xf3, 0x74, 0xe, 0xed, 0xac, 0x9c, 0xb2 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X | EFI\_HII\_DIRECT\_TO\_SCREEN.  3. If a character’s right-most pixel can’t fit, then it will not be drawn at all.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.19 | 0x76bd46eb, 0x56a1, 0x4b66, 0xab, 0x63, 0x2e, 0xf1, 0x69, 0x1a, 0xfd, 0x80 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_CLIP | EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_Y | EFI\_HII\_DIRECT\_TO\_SCREEN.  3. If a row’s bottom-most pixel exceeds screen Height, then it will not be drawn at all.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.20 | 0x9782016a, 0xcd4c, 0x4d39, 0x91, 0xc3, 0x7e, 0xe3, 0xce, 0xfd, 0xcc, 0x2d | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_IGNORE\_IF\_NO\_GLYPH | EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String with line break opportunity (Space is a line-break).  3. Check if the display is right.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.21 | 0x2833962d, 0x3800, 0x45b3, 0x90, 0xf8, 0xfb, 0xe2, 0xee, 0xc6, 0x6e, 0xd9 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_WRAP | EFI\_HII\_DIRECT\_TO\_SCREEN and String without line break opportunity.  3. String is designed to display as if EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X is set.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.22 | 0x12eb38a6, 0xfc, 0x4568, 0xa3, 0x44, 0x75, 0x40, 0xd3, 0x89, 0x88, 0xbe | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_IGNORE\_LINE\_BREAK | EFI\_HII\_DIRECT\_TO\_SCREEN.  3. If a row’s bottom-most pixel can’t fit, then it will not be drawn at all. This flag requires that EFI\_HII\_OUT\_FLAG\_CLIP be set.  4. The return status should be EFI\_SUCCESS. |
| 5.18.8.1.23 | 0x9c9802d4, 0x98e5, 0x46b9, 0xab, 0xc7, 0x66, 0x17, 0xb7, 0x80, 0x40, 0x29 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringToImageEx() - StringToImageEx() returns EFI\_SUCCESS with parameters EFI\_HII\_OUT\_FLAG\_TRANSPARENT. | 1. Register a specific font package.  2. Call StringToImageEx() with EFI\_HII\_OUT\_FLAG\_TRANSPARENT.  3. Check the output buffer StringInfo background should be ignored according to UEFI Spec.  4. The return status should be EFI\_SUCCESS. |

### StringIdToImageEx()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.8.2.1 | 0x7baa464a, 0x572c, 0x4fa9, 0x80, 0xa3, 0x99, 0xa0, 0x61, 0xc0, 0x46, 0x4f | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when Blt is NULL. | 1. Call StringIdToImageEx() when Blt is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.2 | 0xa086a16b, 0x6e61, 0x4f06, 0xb5, 0xd, 0xac, 0x6e, 0x80, 0x71, 0x11, 0xe4 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when PackageList is NULL. | 1. Call StringIdToImageEx() when PackageList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.3 | 0x10931cc4, 0xfa08, 0x4df8, 0xab, 0x6a, 0xb3, 0x8f, 0xa5, 0xc6, 0x84, 0x24 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when PackageList is not in Database. | 1. Call StringIdToImageEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. |
| 5.18.8.2.4 | 0x7623d5de, 0x71e9, 0x49f6, 0xb7, 0x9f, 0xd2, 0x6f, 0x38, 0x69, 0xae, 0xe9 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when StringId is not in PackageList. | 1. Call StringIdToImageEx() when StringId is not in PackageList, the return status should be EFI\_NOT\_FOUND. |
| 5.18.8.2.5 | 0x36cd9086, 0x8e5e, 0x4a95, 0xb4, 0xdd, 0x56, 0x94, 0x74, 0x5c, 0x21, 0x37 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when Flags is the invalid combination. | 1. Call StringIdToImageEx() when Flags are EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X with EFI\_HII\_OUT\_FLAG\_WRAP, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.6 | 0x16b7317e, 0x1196, 0x4323, 0x9d, 0xeb, 0xe8, 0xc7, 0x44, 0x32, 0x7e, 0x20 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when Flags is the invalid combination. | 1. Call StringIdToImageEx() when Flags is EFI\_HII\_OUT\_FLAG\_CLIP\_CLEAN\_X without EFI\_HII\_OUT\_FLAG\_CLIP, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.7 | 0xc3a512bc, 0x6464, 0x4e74, 0xab, 0x8d, 0x41, 0xd5, 0x42, 0xd6, 0xad, 0x66 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_SUCCESS with valid parameters. | 1. Call StringIdToImageEx() with valid parameters and use EFI\_GRAPUICS\_OUTPUT\_BLT\_PIXEL structure in EFI\_IMAGE\_OUTPUT structure, the return status should be EFI\_SUCCESS. |
| 5.18.8.2.8 | 0x9c84a237, 0x9ba5, 0x417a, 0x94, 0xcd, 0xf5, 0xed, 0x37, 0xf7, 0xbb, 0x9e | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_SUCCESS with valid parameters. | 1. Call StringIdToImageEx() with valid parameters and use EFI\_GRAPUICS\_OUTPUT\_PROTOCOL structure in EFI\_IMAGE\_OUTPUT structure, the return status should be EFI\_SUCCESS. |

### GetGlyphEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.8.3.1 | 0x4e1b65f1, 0xa0c1, 0x4f13, 0xb6, 0xfb, 0x2a, 0xdc, 0xaa, 0x21, 0x8d, 0x89 | EFI\_HII\_FONT\_EX\_PROTOCOL. GetGlyphEx() - GetGlyphEx ()returns EFI\_INVALID\_PARAMETER when Blt is NULL. | 1. Call GetGlyphEx() when Blt is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.3.2 | 0x139af9e5, 0x5d3e, 0x46b2, 0x83, 0x9c, 0x52, 0x54, 0x66, 0xf1, 0xe0, 0xe | EFI\_HII\_FONT\_EX\_PROTOCOL. GetGlyphEx() - GetGlyphEx ()returns EFI\_INVALID\_PARAMETER when \*Blt is not NULL. | 1. Call GetGlyphEx() when \*Blt is not NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.3.3 | 0xf3fc9dce, 0x7f2c, 0x45d7, 0x87, 0xcf, 0x55, 0x17, 0xea, 0xcf, 0x9d, 0x4d | EFI\_HII\_FONT\_EX\_PROTOCOL. GetGlyphEx() - GetGlyphEx ()returns EFI\_SUCCESS with valid parameters. | 1. Call GetGlyphEx() with valid parameters, the return status should be EFI\_SUCCESS. |

### GetFontInfoEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.8.4.1 | 0x9511abcb, 0x462e, 0x4b96, 0xb3, 0xf, 0xbf, 0x9b, 0xf5, 0x68, 0x73, 0xeb | EFI\_HII\_FONT\_EX\_PROTOCOL.  GetFontInfoEx() - GetFontInfoEx()returns EFI\_INVALID\_PARAMETER with invalid EFI\_FONT\_INFO\_MASK combination. | 1. Call GetFontInfoEx() when StringInfoIn->FontInfoMask is the invalid combination, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.4.2 | 0x167059e1, 0x4bf6, 0x4d8c, 0xb0, 0x96, 0x7b, 0xf4, 0x61, 0x7b, 0x75, 0x4b | EFI\_HII\_FONT\_EX\_PROTOCOL. GetFontInfoEx() - GetFontInfoEx()returns EFI\_SUCCESS with valid parameters. | 1. Call GetFontInfoEx() with valid parameters, the return status should be EFI\_SUCCESS. |
| 5.18.8.4.3 | 0x29a5204a, 0x507e, 0x4dc0, 0xa1, 0xb1, 0x90, 0x53, 0xf7, 0x2e, 0xd7, 0x77 | EFI\_HII\_FONT\_EX\_PROTOCOL. GetFontInfoEx() - GetFontInfoEx()returns EFI\_SUCCESS with valid parameters(StringInfoIn is NULL). | 1. Call GetFontInfoEx() with valid parameters(StringInfoIn is NULL), the return status should be EFI\_SUCCESS. |

### GetGlyphInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.8.5.1 | 0x298cb0c7, 0x7e78, 0x4e3e, 0x8d, 0x42, 0xc2, 0x2c, 0x16, 0xa0, 0x83, 0x31 | EFI\_HII\_FONT\_EX\_PROTOCOL. GetGlyphInfo() - GetGlyphInfo()returns EFI\_INVALID\_PARAMETER when GlyphInfo is NULL. | 1. Call GetGlyphInfo() when GlyphInfo is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.5.2 | 0xb20f87ce, 0xbc6b, 0x4e27, 0xb8, 0x2a, 0x61, 0x53, 0x59, 0xab, 0x92, 0xa7 | EFI\_HII\_FONT\_EX\_PROTOCOL. GetFontInfoEx() - GetFontInfoEx()returns EFI\_INVALID\_PARAMETER when FontDisplayInfo is NULL. | 1. Call GetGlyphInfo() when FontDisplayInfo is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.5.3 | 0x347f2e9e, 0x70c4, 0x4e89, 0xb9, 0x4, 0x7e, 0x5f, 0xbd, 0x78, 0x4d, 0xb3 | EFI\_HII\_FONT\_EX\_PROTOCOL. GetFontInfoEx() - GetFontInfoEx()returns EFI\_SUCCESS with valid parameters. | 1. Call GetGlyphInfo() with valid parameters, the return status should be EFI\_SUCCESS. |

## EFI\_HII\_IMAGE\_EX\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_HII\_IMAGE\_EX\_PROTOCOL Section.

### NewImageEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.3.1 | 0xe88ca946, 0xed6d, 0x415d, 0x85, 0x55, 0x0, 0x27, 0x9f, 0x14, 0xc3, 0xf9 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_NOT\_FOUND when ImageId is invalid. | 0x7baa464a, 0x572c, 0x4fa9, 0x80, 0xa3, 0x99, 0xa0, 0x61, 0xc0, 0x46, 0x4f |
| 5.18.9.3.2 | 5.18.9.6.2 | 0xf61dfb48, 0x1c77, 0x4907, 0x9f, 0xab, 0x43, 0x93, 0x17, 0x8c, 0x99, 0xee | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_INVALID\_PARAMETER when Image is NULL. |
| 5.18.8.2.2 | 0xa086a16b, 0x6e61, 0x4f06, 0xb5, 0xd, 0xac, 0x6e, 0x80, 0x71, 0x11, 0xe4 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when PackageList is NULL. | 1. Call StringIdToImageEx() when PackageList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.3 | 0x10931cc4, 0xfa08, 0x4df8, 0xab, 0x6a, 0xb3, 0x8f, 0xa5, 0xc6, 0x84, 0x24 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when PackageList is not in Database. | 1. Call StringIdToImageEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. |

### GetImageEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.3.1 | 0xe88ca946, 0xed6d, 0x415d, 0x85, 0x55, 0x0, 0x27, 0x9f, 0x14, 0xc3, 0xf9 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_NOT\_FOUND when ImageId is invalid. | 0x7baa464a, 0x572c, 0x4fa9, 0x80, 0xa3, 0x99, 0xa0, 0x61, 0xc0, 0x46, 0x4f |
| 5.18.9.3.2 | 5.18.9.6.2 | 0xf61dfb48, 0x1c77, 0x4907, 0x9f, 0xab, 0x43, 0x93, 0x17, 0x8c, 0x99, 0xee | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_INVALID\_PARAMETER when Image is NULL. |
| 5.18.8.2.2 | 0xa086a16b, 0x6e61, 0x4f06, 0xb5, 0xd, 0xac, 0x6e, 0x80, 0x71, 0x11, 0xe4 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when PackageList is NULL. | 1. Call StringIdToImageEx() when PackageList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.3 | 0x10931cc4, 0xfa08, 0x4df8, 0xab, 0x6a, 0xb3, 0x8f, 0xa5, 0xc6, 0x84, 0x24 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when PackageList is not in Database. | 1. Call StringIdToImageEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. |
| 5.18.8.2.4 | 0x7623d5de, 0x71e9, 0x49f6, 0xb7, 0x9f, 0xd2, 0x6f, 0x38, 0x69, 0xae, 0xe9 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when StringId is not in PackageList. | 1. Call StringIdToImageEx() when StringId is not in PackageList, the return status should be EFI\_NOT\_FOUND. |

### SetImageEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.3.1 | 0xe88ca946, 0xed6d, 0x415d, 0x85, 0x55, 0x0, 0x27, 0x9f, 0x14, 0xc3, 0xf9 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_NOT\_FOUND when ImageId is invalid. | 0x7baa464a, 0x572c, 0x4fa9, 0x80, 0xa3, 0x99, 0xa0, 0x61, 0xc0, 0x46, 0x4f |
| 5.18.9.3.2 | 5.18.9.6.2 | 0xf61dfb48, 0x1c77, 0x4907, 0x9f, 0xab, 0x43, 0x93, 0x17, 0x8c, 0x99, 0xee | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_INVALID\_PARAMETER when Image is NULL. |
| 5.18.8.2.2 | 0xa086a16b, 0x6e61, 0x4f06, 0xb5, 0xd, 0xac, 0x6e, 0x80, 0x71, 0x11, 0xe4 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when PackageList is NULL. | 1. Call StringIdToImageEx() when PackageList is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.8.2.3 | 0x10931cc4, 0xfa08, 0x4df8, 0xab, 0x6a, 0xb3, 0x8f, 0xa5, 0xc6, 0x84, 0x24 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when PackageList is not in Database. | 1. Call StringIdToImageEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. |
| 5.18.8.2.4 | 0x7623d5de, 0x71e9, 0x49f6, 0xb7, 0x9f, 0xd2, 0x6f, 0x38, 0x69, 0xae, 0xe9 | EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_NOT\_FOUND when StringId is not in PackageList. | 1. Call StringIdToImageEx() when StringId is not in PackageList, the return status should be EFI\_NOT\_FOUND. |

### DrawImageEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.4.1 | 0x42dd08a5, 0xbd85, 0x4eab, 0xb4, 0x74, 0x9f, 0xe2, 0x55, 0x71, 0x56, 0x8f | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() returns EFI\_INVALID\_PARAMETER when Image is NULL. | 1. Call DrawImageEx() when Image is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.4.2 | 0xcf06b84d, 0x8d1f, 0x43c1, 0xb5, 0xb2, 0xa3, 0x3a, 0x2, 0xc2, 0xd, 0x50 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() returns EFI\_INVALID\_PARAMETER when Flag is EFI\_HII\_DRAW\_FLAG\_TRANSPARENT and Blt is NULL. | 1. Call DrawImageEx() when Flag is EFI\_HII\_DRAW\_FLAG\_TRANSPARENT and Blt is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.4.3 | 0xa20a8ee4, 0x9bed, 0x4538, 0x94, 0x7a, 0xbf, 0xb7, 0x42, 0xa6, 0xaf, 0xd9 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() returns EFI\_INVALID\_PARAMETER when Flag is EFI\_HII\_DIRECT\_TO\_SCREEN and no screen. | 1. Call DrawImageEx() when Flag is EFI\_HII\_DIRECT\_TO\_SCREEN and no screen, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.4.4 | 0x8a4f106c, 0xdb5d, 0x4491, 0x96, 0xbd, 0x62, 0x9a, 0xa8, 0xa2, 0xc4, 0x25 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() returns EFI\_INVALID\_PARAMETER when Flag is EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL. | 1. Call DrawImageEx() when Flag is EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.4.5 | 0x4ed61351, 0xc6de, 0x4910, 0x97, 0x15, 0xcf, 0xc5, 0x5e, 0xe, 0x75, 0x9b | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() returns EFI\_INVALID\_PARAMETER when Flag is EFI\_HII\_DRAW\_FLAG\_DEFAULT and Blt points to NULL, but Image->Flag is EFI\_IMAGE\_TRANSPARENT. | 1. Call DrawImageEx() when Flag is EFI\_HII\_DRAW\_FLAG\_DEFAULT and Blt points to NULL, but Image->Flag is EFI\_IMAGE\_TRANSPARENT, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.4.6 | 0x3ac875ed, 0x46d4, 0x4d1d, 0xac, 0xfe, 0xdb, 0x37, 0xe5, 0xf1, 0xb7, 0xd0 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() return EFI\_SUCCESS with valid parameters. | 1. Call DrawImageEx() when Flag is EFI\_HII\_DRAW\_FLAG\_FORCE\_OPAQUE, Blt is NULL and other valid parameters, the return status should be EFI\_SUCCESS. |
| 5.18.9.4.7 | 0x16a8be, 0x4466, 0x4777, 0xa0, 0xbd, 0xa9, 0x10, 0x1c, 0x54, 0x19, 0xa0 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageEx() - DrawImageEx() return EFI\_SUCCESS with valid parameters. | 1. Call DrawImageEx() when Flag is the valid combination, Blt is NULL and other valid parameters, the return status should be EFI\_SUCCESS. |

### DrawImageIdEx()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.5.1 | 0x24ddcd2b, 0xa9d8, 0x4ec5, 0xaf, 0xf6, 0x77, 0xf3, 0x69, 0x8c, 0xe, 0x19 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_NOT\_FOUND when PackageList is not in Database. | 1. Call DrawImageIdEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. |
| 5.18.9.5.2 | 0x8f114d30, 0x684d, 0x402e, 0xb5, 0x35, 0x74, 0x34, 0x1e, 0xbb, 0x88, 0x5f | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_NOT\_FOUND when PackageList is NULL. | 1. Call DrawImageIdEx() when PackageList is NULL, the return status should be EFI\_NOT\_FOUND. |
| 5.18.9.5.3 | 0x446d5d03, 0xf2b6, 0x4627, 0xad, 0xd1, 0x75, 0x6d, 0xfe, 0xe9, 0x18, 0x3f | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_NOT\_FOUND when ImageId is invalid. | 1. Call DrawImageIdEx() when ImageId is invalid, the return status should be EFI\_NOT\_FOUND. |
| 5.18.9.5.4 | 0x6dbc9f6e, 0x2694, 0x44ec, 0x99, 0xe9, 0x2d, 0x67, 0x6a, 0xfe, 0x9f, 0x37 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_NOT\_FOUND when PackageList is NULL. | 1. Call DrawImageIdEx() when PackageList is invalid, the return status should be EFI\_NOT\_FOUND. |
| 5.18.9.5.5 | 0x8c43a76, 0x7f57, 0x41dd, 0x87, 0x99, 0x13, 0xcf, 0xf2, 0x5, 0x9b, 0x6 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_INVALID\_PARAMETER when Flags is EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt is NULL. | 1. Call DrawImageIdEx() when Flags is EFI\_HII\_DRAW\_FLAG\_FORCE\_TRANS and Blt is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.5.6 | 0x39787a10, 0x1204, 0x41a5, 0xa8, 0xdb, 0xd3, 0xe9, 0x83, 0xc4, 0x47, 0x44 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_INVALID\_PARAMETER when Flags is EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL. | 1. Call DrawImageIdEx() when Flags is EFI\_HII\_DRAW\_FLAG\_CLIP and Blt points to NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.5.7 | 0x82c37f35, 0xbca3, 0x494e, 0x8a, 0xdb, 0xf6, 0xd8, 0xf0, 0x7a, 0xf6, 0xe3 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() returns EFI\_INVALID\_PARAMETER when Flags is EFI\_HII\_DRAW\_FLAG\_DEFAULT, Blt points to NULL and Image->Flags is EFI\_IMAGE\_TRANSPARENT. | 1. Call DrawImageIdEx() when Flags is EFI\_HII\_DRAW\_FLAG\_DEFAULT, Blt points to NULL and Image->Flags is EFI\_IMAGE\_TRANSPARENT, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.18.9.5.8 | 0x1c03d9b0, 0x8d9c, 0x40bf, 0x94, 0xa7, 0xa7, 0x85, 0xa3, 0x52, 0xa2, 0x68 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() return EFI\_SUCCESS with valid parameters. | 1. Call DrawImageIdEx() when Flag is EFI\_HII\_DRAW\_FLAG\_FORCE\_OPAQUE, Blt is NULL and other valid parameters, the return status should be EFI\_SUCCESS. |
| 5.18.9.5.9 | 0x5ee23086, 0xe0ee, 0x4cc8, 0x85, 0xf2, 0x5a, 0xd3, 0x52, 0xd7, 0x4d, 0xb7 | EFI\_HII\_FONT\_EX\_PROTOCOL. DrawImageIdEx() - DrawImageIdEx() return EFI\_SUCCESS with valid parameters. | 1. Call DrawImageIdEx() when Flag is the valid combination, Blt is NULL and other valid parameters, the return status should be EFI\_SUCCESS. |

### GetImageInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.18.9.3.1 | 0xe88ca946, 0xed6d, 0x415d, 0x85, 0x55, 0x0, 0x27, 0x9f, 0x14, 0xc3, 0xf9 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_NOT\_FOUND when ImageId is invalid. | 0x7baa464a, 0x572c, 0x4fa9, 0x80, 0xa3, 0x99, 0xa0, 0x61, 0xc0, 0x46, 0x4f |
| 5.18.9.6.2 | 0xf61dfb48, 0x1c77, 0x4907, 0x9f, 0xab, 0x43, 0x93, 0x17, 0x8c, 0x99, 0xee | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_INVALID\_PARAMETER when Image is NULL. | 1. Call GetImageInfo() when Image is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| EFI\_HII\_FONT\_EX\_PROTOCOL. StringIdToImageEx() - StringIdToImageEx() returns EFI\_INVALID\_PARAMETER when PackageList is NULL. | 1. Call StringIdToImageEx() when PackageList is NULL, the return status should be EFI\_INVALID\_PARAMETER. | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_INVALID\_PARAMETER when ImageId is 0. | 1. Call GetImageInfo() when ImageId is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 1. Call StringIdToImageEx() when PackageList is not in Database, the return status should be EFI\_NOT\_FOUND. | 0x9cf6b34c, 0x4d53, 0x464e, 0x99, 0x4e, 0xd0, 0x3, 0xb5, 0x7b, 0x8b, 0x67 | EFI\_HII\_IMAGE\_EX\_PROTOCOL. GetImageInfo() - GetImageInfo() returns EFI\_SUCCESS with valid parameters. | 1. Call GetImageInfo() with valid parameters, the return status should be EFI\_SUCCESS. |

# Random Number Generator Protocols

## EFI\_RNG\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_RNG\_PROTOCOL Section.

### GetInfo ()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.33.4.1.1 | 0xb0aeea8a, 0xcd05, 0x4254, 0xb2, 0xcb, 0x30, 0xbb, 0x90, 0x87, 0x73, 0xc6 | **EFI\_RNG\_PROTOCOL.GetInfo() - GetInfo()** returns EFI\_SUCCESS with valid parameters. | Call GetInfo() to get the  RNGAlgorithmListSize.  Allocate a list buffer with the  RNGAlgorithmListSize gotten from step1.  3. Call GetInfo() with the new allocated buffer, the return status should be EFI\_SUCCESS. |
| 5.33.4.1.2 | 0x50df54e5, 0x1449, 0x4a34, 0x95, 0x6a, 0xb6, 0x61, 0x66, 0xc2, 0xd5, 0x8a | EFI\_RNG\_PROTOCOL.GetInfo() - GetInfo() returns valid algorithm with valid parameters. | Call GetInfo() to get the  RNGAlgorithmListSize.  Allocate a list buffer with the  RNGAlgorithmListSize gotten from step1.  Call GetInfo() with the new allocated  buffer, the return status should be EFI\_SUCCESS.  Compare the Algorithm gotten from  Step3 with the given algorithms, the result should be success. |
| 5.33.4.1.3 | 0x0db3b0d2, 0x859f, 0x4682, 0x87, 0x67, 0x62, 0x35, 0x67, 0x91, 0xb7, 0x9d | EFI\_RNG\_PROTOCOL.GetInfo() - GetInfo() returns EFI\_BUFFER\_TOO\_SMALL with small RNGAlgorithmListSize and returns valid size | Call GetInfo() with small RNGAlgorithmListSize, the return  status should be EFI\_BUFFER\_TOO\_SMALL and returns valid size |

### GetRNG()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.33.4.2.1 | 0x4a54a35e, 0x66ac, 0x4c2e, 0x92, 0xd8, 0x7b, 0x26, 0x3d, 0x8a, 0x77, 0xa8 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_SUCCESS with valid parameters. | Call GetInfo() to get the  RNGAlgorithmListSize.  Allocate a list buffer with the  RNGAlgorithmListSize gotten from step1.  Call GetInfo() with the new allocated  Buffer.  Call GetRNG() with valid parameters,  the return status should be EFI\_SUCCESS. |
| 5.33.4.2.2 | 0xe3d11e22, 0xeddb, 0x40c4, 0x8f, 0x6d, 0x25, 0x79, 0x33, 0xea, 0x62, 0xf8 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_SUCCESSwith default algorithm. | Call GetRNG() with default algorithm,  the return status should be EFI\_SUCCESS. |
| 5.33.4.2.3 | 0xe79e5379, 0xd4dc, 0x4624, 0x88, 0x05, 0x09, 0x46, 0x1c, 0x09, 0x78, 0x28 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_INVALID\_PARAMETER when RNGValueLength is 0. | Call GetRNG()when RNGValueLength is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.33.4.2.4 | 0x76ac3e4c, 0x5f59, 0x4c21, 0x82, 0x0a, 0xe4, 0x24, 0xc2, 0xef, 0x36, 0x14 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_INVALID\_PARAMETERwhen RNGValue is NULL. | Call GetRNG()when RNGValue is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.33.4.2.5 | 0x27451869, 0x357d, 0x4e92, 0xb8, 0xb0, 0xb8, 0xc5, 0xba, 0xb9, 0xa4, 0xe9 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_INVALID\_PARAMETERwhen RNGAlgorithm is NULL and RNGValueLength is 0. | Call GetRNG()when RNGAlgorithm is NULL and RNGValueLength is 0, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.33.4.2.6 | 0x31ce0e8, 0x3604, 0x4489, 0x93, 0x6c, 0x60, 0x8c, 0x9b, 0x2c, 0xf8, 0xf4 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_INVALID\_PARAMETERwhen RNGValueLength is 0 after the RNGAlgorithm is freed. | Call GetRNG()when RNGValue is NULL after the RNGAlgorithm is freed, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.33.4.2.7 | 0x7a4ea182, 0xa4cd, 0x441d, 0x98, 0xd7, 0x73, 0x65, 0x87, 0x6f, 0xfa, 0x77 | EFI\_RNG\_PROTOCOL.GetRNG() - GetRNG() returns EFI\_UNSUPPORTEDwhen RNGAlgorithm is unsupported. | Call GetRNG()when RNGAlgorithm is unsupported, the return status should be EFI\_UNSUPPORTED. |

# Timestamp Protocols

## EFI\_TIMESTAMP\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_TIMESTAMP\_PROTOCOL Section.

### GetTimestamp()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.34.1.1.1 | 0xa971e7ad, 0x5889, 0x4af0, 0x8c, 0x7e, 0x05, 0xa6, 0x88, 0xca, 0xf6, 0xd8 | EFI\_TIMESTAMP\_PROTOCOL.GetTimestamp - GetTimestamp() returns reasonable value. | Call GetTimestamp () should return a reasonable value. |

### GetProperties()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.34.1.2.1 | 0x7530e468, 0xc9d0, 0x4881, 0xa2, 0xe7, 0xb5, 0x9f, 0x80, 0x38, 0x70, 0x26 | EFI\_TIMESTAMP\_PROTOCOL.GetProperties- GetProperties() returns EFI\_SUCCESS with properties being not NULL. | Call GetProperties ()with properties being not NULL, the return status should be EFI\_SUCCESS. |
| 5.34.1.2.2 | 0x2e9847b0, 0x8d24, 0x4c8d, 0xbd, 0xbc, 0x57, 0xc5, 0xdb, 0x10, 0x10, 0x95 | EFI\_TIMESTAMP\_PROTOCOL.GetProperties- GetProperties() Properties.EndValue returned from GetProperties() should be in 0xFFFF format. | Call GetProperties ()with properties being not NULL, Properties.EndValue returned from GetProperties() should be in 0xFFFF format. |
| 5.34.1.2.3 | 0x3b1d442f, 0xcc6d, 0x4e89, 0xa3, 0x91, 0x00, 0x40, 0xb2, 0x39, 0xd7, 0xb6 | EFI\_TIMESTAMP\_PROTOCOL.GetProperties- GetProperties() returns EFI\_INVALID\_PARAMETER with properties being NULL. | Call GetProperties ()with properties being NULL, the return status should be EFI\_INVALID\_PARAMETER. |

# Protocols String Services Test

## EFI\_REGULAR\_EXPRESSION\_PROTOCOL Test

Reference Document:

*UEFI Specification*, EFI\_REGULAR\_EXPRESSION\_PROTOCOL Section.

### MatchString()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.35.1.1.1 | 0x9cec70a0, 0xfb56, 0x4b7f, 0x95, 0x31, 0xeb, 0xd0, 0x61, 0xa2, 0xcf, 0x8f | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_INVALID\_PARAMETER when String is NULL. | 1. Call MatchString() when String is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.35.1.1.2 | 0xfdceb7d8, 0x5fb7, 0x43c8, 0x8f, 0xa8, 0xec, 0xf, 0x7f, 0x14, 0x34, 0x29 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_INVALID\_PARAMETER when Pattern is NULL. | 1. Call MatchString() when Pattern is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.35.1.1.3 | 0x76813d40, 0xd2a7, 0x4912, 0x9e, 0xc4, 0x96, 0x6b, 0x14, 0x15, 0x4b, 0x51 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_INVALID\_PARAMETER when Result is NULL. | 1. Call MatchString() when Result is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.35.1.1.4 | 0xea3de64c, 0xe402, 0x43a7, 0xb4, 0x77, 0x66, 0xcd, 0xf5, 0x13, 0x1e, 0x85 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_INVALID\_PARAMETER when CapturesCount is NULL. | 1. Call MatchString() when CapturesCount is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.35.1.1.5 | 0x98dee30e, 0xdc2b, 0x4dc6, {0x83, 0x10, 0xf8, 0x85, 0x17, 0x2f, 0x4c, 0xc8 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_UNSUPPORTED with unsupported SyntaxType. | 1. Call MatchString() with unsupported SyntaxType, the return status should be EFI\_UNSUPPORTED. |
| 5.35.1.1.6 | 0x94407424, 0xc17e, 0x4a28, 0xb7, 0x84, 0x3f, 0x84, 0x39, 0xcf, 0x30, 0x96 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_SUCCESS with all supported SyntaxType. | 1. Call MatchString() with all supported SyntaxType, the return status should be EFI\_SUCCESS. |
| 5.35.1.1.7 | 0x3d3be925, 0xfbf3, 0x425c, 0xbd, 0xd, 0x2b, 0x95, 0x2f, 0xf3, 0xbf, 0xe8 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. MatchString() - MatchString()returns EFI\_SUCCESS with default SyntaxType. | 1. Call MatchString() with default SyntaxType, the return status should be EFI\_SUCCESS. |

### GetInfo()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.35.1.2.1 | 0x3219e1b1, 0xac3a, 0x4f53, 0x99, 0x11, 0xf3, 0x25, 0x44, 0x5b, 0xa8, 0x26 | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. GetInfo() - GetInfo()returns EFI\_BUFFER\_TOO\_SMALL when SyntaxTypeListSize is too small to hold the result. | 1. Call GetInfo() when SyntaxTypeListSize is too small to hold the result, the return status should be EFI\_BUFFER\_TOO\_SMALL. The outputted SyntaxTypeListSize should be the multiple of size of EFI\_REGEX\_SYNTAX\_TYPE. |
| 5.35.1.2.2 | 0x5a216f4d, 0xb4fe, 0x486d, 0x8e, 0x2e, 0x7b, 0xf9, 0x98, 0x47, 0x62, 0xbd | EFI\_REGULAR\_EXPRESSION\_PROTOCOL. GetInfo() - GetInfo()returns EFI\_INVALID\_PARAMETER when SyntaxTypeListSize is NULL. | 1. Call GetInfo() when SyntaxTypeListSize is NULL, the return status should be EFI\_INVALID\_PARAMETER. |
| 5.35.1.2.3 | 0x5365a661, 0xdb02, 0x46ed, 0xb8, 0x3e, 0xbc, 0x71, 0x6d, 0x6a, 0x8b, 0xb4 | EFI\_CONFIG\_KEYWORD\_HANDLER\_PROTOCOL. GetData() - GetData()returns EFI\_SUCCESS with valid parameters. | 1. Call GetInfo() with valid parameters, the return status should be EFI\_SUCCESS. The outputted SyntaxTypeListSize should be same as the input size. |
|  |  |  |  |

# TCG2 Protocol

## TCG2\_PROTOCOL Test

Reference Document:

EFI Protocol Specification, Level 00 Revision 00.13, March 30, 2016. EFI\_TCG2\_PROTOCOL Chapter 6. The implementation of the EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY struct is assumed to be version 1.1.

Tests in this chapter support TPMs based TCG PC Client Platform TPM Profile Specification for TPM 2.0.

### GetCapability()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.1.1 | 0xca93b02a, 0xe897, 0x4400, 0x81, 0x38, 0xc8, 0xa8, 0xcb, 0x2f, 0xc1, 0xed | EFI\_TCG2\_PROTOCOL.GetCapability() - GetCapabilty() returns EFI\_INVALID\_PARAMTERwith NULL pointer Capability Struct Passed in. | Call GetCapability()with NULL for capability struct pointer.  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.1.2 | 0xfdee7001, 0x7e28, 0x4e35, 0x99, 0x66, 0x98, 0x0b, 0xeb, 0xba, 0xf1, 0x57 | EFI\_TCG2\_PROTOCOL.GetCapability() - GetCapability() shall populate all structure elements and return with a Status of EFI\_SUCCESS when the incoming Size field is greater than or equal to the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY supported by the firmware. | Invoke GetCapabilty()with Protocol Capability. Size set to sizeof(EFI\_TCG2\_BOOT\_SEVICE\_CAPABILTY)   1. Verify that StructureVersion->Major == 1 2. Verify that StructureVersion->Minor == 1 3. Verify that ProtocolVersion->Major == 1 4. Verify that ProtocolVersion->Minor == 1 5. Verify that HashAlgorithmBitmapincludes SHA256 6. Verify that SupportedEventLogs is EFI\_TCG2\_EVENT\_LOG\_FORMAT\_TCG\_2 7. Verify that ~ActivePcrBanks & HashAlgorithmBitMap == 0 8. Verify that NumberofPcrBanks is at least 1 9. Verify that ActivePcrBanks includes SHA256, SHA384, or SHA512   Verify returned Status == EFI\_SUCCESS. |
| 31.1.1.3 | 0xda8821d9, 0x3d2c, 0x4698, 0x8c, 0xd5, 0x0f, 0x0c, 0x82, 0x94, 0x1d, 0x0c | EFI\_TCG2\_PROTOCOL.GetCapability() – If the incoming Size parameter to GetCapability() is less than the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY up to and including the ManufacturerID field then the output Size field is populated with the full size of the capability struct supported by the firmware and return code is BUFFER\_TOO\_SMALL. This allows a client to determine the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY supported by the firmware. | Invoke GetCapability() with ProtocolCapability.Size set to a value less than the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY up to and including the ManufacturerID field.   1. Verify Status returned == EFI\_BUFFER\_TOO\_SMALL.   Verify returned Size equal to sizeof(EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY). |
| 31.1.1.4 | 0x8ddb031b, 0x7448, 0x40ee, 0xb1, 0xa2, 0xe6, 0xf8, 0xe8, 0xc4, 0xe5, 0x5f | EFI\_TCG2\_PROTOCOL.GetCapability() – If the incoming Size parameter to GetCapability() is greater than or equal to the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY up to and including the ManufacturerID field and is less than sizeof(EFI\_TCG2\_BOOT\_SEVICE\_CAPABILTY) supported by the firmware, then the fields up to and including the ManufacturerID are populated. This is a case of client that supports version 1.0 of the EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY struct. | Invoke GetCapability() with ProtocolCapability.Size set to a value equal to the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY up to and including the ManufacturerID field.   1. Verify Status returned == EFI\_SUCCESS.   Verify returned Size equals the size of EFI\_TCG2\_BOOT\_SERVICE\_CAPABILITY up to and including the ManufacturerID field. |

### GetActivePcrBanks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.2.1 | 0x7a1e79a3, 0x4064, 0x4372, 0xbb, 0x64,0x55, 0xb8, 0xf2, 0xa5, 0xa3, 0x26 | EFI\_TCG2\_PROTOCOL. GetActivePcrBanks() - GetActivePcrBanks() returns EFI\_INVALID\_PARAMETERwith NULL pointer Passed in. | Invoke GetActivePcrBanks()with ActivePcrBanks=NULL.  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.2.2 | 0xb0e717c4, 0xb1e2, 0x49f7, 0xb2, 0xd7,0x60, 0x58,0x97, 0x7d, 0x09, 0x2c | EFI\_TCG2\_PROTOCOL. GetActivePcrBanks() - GetActivePcrBanks()should return with EFI\_SUCCESSand have SHA256/384/512 Algorithms in its Bitmap. | 1. Invoke GetActivePcrBanks()with valid ActivePcrBanks buffer. Should return EFI\_SUCCESS.   1. Verify Status returned == EFI\_SUCCESS   Verify that returned ActivePcrBanks bitmap includes SHA256, SHA384, or SHA512.c. Verify that returned ActivePcrBanks bitmap matches one returned by GetCapabilty(). |

### HashLogExtendEvent()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.3.1 | 0xa8e1b5e6, 0xfc09, 0x461c, 0xb0, 0xe9, 0x2a, 0x49, 0xcd, 0x25, 0xc1, 0x24 | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test with NULL DataToHash Pointer should return EFI\_INVALID\_PARAMETER. | Invoke HashLogExtendEvent()with DataToHash=NULL.  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.3.2 | 0x26f04a9b, 0x7b7a, 0x4f47, 0xbe, 0xa8, 0xb1, 0xa6, 0x02, 0x65, 0x19, 0x8a | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test with NULL EfiTcgEvent Pointer should return EFI\_INVALID\_PARAMETER. | Invoke HashLogExtendEvent() with EfiTcgEvent=NULL  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.3.3 | 0x4d1d9985, 0x91e2, 0x4948, 0x89, 0x16, 0xbb, 0x98, 0x13, 0x62, 0x39, 0x1d | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test with Event.Size < Event.Header.HeaderSize + sizeof(UINT32) should return EFI\_INVALID\_PARAMETER. | Invoke HashLogExtendEvent() with EfiTcgEvent.Size is less than EfiTcgEvent.Header.HeaderSize + sizeof(UINT32).  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.3.4 | 0xfb59cab7, 0x4f8c, 0x4ded, 0xa4, 0x1c, 0xc8, 0x41, 0x20, 0x1c, 0x37, 0x22 | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test with PCRIndex > 23 should return EFI\_INVALID\_PARAMETER. | Invoke HashLogExtendEvent with EfiTcgEvent.Header.PCRIndex=24.  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.3.5 | 0x0363d22f, 0xc66a, 0x4872, 0xa5, 0x46, 0x06, 0x7f, 0x6a, 0x0d, 0xdb, 0xcd | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent() Test with valid parameters should return EFI\_SUCCESS. | Invoke HashLogExtendEvent() with:   * DataToHash = "The quick brown fox jumps over the lazy dog" * PCRIndex = 16 * EventType = EV\_POST\_CODE * Event data = "TCG2 Protocol Test"   Verify Status returned == EFI\_SUCCESS. |
| 31.1.3.6 | 0x9cd6d636, 0x603a, 0x4b78, 0x80, 0xa3, 0xa3, 0xb9, 0xcc, 0x6a, 0x0b, 0x08 | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test Handling of PE\_COFF\_IMAGE flag. | Invoke HashLogExtendEvent() with:   * DataToHash = "The quick brown fox jumps over the lazy dog" * PCRIndex = 16 * EventType = EV\_POST\_CODE * Event data = "TCG2 Protocol Test" * Flags = PE\_COFF\_IMAGE   Verify Status returned == EFI\_UNSUPPORTED. |
| 31.1.3.7 | 0xa8e1b5e6, 0xfc09, 0x461c, 0xb0, 0xe9, 0x2a, 0x49, 0xcd, 0x25, 0xc1, 0x24 | EFI\_TCG2\_PROTOCOL. HashLogExtendEvent() - HashLogExtendEvent()Test with NULL DataToHash Pointer should return EFI\_INVALID\_PARAMETER. | Invoke HashLogExtendEvent()with DataToHash=NULL.  Verify Status returned == EFI\_INVALID\_PARAMETER. |

### GetEventLog()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.4.1 | 0xfc80408e, 0x9a3c, 0x4054, 0x96, 0xf9, 0x31, 0x23, 0x35, 0xc2, 0x31, 0x35 | EFI\_TCG2\_PROTOCOL. GetEventLog() - GetEventLog() should return EFI\_INVALID\_PARAMTER when passed in invalid EventLog Format. | Invoke GetEventLog() with invalid EventLogFormat.  Verify Status returned == EFI\_SUCCESS. |
| 31.1.4.2 | 0x45fa1a42, 0x912a, 0x5124, 0x84, 0xf4, 0x41, 0x67, 0xab, 0xb5, 0x89, 0x90 | EFI\_TCG2\_PROTOCOL. GetEventLog() - GetEventLog() shall return EFI\_SUCCESS when a valid EventLogFormat is passed in. | Invoke GetEventLog() with EventLogFormat=EFI\_TCG2\_EVENT\_LOG\_FORMAT\_TCG\_2. Should return EFI\_SUCCESS.  Verify Status returned == EFI\_SUCCESS. |
| 31.1.4.3 | 0x1689bc3a, 0x2298, 0xa116, 0x28, 0x4c, 0xc1, 0xdd, 0xaa, 0xd8, 0xef, 0x51 | EFI\_TCG2\_PROTOCOL. GetEventLog() - GetEventLog() should return correct EventLogHeader | Verify that the returned event log is present at EventLogLocation address by verifying event log header. |
| 31.1.4.4 | 0x126a789a, 0x1932, 0x3234, 0x21, 0xab, 0x42, 0x64, 0x8a, 0x7b, 0x63, 0x76 | EFI\_TCG2\_PROTOCOL. GetEventLog() - GetEventLog() should record Event from Test 0x0363d22f as last EventLogEntry. | Verify that an event log entry is present at EventLogLastEntry by verifying the last entry. The last entry should be the one added with the HashLogExtendEvent in test 0x0363d22f:   1. Verify TCG\_PCR\_EVENT2.PCRIndex = 16 2. Verify TCG\_PCR\_EVENT2.EventType = EV\_POST\_CODE   Verify TCG\_PCR\_EVENT2.Digests.Count = [must equal number of active PCR banks] |

### SubmitCommmand()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.5.1 | 0x3aac8b9a, 0x312a, 0x4dcf, 0x12, 0x76, 0x54, 0x55, 0x32, 0xcd, 0x3a, 0xea | EFI\_TCG2\_PROTOCOL.SubmitComand() - SubmitCommand() shall populate the response buffer and return with a status of EFI\_SUCCESS when valid command parameters are passed in. | Invoke SubmitCommand() with a command buffer containing Command TPM2\_HASH Command, and Data to Hash is "The quick brown fox jumps over the lazy dog".   1. Verify Status returned == EFI\_SUCCESS.   Verify returned outHash matches expected result |

### SetActivePcrBanks()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 31.1.6.1 | 0x48586d48, 0xa8a4, 0x4129, 0x99, 0x8e, 0x78, 0x62, 0x3a, 0xac, 0x43, 0x6a | EFI\_TCG2\_PROTOCOL.SetActivePcrBanks () - SetActivePcrBanks() should return EFI\_INVALID\_PARAMETER with bitmap value of zero. | Invoke SetActivePcrBanks() with ActivePcrBanks=0  Verify Status returned == EFI\_INVALID\_PARAMETER. |
| 31.1.6.2 | 0x1ed1b506, 0xc3c9, 0x45ea, 0xbf, 0x1e, 0x9b, 0xf2, 0x87, 0x08, 0x4e, 0x17 | EFI\_TCG2\_PROTOCOL.SetActivePcrBanks () - SetActivePcrBanks() should return EFI\_INVALID\_PARAMETER with an ActivePcrBanks value with a bit set but not defined in HashAlgorithmBitMap. | 1. Invoke GetCapabilty() to retrieve HashAlgorithmBitmap. 2. Invoke SetActivePcrBanks() with a bit set that is not in HashAlgorithmBitMap    1. Verify Status returned == EFI\_INVALID\_PARAMETER   . |
| 31.1.6.3 | 0x2923c2b2, 0x5a83, 0x4977, 0xbd, 0xed, 0x78, 0xb0, 0xd8, 0xbb, 0xcc, 0x77 | EFI\_TCG2\_PROTOCOL.SetActivePcrBanks () - SetActivePcrBanks() should return EFI\_SUCESS for all bank permutations defined in HashAlgorithmmBitmap. | Using the HashAlgorithmBitMap from 30.1.6.2, invoke SetActivePcrBanks() with ActivePcrBanks from all permutations of banks reported in HashAlgorithmBitMap retrieved via GetCapabilities(). For each Permutation:  Verify Status returned == EFI\_SUCCESS. |
| 31.1.6.4 | 0x181bc213, 0x4512, 0x47ea, 0x8a, 0xb6, 0x44, 0x76, 0xbf, 0x9a, 0x44, 0x6d | EFI\_TCG2\_PROTOCOL.SetActivePcrBanks () - Verify that the ActivePcrBanks value set by SetActivePcrBanks() is active following a reboot. | 1. Identify the first algorithm in HashAlgorithmBitMap retrieved in test 30.1.6.3 2. Invoke ActivePcrBanks() to set the ActivePcrBanks to the first algorithm. 3. Reboot the system   Invoke GetActivePcrBanks(). Should return EFI\_SUCCESS, and ActivePcrBanks should be equal to the value set in step #2 |

# TCG Platform Reset Attack Mitigation

## TCGMemoryOverwriteRequest Test

Reference Document:

TCG PC Platform Reset Attack Mitigation Specification, v1.10 Revision 17, January 21, 2019, Chapter 4.

These tests support platform firmware that implements the MemoryOverwriteRequestControl and MemoryOverwriteRequestControlLock UEFI variables in accordance with TCG PC Platform Reset Attack Mitigation Specification, v1.10.

### Platform Reset Check

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.1.1 | { 0xd1c31d5f, 0x944f, 0x434c, {0x88, 0x26, 0xa6, 0xfb, 0x00, 0xd4, 0xbb, 0x97 }} | Verify MemoryOverwrite-RequestControl is created by platform firmware as specified in the TCG specification. | 1. Reset the system.  2. Verify GetVariable() returns MemoryOverwriteRequestControl with correct attributes = (NV+RT+BS) and correct DataSize.  If MemoryOverwriteRequestControl does not exist with the correct attributes and/or DataSize, the test should report a failure. |
| 32.1.1.2, 32.1.1.3 | { 0xa6c191b1, 0x9bfb, 0x4231, {0xb9, 0x2d, 0x4e, 0xa2, 0x21, 0xf6, 0x4b, 0x5d }},  { 0x34d41a18, 0x8ffe, 0x456b, {0xa4, 0x82, 0x97, 0xb9, 0x9c, 0x50, 0x7d, 0x9e }} | Set the ClearMemory bit within MemoryOverwriteRequestControl.  Verify that on System reset, the ClearMemory bit is cleared. | 1. Invoke SetVariable() with valid GUID, variable name, attributes, and DataSize and Set the ClearMemory bit.  2. Reboot System.  3. Invoke GetVariable() with valid GUID, variable name, attributes, and DataSize.  4. Verify the ClearMemory bit is Cleared |
| 32.1.1.4 | { 0x002519c6, 0x859f, 0x4d25, {0xb1, 0x36, 0xb2, 0xef, 0x61, 0xe5, 0xd9, 0x6f }} | Verify MemoryOverwriteRequestControlLock is created by platform firmware as specified in the TCG specification. | Verify GetVariable() returns EFI\_SUCCESS and MemoryOverwriteRequestControlLock with correct attributes = (NV+RT+BS), correct DataSize = 1, and correct Data = 0x00 to indicate unlocked. |

### 32.1.2 MemoryOverwriteRequestControl.SetVariable()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.2.5, 32.1.2.6 | { 0x13e97668, 0xe905, 0x452d, {0xa0, 0x72, 0x03, 0xde, 0xbf, 0x53, 0xdf, 0xa2 }},  { 0x94811e97, 0x7513, 0x4099, {0xae, 0xb8, 0x5a, 0x7e, 0x7d, 0x50, 0xb4, 0x99 }} | MemoryOverwriteRequestControl.SetVariable() returns EFI\_INVALID\_PARAMETER if incorrect attributes are passed (with all other parameters being valid).  The state of MemoryOverwriteRequestControl shall not change. | 1. Invoke GetVariable()with valid GUID, variable name, attributes and DataSize. Save the current value for comparison.  2. Invoke SetVariable() with valid GUID, variable name, and DataSize = 1. Pass an attributes value != (NV+RT+BS) and Data != saved value from the previous step.  a. Verify SetVariable() returns EFI\_INVALID\_PARAMETER.  b. Verify that MemoryOverwrit-eRequestControl GetVariable() returns a Data value == initial saved value of MemoryOverwriteRequestControl. |

### 32.1.3 MemoryOverwriteRequestControlLock.SetVariable()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.3.7, 32.1.3.8 | { 0x15378290, 0x17dd, 0x4cbf, {0x8e, 0x8f, 0xc2, 0x4b, 0xc9, 0x09, 0xb4, 0x14 }},  { 0x5f0b42ef, 0x3cec, 0x46ad, {0xbc, 0x5b, 0xc3, 0x7a, 0x1d, 0x45, 0x41, 0x29 }} | MemoryOverwriteRequestControlLock.SetVariable() with Attributes == 0 must return value of EFI\_WRITE\_PROTECTED.  The state of MemoryOverwriteRequestControlLock shall not change. | 1. Reboot the system to ensure MemoryOverwriteRequestControlLock is unlocked.  2. Invoke SetVariable() with valid GUID, variable name, Data, and DataSize = 1. Pass an attributes value == 0.   1. Verify SetVariable() returns EFI\_WRITE\_PROTECTED. 2. Verify that MemoryOverwriteRequestControlLock GetVariable() returns a Data Value == 0x00. |
| 32.1.3.9, 32.1.3.10 | { 0x9665c8d9, 0x267c, 0x4393, {0xa4, 0x72, 0x10, 0x54, 0x43, 0x56, 0x20, 0x21 }},  { 0xce655812, 0xcc40, 0x42b0, {0x80, 0xd1, 0xa7, 0x26, 0xdb, 0x14, 0x9e, 0xa8 }} | MemoryOverwriteRequestControlLock.SetVariable() with DataSize == 0 must return value of EFI\_WRITE\_PROTECTED.  The state of MemoryOverwriteRequestControlLock shall not change. | Invoke SetVariable() with valid GUID, variable name, Data, and Attributes. Pass DataSize== 0.   1. Verify SetVariable() returns EFI\_WRITE\_PROTECTED. 2. Verify that MemoryOverwriteRequestControlLock GetVariable() returns a Data Value == 0x00. |
| 32.1.3.11, 32.1.3.12 | { 0xd34348ad, 0x5d46, 0x4961, {0x91, 0x3e, 0xb1, 0xf2, 0xc5, 0xe7, 0x0f, 0x7d }},  { 0x838311e0, 0x419a, 0x4c92, {0x90, 0x60, 0xbf, 0x94, 0x59, 0xd3, 0xc3, 0x59 }} | MemoryOverwriteRequestControlLock.SetVariable() with Data == NULL must either return value of EFI\_WRITE\_PROTECTED or EFI\_INVALID\_PARAMETER.  The state of MemoryOverwriteRequestControlLock shall not change. | Invoke SetVariable() with valid GUID, variable name, Attributes, and DataSize = 1. Pass Data == NULL.   1. Verify SetVariable() returns EFI\_WRITE\_PROTECTED or EFI\_INVALID\_PARAMETER. 2. Verify that MemoryOverwriteRequestControlLock GetVariable() returns a Data Value == 0x00. |
| 32.1.3.13, 32.1.3.14 | { 0x12998a9c, 0xc863, 0x4572, {0x80, 0x6c, 0xb6, 0x40, 0x97, 0x91, 0x89, 0x7f }},  { 0xebd4ba26, 0x44c3, 0x464a, {0x88, 0xe3, 0x3b, 0x44, 0x94, 0x88, 0xbb, 0xb8 }} | MemoryOverwriteRequestControlLock.SetVariable() with Attributes != (NV+BS+RT) must return EFI\_INVALID\_PARAMETER.  The state of MemoryOverwriteRequestControlLock shall not change. | Invoke SetVariable() with valid GUID, variable name, Data, and DataSize. Set Attributes != (NV+BS+RT).   1. Verify SetVariable() returns EFI\_INVALID\_PARAMETER. 2. Verify that MemoryOverwriteRequestControlLock GetVariable() returns a Data Value == 0x00. |
| 32.1.3.15, 32.1.3.16 | { 0x00920c8e, 0x241d, 0x4da0, {0x8b, 0x59, 0xc3, 0xad, 0xe0, 0xd6, 0x4e, 0xc9 }},  { 0x169a43cc, 0x23fa, 0x4887, {0x8b, 0x4f, 0x11, 0xb2, 0xa0, 0x88, 0x4f, 0x63 }} | MemoryOverwriteRequestControlLock.SetVariable() with DataSize != 1 and DataSize != 8 must return EFI\_INVALID\_PARAMETER.  The state of MemoryOverwriteRequestControlLock shall not change. | Invoke SetVariable() with valid GUID, variable name, Data, and Attributes. Set DataSize != 1 & DataSize != 8.   1. Verify SetVariable() returns EFI\_INVALID\_PARAMETER. 2. Verify that MemoryOverwriteRequestControlLock GetVariable() returns a Data Value == 0x00. |

### 32.1.4 MemoryOverwriteRequestControlLock Unlocked state

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.4.17, 32.1.4.18 | { 0x7c11d0ab, 0x7a84, 0x482b, {0xb7, 0x5a, 0xd7, 0x72, 0x6c, 0x3e, 0xae, 0x0e }},  { 0xbbaa52b6, 0x5576, 0x4acd, {0xb9, 0x5f, 0x86, 0x22, 0x5e, 0xfc, 0xb0, 0x31 }} | Setting MemoryOverwriteRequestControlLock to Unlocked State when already Unlocked using SetVariable must return EFI\_SUCCESS and a data value of 0(Unchanged). | 1. Reboot System to make firmware initialize MemoryOverwriteRequestControlLock to Unlocked.  2. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize = 1, and Data = 0x00.   1. Verify Lock.SetVariable() returns EFI\_SUCCESS.   3. Invoke GetVariable() with valid GUID, variable name, attributes, DataSize.   1. Verify that the output value is 0x00. |
| 32.1.4.19, 32.1.4.20 | { 0x60b227e0, 0x9f5c, 0x412c, {0x88, 0x79, 0xd3, 0x59, 0xfc, 0xd0, 0xdd, 0x3f }},  { 0x2eba284a, 0xf701, 0x4c19, {0xbe, 0x5c, 0x39, 0x27, 0xb0, 0x68, 0x4f, 0xd7 }} | Setting MemoryOverwriteRequestControlLock with an invalid first byte for Data when in Unlocked State must return EFI\_INVALID\_PARAMETER. | 1. Invoke SetVariable() with valid GUID, variable name, attributes, DataSize = 1, Data first byte != 0 & Data first byte != 1.   1. Verify SetVariable() returns EFI\_INVALID\_PARAMETER.   2. Invoke GetVariable() with valid GUID, variable name, attributes, DataSize.   1. Verify that the output value is 0x00. |

### 32.1.5 MemoryOverwriteRequestControlLock Locked w/o key state

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.5.21, 32.1.5.22 | { 0x9a1b44ae, 0x08ce, 0x474c, {0xa5, 0x8e, 0xa6, 0xe2, 0xcf, 0xaf, 0x91, 0x2c }},  { 0x490d7b39, 0xcad4, 0x4e8c, {0xb1, 0x5d, 0x63, 0xd2, 0x0c, 0xb3, 0xe9, 0x45 }} | Changing MemoryOverwritRequestControlLock to Locked state without key must return EFI\_SUCCESS when MemoryOverwriteRequestControlLock is currently unlocked. | 1. Reboot System to make firmware initialize MemoryOverwriteRequestControlLock to Unlocked.  2. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 0x01.   1. Verify SetVariable() returns EFI\_SUCCESS. 2. Verify GetVariable() returns Data value of 0x01. |
| 32.1.5.23, 32.1.5.24 | { 0x397394ae, 0xce01, 0x4350, {0xa2, 0x0c, 0xe1, 0xb3, 0xe8, 0x74, 0xdc, 0x01 }},  { 0x9cf27a60, 0x94b5, 0x4e2e, {0xb3, 0x2b, 0x51, 0x0f, 0x24, 0x7a, 0x80, 0xd7 }} | Changing MemoryOverwriteRequestControlLock to Unlocked state must return  EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked without key. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 0x00.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value of 0x01. |
| 32.1.5.25, 32.1.5.26 | { 0x766dc008, 0x2a88, 0x4eed, {0x91, 0x95, 0x46, 0x92, 0xdc, 0xcc, 0x1d, 0xf6 }},  { 0x5f66c8e5, 0x1bf8, 0x4af4, {0x86, 0x45, 0xf4, 0x93, 0xa0, 0xee, 0x26, 0x88 }} | Changing MemoryOverwriteRequestControlLock to Locked without key state must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked without key. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 0x01.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x01. |
| 32.1.5.27, 32.1.5.28 | { 0x1064f6ce, 0xb307, 0x4981, {0xac, 0x8f, 0xe5, 0xca, 0x20, 0x6c, 0x1b, 0x8b }},  { 0x40f2c4e9, 0xe937, 0x426e, {0x98, 0xc5, 0x62, 0xca, 0x23, 0x68, 0x52, 0xd0 }} | Changing MemoryOverwriteRequestControlLock to Locked state with key must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock was already Locked without key. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 8-byte user generated key.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x01. |
| 32.1.5.29, 32.1.5.30 | { 0x6d5dcb4d, 0xe008, 0x41cc, {0x98, 0x32, 0xdf, 0xa8, 0x38, 0xb1, 0xb6, 0x02 }},  { 0x29b81ee0, 0x368d, 0x447c, {0x9e, 0xd0, 0xa5, 0xfe, 0xd7, 0x02, 0x65, 0x7b }} | Since the MemoryOverwriteRequestControlLock is Set, Changing MemoryOverwriteRequestControl value must return EFI\_ACCESS\_DENIED and the value of MemoryOverwriteRequestControl Should not change | 1. Invoke MOR - GetVariable()with valid GUID, variable name, attributes and DataSize. Save the current value for comparison.  2. Invoke MOR - SetVariable() with valid GUID, variable name, and DataSize. Pass Data value with Bit0 Set High to indicate MORbit0 set.  a. Verify SetVariable() returns EFI\_ACCESS\_DENIED.  b. Verify that MemoryOverwriteRequestControl GetVariable() returns a Data value == initial saved value of MemoryOverwriteRequestControl. |
| 32.1.5.31 | { 0xe88b22ce, 0x3de6, 0x49b0, {0xb2, 0x46, 0x9e, 0x35, 0x98, 0x2b, 0x9b, 0x1c }} | MemoryOverwriteRequestControl is locked, the variable must not be erasable(deleted). | 1. Invoke MOR - SetVariable() with valid GUID, variable name, and DataSize == 0.  a. Verify SetVariable() returns either EFI\_ACCESS\_DENIED or EFI\_INVALID\_PARAMETER. |

### 32.1.6 MemoryOverwriteRequestControlLock Locked state with key

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 32.1.6.32, 32.1.6.33 | { 0xc8894201, 0x7a3a, 0x47d4, {0xa8, 0x8d, 0xdf, 0x4b, 0x03, 0xff, 0xde, 0x4f }},  { 0x38a813ac, 0x8eb9, 0x46ce, {0xa8, 0x6b, 0x40, 0x8c, 0x07, 0x5f, 0xc7, 0xed }} | Changing MemoryOverwriteRequestControlLock to Locked state with a key  must return EFI\_SUCCESS when MemoryOverwriteRequestControlLock is currently unlocked.    MemoryOverwriteRequestControlLock must be locked with key. | 1. Reboot System to make firmware initialize MemoryOverwriteRequestControlLock to Unlocked.  2. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 8-byte user generated key.   1. Verify SetVariable() returns EFI\_SUCCESS. 2. Verify GetVariable() returns Data value 0x02. |
| 32.1.6.34, 32.1.6.35 | { 0x919b8392, 0xcb78, 0x49ff, {0xa3, 0x18, 0x49, 0x78, 0x76, 0xe0, 0xf8, 0xf8 }},  { 0x219abaf2, 0x04a9, 0x407c, {0xb5, 0xde, 0xa0, 0x03, 0x6e, 0x65, 0xb0, 0xb9 }} | Changing MemoryOverwriteRequestControlLock to Unlocked state with the 8 byte key used in the previous SetVariable() Lock with key action  must return EFI\_SUCCESS when MemoryOverwriteRequestControlLock is currently Locked with key.    MemoryOverwriteRequestControlLock must be unlocked. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 8-byte user generated key that was used to set the lock in test number 33   1. Verify SetVariable() returns EFI\_SUCCESS. 2. Verify GetVariable() returns Data value 0x00. |
| 32.1.6.36, 32.1.6.37, 32.1.6.38 | { 0x9a51640a, 0xff14, 0x402b, {0xb0, 0x57, 0xa0, 0xc4, 0xf7, 0x20, 0x8e, 0x44 }},  { 0x8ccd0dbb, 0x9b0a, 0x4bfb, {0xa0, 0x7e, 0xc6, 0x06, 0x8b, 0x91, 0x0d, 0xfb }},  { 0xde6f4e17, 0xe375, 0x4dcb, {0x8f, 0x07, 0x77, 0x7e, 0x62, 0x49, 0xea, 0x2c }} | Changing MemoryOverwriteRequestControlLock to Unlocked state with an invalid DataSize must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked with key.    MemoryOverwriteRequestControlLock must not change. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 8-byte user generated key.  a. Verify SetVariable() returns EFI\_SUCCESS.  2. Invoke SetVariable() with Valid GUID, variable name, attributes, and DataSize != 8.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x02. |
| 32.1.6.39, 32.1.6.40 | { 0x4ab6927b, 0x5ee4, 0x4748, {0xa4, 0x9d, 0x2d, 0xf3, 0x70, 0x01, 0x41, 0xd5 }},  { 0x33142ecf, 0x0f92, 0x4625, {0xb7, 0xf6, 0x7f, 0x15, 0x25, 0x74, 0xd3, 0x03 }} | Changing MemoryOverwriteRequestControlLock to Unlocked state by passing Data Value 0x00 must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked with key.    MemoryOverwriteRequestControlLock must not change. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, and DataSize, Data = 0x00.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x02. |
| 32.1.6.41, 32.1.6.42 | { 0xf73c04df, 0x2e42, 0x4174, {0x82, 0x18, 0x0f, 0x25, 0x46, 0x4a, 0x55, 0xe9 }},  { 0xd4eacf82, 0x55d1, 0x4ba1, {0xbe, 0x89, 0x6a, 0x2e, 0x44, 0x0f, 0xc7, 0xc0 }} | Changing MemoryOverwriteRequestControlLock to Locked without key state must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked with key.    MemoryOverwriteRequestControlLock must not change. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize = 1, and Data Input = 0x01.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x02. |
| 32.1.6.43, 32.1.6.44 | { 0xfd88fe63, 0x5ed4, 0x482a, {0x98, 0x44, 0x23, 0x90, 0xf9, 0x09, 0x1c, 0x20 }},  { 0x176f16cb, 0xf3a4, 0x4f12, {0x8f, 0x96, 0x4a, 0xc1, 0x8b, 0xdd, 0x6e, 0x3c }} | Since the MemoryOverwriteRequestControlLock is Set, Changing MemoryOverwriteRequestControl value should return EFI\_ACCESS\_DENIED and the value of MemoryOverwriteRequestControl Should not change | 1. Invoke MOR - GetVariable()with valid GUID, variable name, attributes and DataSize. Save the current value for comparison.  2. Invoke MOR - SetVariable() with valid GUID, variable name, and DataSize. Pass Data value with Bit0 Set High to indicate MORbit0 set.  a. Verify SetVariable() returns EFI\_ACCESS\_DENIED.  b. Verify that MemoryOverwrit-eRequestControl GetVariable() returns a Data value == initial saved value of MemoryOverwriteRequestControl. |
| 32.1.6.45 | { 0xf0d5e7b3, 0xdc0f, 0x4a18, {0xb9, 0x78, 0x09, 0x3b, 0x15, 0x55, 0x66, 0xbf }} | MemoryOverwriteRequestControl is locked, the variable must not be erasable(deleted). | 1. Invoke MOR - SetVariable() with valid GUID, variable name, and DataSize == 0.  a. Verify SetVariable() returns EFI\_ACCESS\_DENIED or EFI\_INVALID\_PARAMETER. |
| 32.1.6.46, 32.1.6.47 | { 0x9bf14c4b, 0x2950, 0x4c4e, {0x8b, 0xa3, 0x06, 0x46, 0xf1, 0x27, 0x8c, 0x05 }},  { 0xb0468dee, 0xb1d0, 0x4795, {0x9f, 0xbf, 0xbe, 0x3f, 0x40, 0x2f, 0x3d, 0x6f }} | Changing MemoryOverwriteRequestControlLock to Unlocked state with an 8 byte value that is not equal to the 8-byte key used in the previous SetVariable() Lock with key action  must return EFI\_ACCESS\_DENIED when MemoryOverwriteRequestControlLock is currently Locked with key. The Dictionary Attack Mitigation must also change the Lock value to Locked with no key. | 1. Invoke SetVariable() with Valid GUID, variable name, attributes, DataSize, and Data Input = 8 byte value != 8-byte user generated key from test number 33.   1. Verify SetVariable() returns EFI\_ACCESS\_DENIED. 2. Verify GetVariable() returns Data value 0x01. |
| 32.1.6.48, 32.1.6.49 | { 0x1f7dd903, 0xcd58, 0x4d6f, {0x80, 0xd6, 0x4f, 0x6d, 0xcb, 0x4a, 0xd6, 0xc9 }}, { 0x439179c2, 0x744d, 0x43bc, {0xb0, 0x67, 0x7b, 0x65, 0x60, 0x62, 0x6f, 0x5e }} | After the Dictionary Attack Prevention Mechanism is activated, the MorLock should not be able to be unlocked with the correct 8-byte key after the state of the key has already been changed to Locked without key. | 1. SetVariable with Valid GUID, variable name, attributes, DataSize and Data Input = 8 byte key that was used to set the original lock in assertion 37.   * 1. Verify SetVariable() returns EFI\_ACCESS\_DENIED   2. Verify GetVariable() returns Data Value 0x01. |

* Format of Test Profiles
* EFI Requirements Test Profile

**File Path: SCT\Dependency\EfiCompliantBBTest\EfiCompliant.Ini**

[Platform Specific]

ConsoleDevices = <yes: if this platform includes console devices>

GraphicalConsoleDevices = <yes: if this platform includes graphical console devices>

PointerDevices = <yes: if this platform includes a pointer device as part of its console support>

BootFromDiskDevices = <yes: if this platform supports to boot from a disk device>

BootFromNetworkDevices = <yes: if this platform supports to boot from a network device>

UartDevices = <yes: if this platform includes a byte-stream device such as a UART>

PciBusSupport = <yes: if this platform includes PCI bus support>

UsbBusSupport = <yes: if this platform includes USB bus support>

ScsiPassThru = <yes: if this platform includes an I/O system that uses SCSI command packets>

DebugSupport = <yes: if this platform supports debugging capabilities>

PlatformDriverOverride = <yes: includes the ability to override the default driver>

* EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL Test Profile

[PollMem\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The memory address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

TargetValue = <The target value to be set and polled in destination address, in hex format>

AlternateValue = <The alternate value to be set in destination address, in hex format>

[PollIo\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The Io address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

TargetValue = <The target value to be set and polled in destination address, in hex format>

AlternateValue = <The alternate value to be set in destination address, in hex format>

[MemRead\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The memory address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[MemWrite\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The memory address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[IoRead\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The Io address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[IoWrite\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The Io address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[PciRead\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The PCI address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[PciWrite\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The PCI address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[CopyMem\_Func]

DevicePath = <The PCI root bridge device path string>

Address = <The memory address controlled by this root bridge>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH>

Length = <The tested address length, in hex format>

DataUnits = <The data unit to be written in to tested area, this item can be **NULL**>

[MemRead\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[MemWrite\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[IoRead\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[IoWrite\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[PciRead\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[PciWrite\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

[CopyMem\_Conf]

DevicePath = <The PCI root bridge device path string>

RootBridgeIoWidth = <The EFI\_PCI\_ROOT\_BRIDGE\_IO\_PROTOCOL\_WIDTH invalid for this system>

* ��EFI\_PCI\_IO\_PROTOCOL Test Profile

[PollMem\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

TargetValue = <The target value to Poll in destination address, in hex format>

AlternateValue = <The alternate value set in destination address, in hex format>

[PollIo\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

TargetValue = <The target value to Poll in destination address, in hex format>

AlternateValue = <The alternate value set in destination address, in hex format>

[MemRead\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[MemWrite\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[IoRead\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[IoWrite\_Func]

DevicePath = <The Pci Device Path String>

BarIndex = <The BAR Index valid value is 0-5>

AddressOffset = <The Address offset in this BAR, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[PciRead\_Func]

DevicePath = <The Pci Device Path String>

AddressOffset = <The Address offset in configuration space for this device, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[PciWrite\_Func]

DevicePath = <The Pci Device Path String>

AddressOffset = <The Address offset in configuration space for this device, in hex format>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the destination address, can be **NULL**>

[CopyMem\_Func]

DevicePath = <The Pci Device Path String>

SrcBarIndex = <Source BAR index valid value is 0-5>

DestBarIndex = <Destination BAR index valid value is 0-5>

SrcAddressOffset = <The address offset in source BAR resource>

DestAddressOffset = <The address offset in destination BAR resource>

Length = <The Address length to be tested, in hex format>

PciIoWidth = <The EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint8>

DatUnits = <The data units to be write into the source address, can be **NULL**>

[PollMem\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[PollIo\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[MemRead\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[MemWrite\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[IoRead\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[IoWrite\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[PciRead\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[PciWrite\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

[CopyMem\_Conf]

DevicePath = <The Pci Device Path String>

PciIoWidth = <The invalid EFI\_PCI\_IO\_PROTOCOL\_WIDTH. For example EfiPciIoWidthUint64 on IA32 platform>

* �EFI\_DEVICE\_IO\_PROTOCOL Test Profile

[MemRead\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Memory address in this Device>

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

[MemWrite\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Memory address in this Device>

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

[IoRead\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Io address in this Device>

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

[IoWrite\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Io address in this Device>

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

[PciRead\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The PCI address>

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

DataUnits = <The data for this PCI address range>

[PciWrite\_Func]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The PCI address >

ValidEfiIoWidth = <The valid EFI\_IO\_WIDTH value>

Length = <The Data length to be tested>

DataUnits = <The data to be written for this PCI address range>

[MemRead\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Memory address in this device>

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[MemWrite\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Memory address in this device>

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[IoRead\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Io address in this device>

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[IoWrite\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Io address in this device>

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[PciRead\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Valid PCI address >

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[PciWrite\_Conf]

DevicePath = <The Device IO Protocol instance device path>

ValidBaseAddress = <The Valid PCI address >

InvalidEfiIoWidth = <The EFI\_IO\_WIDTH invalid for this system>

[AllocateBuffer\_Conf]

DevicePath = <The Device IO Protocol instance device path>

InvalidBaseAddress= <The memory address invalid for this system>

[PciDevicePath\_Conf]

DevicePath = <The Device IO Protocol instance device path>

InvalidBaseAddress= <The PCI address invalid for this system>

>

* Deprecated Protocols

This appendix lists the Protocol , GUID, and revision identifier name changes and the deprecated protocols compared to the *EFI Specification 1.10.* The protocols listed are not Runtime, Reentrant or MP Safe. Protocols are listed by EFI 1.10 name.

For protocols in the table whose TPL is not <= TPL\_NOTIFY:

This function must be called at a TPL level less then or equal to %%%%.

%%%% is TPL\_CALLBACK or TPL\_APPLICATION. The <= is done via text.

* Protocol Name changes

|  |  |
| --- | --- |
| EFI 11.0 Protocol Name | UEFI 2.0 Protocol Name |
| EFI\_LOADED\_IMAGE | EFI\_LOADED\_IMAGE\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_LOADED\_IMAGE\_PROTOCOL\_GUID |
| EFI\_DEVICE\_PATH | EFI\_DEVICE\_PATH\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_DEVICE\_PATH\_PROTOCOL\_GUID |
| SIMPLE\_INPUT\_INTERFACE | EFI\_SIMPLE\_INPUT\_PROTOCOL |
| TPL | <= TPL\_APPLICATION |
| New GUID name | EFI\_SIMPLE\_INPUT\_PROTOCOL\_GUID |
| SIMPLE\_TEXT\_OUTPUT\_INTERFACE | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_SIMPLE\_TEXT\_OUTPUT\_PROTOCOL\_GUID |
| SERIAL\_IO\_INTERFACE | EFI\_SERIAL\_IO\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_SERIAL\_IO\_PROTOCOL\_GUID |
| EFI\_LOAD\_FILE\_INTERFACE | EFI\_LOAD\_FILE\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_LOAD\_FILE\_PROTOCOL\_GUID |
| EFI\_FILE\_IO\_INTERFACE | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_FILE\_SYSTEM\_PROTOCOL\_GUID |
| EFI\_FILE | EFI\_FILE\_PROTOCOL |
| TPL | <= TPL\_CALLBACK |
| New GUID name | EFI\_FILE\_PROTOCOL\_GUID |
| EFI\_DISK\_IO | EFI\_DISK\_IO\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_DISK\_IO\_PROTOCOL\_GUID |
| EFI\_BLOCK\_IO | EFI\_BLOCK\_IO\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_BLOCK\_IO\_PROTOCOL\_GUID |
| UNICODE\_COLLATION\_INTERFACE | EFI\_UNICODE\_COLLATION\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_UNICODE\_COLLATION\_PROTOCOL\_GUID |
| EFI\_SIMPLE\_NETWORK | EFI\_SIMPLE\_NETWORK\_PROTOCOL |
| TPL | <=TPL\_CALLBACK |
| New GUID name | EFI\_SIMPLE\_NETWORK\_PROTOCOL\_GUID |
| EFI\_NETWORK\_INTERFACE\_IDENTIFIER  \_INTERFACE | EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_PROTOCOL\_GUID |
| EFI\_PXE\_BASE\_CODE | EFI\_PXE\_BASE\_CODE\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_ PXE\_BASE\_CODE \_PROTOCOL\_GUID |
| EFI\_PXE\_BASE\_CODE\_CALLBACK | EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL\_GUID |
| EFI\_DEVICE\_IO\_INTERFACE | EFI\_DEVICE\_IO\_PROTOCOL |
| TPL | <= TPL\_NOTIFY |
| New GUID name | EFI\_DEVICE\_IO\_PROTOCOL\_GUID |

* Revision Identifier Name Changes

|  |  |
| --- | --- |
| EFI 11.0 Revision Identifier Name | UEFI 2.0 Revision Identifier Name |
| EFI\_LOADED\_IMAGE\_INFORMATION\_REVISION | EFI\_LOADED\_IMAGE\_PROTOCOL\_REVISION |
| SERIAL\_IO\_INTERFACE\_REVISION | EFI\_SERIAL\_IO\_PROTOCOL\_REVISION |
| EFI\_FILE\_IO\_INTERFACE\_REVISION | EFI\_SIMPLE\_FILE\_SYSTEM\_PROTOCOL\_REVISION |
| EFI\_FILE\_REVISION | EFI\_FILE\_PROTOCOL\_REVISION |
| EFI\_DISK\_IO\_INTERFACE\_REVISION | EFI\_DISK\_IO\_PROTOCOL\_REVISION |
| EFI\_BLOCK\_IO\_INTERFACE\_REVISION | EFI\_BLOCK\_IO\_PROTOCOL\_REVISION |
| EFI\_SIMPLE\_NETWORK\_INTERFACE\_REVISION | EFI\_SIMPLE\_NETWORK\_PROTOCOL\_REVISION |
| EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_INTERFACE  \_REVISION | EFI\_NETWORK\_INTERFACE\_IDENTIFIER\_PROTOCOL  \_REVISION |
| EFI\_PXE\_BASE\_CODE\_INTERFACE\_REVISION | EFI\_PXE\_BASE\_CODE\_PROTOCOL\_REVISION |
| EFI\_PXE\_BASE\_CODE\_CALLBACK\_INTERFACE  \_REVISION | EFI\_PXE\_BASE\_CODE\_CALLBACK\_PROTOCOL  \_REVISION |

* Deprecated Protocols

Device I/O Protocol

The support of the Device I/O Protocol (see EFI 1.1 Chapter 18) has been replaced by the use of the **PCI Root Bridge I/O** protocols from the UEFI 2.0 specification and following. Note: certain “legacy” EFI applications such as some of the ones that reside in the EFI Toolkit assume the presence of Device I/O.

 UGA I/O + UGA Draw Protocol

The support of the UGA \* Protocols (see EFI 1.1 Section 10.7) have been replaced by the use of the **EFI Graphics Output Protocol** described in the UEFI 2.0 specification.

USB Host Controller Protocol (version that existed for EFI 1.1)

The support of the USB Host Controller Protocol (see EFI 1.1 Section 14.1) has been replaced by the use of a UEFI 2.0 instance that covers both USB 1.1 and USB 2.0 support, as described in the UEFI 2.0 specification and following. It replaces the pre-existing protocol definition.

SCSI Passthru Protocol

The support of the SCSI Passthru Protocol (see EFI 1.1 Section 13.1) has been replaced by the use of the **Extended SCSI Passthru Protocol** which is described in the UEFI 2.0 specification.

BIS Protocol

Remains as an optional protocol.

* �EFI\_UGA\_DRAW\_PROTOCOL Test

Reference Document:

*Specification*, Section .

* GetMode()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.3.1.1 | 0x7be3c5ea, 0xca81, 0x49e2, 0xba, 0xc6, 0xb9, 0xa6, 0x5b, 0xbf, 0xfc, 0x57 | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with valid parameter returns EFI\_SUCCESS | 1. Call GetMode() with valid parameter to backup current UGA mode. The return code should be EFI\_SUCCESS |
| 5.6.3.1.2 | 0x2dcf2f9d, 0xbc9c, 0x4be2, 0x9d, 0x0a, 0x35, 0xb9, 0x9d, 0x13, 0xb1, 0xba | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with valid parameter returns EFI\_SUCCESS | 1. Call SetMode() to set 800x600x32x60 UGA mode.  2. Call GetMode() with valid parameter. The return code should be EFI\_SUCCESS |
| 5.6.3.1.3 | 0x53954b07, 0x1ee8, 0x4ab9, 0x9b, 0x5b, 0x28, 0xbe, 0xf2, 0xae, 0x65, 0x8c | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with valid parameter returns EFI\_SUCCESS | 1. Call SetMode() to set supported UGA mode.  2. Call GetMode() with valid parameter. The return code should be EFI\_SUCCESS |
| 5.6.3.1.4 | 0xee89abe2, 0xe289, 0x4e5f, 0xbd, 0x0f, 0xee, 0x41, 0x5f, 0x9d, 0x76, 0x06 | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with a HorizontalResolution value of NULL returns EFI\_INVALID\_PARAMETER | 1. Call GetMode() with a HorizontalResolution value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.3.1.5 | 0x27e72405, 0x627f, 0x4d2d, 0x8d, 0x82, 0x1c, 0xf7, 0x5a, 0x94, 0xb1, 0xe0 | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with a VerticalResolution value of NULL returns EFI\_INVALID\_PARAMETER | 1. Call GetMode() with a VerticalResolution value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.3.1.6 | 0x5426aa3f, 0xcf9b, 0x49a1, 0x8b, 0x83, 0x8b, 0xd7, 0x14, 0x05, 0x68, 0x72 | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with a RefreshRate value of NULL returns EFI\_INVALID\_PARAMETER | 1. Call GetMode() with a RefreshRate value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |
| 5.6.3.1.7 | 0x36ebe5d4, 0xe938, 0x4859, 0xaa, 0x3e, 0xac, 0xe4, 0x49, 0xba, 0x5f, 0x17 | EFI\_UGA\_DRAW\_PROTOCOL.GetMode – GetMode() with a ColorDepth value of NULL returns EFI\_INVALID\_PARAMETER | 1. Call GetMode() with a ColorDepth value of NULL. The return code should be EFI\_INVALID\_PARAMETER. |

* SetMode()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.3.2.1 | 0x6a5e8496, 0x0edf, 0x4616, 0x83, 0x9f, 0xde, 0xb5, 0xf8, 0xbe, 0xc8, 0xfd | EFI\_UGA\_DRAW\_PROTOCOL.SetMode - SetMode() with supported UGA mode clears hardware frame buffer to black. | 1. Call SetMode() to set supported UGA mode.  2. Call Blt() with EfiUgaVideoToBltBuffer operation to store screen display to buffer.  3. Each pixel in buffer should be (0,0,0). |
| 5.6.3.2.2 | 0x7ff20bb2, 0xb6e7, 0x47cc, 0x86, 0xc8, 0x81, 0x7d, 0xb0, 0x73, 0x20, 0x41 | EFI\_UGA\_DRAW\_PROTOCOL.SetMode - SetMode() with resolution 800\*600 color depth 32-bit and 60 refresh rate UGA mode returns EFI\_SUCCESS. | 1. Call SetMode() to set 800x600x32x60 UGA mode. The return code must be EFI\_SUCCESS. |
| 5.6.3.2.3 | 0xa5caad17, 0x8605, 0x473a, 0xab, 0x08, 0x6b, 0x87, 0x3f, 0x81, 0x2c, 0x14 | EFI\_UGA\_DRAW\_PROTOCOL.SetMode – GetMode() returns the values set by SetMode(). | 1. Call SetMode() to set 800x600x32x60 UGA mode. The return code must be EFI\_SUCCESS.  2. Call GetMode() with valid parameter. The return values should equal to the values set by SetMode() |
| 5.6.3.2.4 | 0x7d0e59bb, 0x54a3, 0x48c8, 0x85, 0xec, 0xad, 0x89, 0xeb, 0xe6, 0x8b, 0x49 | EFI\_UGA\_DRAW\_PROTOCOL.SetMode – GetMode() returns the values set by SetMode(). | 1. Call SetMode() to set supported UGA mode. The return code must be EFI\_SUCCESS.  2. Call GetMode() with valid parameter. The return values should equal to the values set by SetMode() |
| 5.6.3.2.5 | 0x86cc4728, 0x6884, 0x4743, 0x8b, 0x3b, 0x5c, 0x95, 0x5e, 0x9a, 0x77, 0x29 | EFI\_UGA\_DRAW\_PROTOCOL.SetMode - SetMode() with valid parameters returns EFI\_SUCCESS or EFI\_UNSUPPORTED. | 1. Call SetMode() to set UGA mode. The return code must be EFI\_SUCCESS or EFI\_UNSUPPORTED. |
| 5.6.3.2.6 | 0xe1e7967e, 0xc92a, 0x42dd, 0x93, 0xce, 0xb5, 0x1d, 0x1c, 0xe0, 0x92, 0x17 | EFI\_UGA\_DRAW\_PROTOCOL.SetMode - SetMode() with supported UGA mode returns EFI\_SUCCESS. | 1. Call SetMode() to restore original UGA mode. The return code must be EFI\_SUCCESS. |

* Blt()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.6.3.3.1 | 0xd0bc9db6, 0xc66e, 0x46ed, 0xae, 0x61, 0x6a, 0x90, 0x28, 0x63, 0x1d, 0x34 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with EfiUgaVideoFill operation fills display rectangle with input pixel value. | 1. Call Blt() with EfiUgaVideoFill operation.  2. Call Blt() with EfiUgaVideoToBltBuffer operation to store whole video display to buffer.  3. Each pixel in the display rectangle (DestinationX, DestinationY)(DestinationX + Width, DestinationY + Height) should be equal to the input pixel BltBuffer(0,0). |
| 5.6.3.3.2 | 0xb567d336, 0xca3a, 0x474c, 0xaa, 0x84, 0xa7, 0xb4, 0xad, 0x61, 0x57, 0x58 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with EfiUgaVideoFill operation returns EFI\_SUCCESS. | 1. Call Blt() with EfiUgaVideoFill operation. The return code should be EFI\_SUCCESS. |
| 5.6.3.3.3 | 0x367d6e99, 0x6a11, 0x4d0f, 0xbf, 0x99, 0x7f, 0xbe, 0x43, 0x8b, 0x31, 0x57 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with BltEfiUgaVideoToBltBuffer operation returns EFI\_SUCCESS. | 1. Call Blt() with BltEfiUgaVideoToBltBuffer operation to store display to Buffer1. The return code should be EFI\_SUCCESS. |
| 5.6.3.3.4 | 0x85edb629, 0x147d, 0x40b0, 0x94, 0x88, 0x18, 0x02, 0x71, 0x78, 0x09, 0xcf | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with BltEfiUgaVideoToBltBuffer operation returns EFI\_SUCCESS. | 1. Call Blt() with BltEfiUgaBltBufferToVideo operation to copy Buffer1 contents to video.  1. Call Blt() with BltEfiUgaVideoToBltBuffer operation to store video display in Buffer2. The return code should be EFI\_SUCCESS. |
| 5.6.3.3.5 | 0xc776eb3a, 0x6632, 0x425d, 0xb7, 0x04, 0xfa, 0xfb, 0xce, 0x1e, 0x1d, 0x0c | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with BltEfiUgaBltBufferToVideo operation returns EFI\_SUCCESS. | 1. Call Blt() with BltEfiUgaBltBufferToVideo operation to copy Buffer1 contents to video display. The return code should be EFI\_SUCCESS. |
| 5.6.3.3.6 | 0x92a04254, 0x6cbe, 0x45be, 0x87, 0xc4, 0x38, 0xd4, 0x66, 0x66, 0x11, 0xe6 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with BltEfiUgaVideoToBltBuffer and BltEfiUgaBltBufferToVideo operation gets the same content of display rectangle and buffer. | 1. Call Blt() to output a blue rectangle on screen and call Blt() with BltEfiUgaVideoToBltBuffer operation to store display to Buffer1.  2. Call Blt() with BltEfiUgaBltBufferToVideo operation to copy Buffer1 to video.  3. Call Blt() with BltEfiUgaVideoToBltBuffer to store display to Buffer2.  4. Compare Buffer1 and Buffer2. Each pixel should be the same. |
| 5.6.3.3.7 | 0x9efc6f31, 0x1cb1, 0x458f, 0x9a, 0x15, 0xe3, 0x47, 0xa8, 0x36, 0x8d, 0xd8 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with EfiUgaVideoToVideo operation returns EFI\_SUCCESS. | 1. Call Blt() to output a blue rectangle on screen and call Blt() with EfiUgaVideoToVideo operation to copy source display rectangle to destination display destination. |
| 5.6.3.3.8 | 0x09777d6a, 0x14aa, 0x41eb, 0xb8, 0xbc, 0x0d, 0xcb, 0x90, 0xf6, 0x22, 0xbc | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with EfiUgaVideoToVideo operation returns the same contents between source display rectangle and destination display destination. | 1. Call Blt() to output a blue rectangle on screen and call Blt() with EfiUgaVideoToVideo operation to copy source display rectangle to destination display destination.  2. Call Blt() with BltEfiUgaVideoToBltBuffer to store source display rectangle to Buffer1.  3. Call Blt() with BltEfiUgaVideoToBltBuffer to store destination display rectangle to Buffer2.  4. Compare Buffer1 and Buffer2. Each pixel should be same. |
| 5.6.3.3.9 | 0xa077b57a, 0x2d0f, 0x4d26, 0x9e, 0x41, 0x13, 0xb2, 0x6e, 0x28, 0xed, 0xe7 | EFI\_UGA\_DRAW\_PROTOCOL.Blt - Blt() with invalid BltOperation returns EFI\_INVALID\_PARAMETER. | 1. Call Blt() with invalid BltOperation. The return code should be EFI\_INVALID\_PARAMETER. |

* EFI\_SCSI\_PASS\_THRU\_PROTOCOL Test

Reference Document:

*UEFI Specification,* EFI\_SCSI\_PASS\_THRU\_PROTOCOL Section.

* PassThru()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.1.1 | 0x23512eed, 0x301c, 0x493d, 0x8a, 0x03, 0xa6, 0xd4, 0x22, 0x1b, 0xee, 0x9c | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Invoks PassThru() with NULL Event will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() to get valid Target and Lun. Use the Target and Lun gotten before to call PassThru() with NULL Event. The return status should be EFI\_SUCCESS. |
| 5.9.1.1.2 | 0x00718d3e, 0x788a, 0x4882, 0x80, 0xf7, 0x71, 0xb4, 0xf0, 0xcf, 0x6b, 0x30 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Invoks PassThru() with Event will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() to get valid Target and Lun. Use the Target and Lun gotten before to call PassThru() with Event. The return status should be EFI\_SUCCESS and the event should be invoked. |
| 5.9.1.1.3 | 0x4751f323, 0x0687, 0x47b6, 0xbe, 0x16, 0x57, 0x73, 0xc1, 0xa3, 0x6d, 0x28 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with with too long a TransferLength returns EFI\_BAD\_BUFFER\_SIZE. | Call PassThru() with the TransferLength larger than the SCSI controller can handle. It should return EFI\_BAD\_BUFFER\_SIZE and the TransferLength will be updated to the length that SCSI controller can handle. |
| 5.9.1.1.4 | 0x831dd6e6, 0x1960, 0x4c27, 0xab, 0xef, 0x2c, 0x3c, 0x0d, 0x58, 0x68, 0x7f | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Target returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid Target. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.1.5 | 0x8dc5b229, 0xb838, 0x4a90, 0xb3, 0x50, 0x81, 0x3c, 0x42, 0xd4, 0x85, 0x44 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid Lun returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid Lun. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.1.6 | 0xf57be290, 0x0aa4, 0x4e8e, 0x8d, 0x09, 0xe2, 0xce, 0xbc, 0x73, 0xc0, 0x77 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.PassThru - Calling PassThru() with an invalid ScsiRequestPacket content returns EFI\_INVALID\_PARAMETER. | Call PassThru() with an invalid ScsiRequestPacket content. It should return EFI\_INVALID\_PARAMETER. |

* GetNextDevice()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.2.1 | 0x4eda0492, 0x1eb2, 0x4022, 0x87, 0x1f, 0xd3, 0x95, 0x58, 0x20, 0x1d, 0x01 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetnextDevice – GetnextDevice() retrieves the list of legal Target IDs and LUNs for SCSI devices on a SCSI channel. | Call GetNextDevice() with Target’s value of 0xFFFFFFFF to get the first SCSI device present on a SCSI channel. Use the Target and **Lun** which were returned to get the next SCSI device until the end. Every call of GetNextDevice() should return EFI\_SUCCESS except the last one. The last call should return EFI\_NOT\_FOUND. |
| 5.9.1.2.2 | 0x3661f513, 0xd0ea, 0x47f2, 0x8a, 0xb7, 0xaa, 0xb4, 0x6b, 0xcd, 0x93, 0xa0 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetnextDevice – GetnextDevice() uses former Target and Lun to get next device. | Call GetNextDevice() with Target=0xFFFFFFFF to get the first device. Then call it again to get the next device. Use the Target and Lun return from the first call to call the function. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.2.3 | 0xd2d48206, 0xf2dd, 0x40b3, 0xaf, 0x67, 0xe9, 0xae, 0x60, 0xc7, 0x2b, 0x9f | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetnextDevice - Call **GetNextDevice()** with an invalid Target. | Call GetNextDevice() with an invalid Target. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.2.4 | 0xe7e16f25, 0xca2d, 0x4de5, 0x9f, 0xf4, 0xe4, 0xcc, 0xac, 0x9d, 0xf6, 0x90 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetnextDevice - Call **GetNextDevice()** with an invalid **Lun**. | Call GetNextDevice() with an invalid Lun. It should return EFI\_INVALID\_PARAMETER. |

* BuildDevicePath()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.3.1 | 0x93c4def4, 0x7854, 0x42b3, 0x81, 0xbc, 0xa0, 0x4c, 0x0f, 0xd7, 0xb1, 0x93 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Invoks BuildDevicePath() will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() to get the first device’s Target and Lun. Call BuildDevicePath() with valid parameter. Free the DevicePath. It should return EFI\_SUCCESS. |
| 5.9.1.3.2 | 0xd4c6c164, 0x0198, 0x47c6, 0xb7, 0xef, 0x01, 0x0c, 0x47, 0x42, 0xc9, 0x88 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with an invalid Target returns EFI\_NOT\_FOUND. | Call BuildDevicePath() with an invalid Target. It should return EFI\_NOT\_FOUND. |
| 5.9.1.3.3 | 0xec077c7f, 0x114a, 0x41b1, 0x94, 0x83, 0x5b, 0x38, 0x10, 0xdb, 0xc4, 0x00 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with an invalid Lun returns EFI\_NOT\_FOUND. | Call BuildDevicePath() with an invalid Lun. It should return EFI\_NOT\_FOUND. |
| 5.9.1.3.4 | 0x8a1ce910, 0x8a20, 0x4a72, 0xb7, 0x05, 0xb8, 0x09, 0x70, 0xc7, 0xdf, 0xd3 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.BuildDevicePath - Calling BuildDevicePath() with NULL DevicePath returns EFI\_INVALID\_PARAMETER. | Call BuildDevicePath() with a. NULL DevicePath. It should return EFI\_INVALID\_PARAMETER. |

* GetTargetLun()

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| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.4.1 | 0x8d06f9c5, 0xd470, 0x4b31, 0xbe, 0xb9, 0x73, 0x3e, 0x5d, 0x8f, 0xf4, 0xcb | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoks GetTargetLun()will verify interface correctness by returning EFI\_SUCCESS. | Call GetNextDevice() and GetTargetLun() to get the valid DevicePath. Use this DevicePath to call GetTargetLun().The return code should be EFI\_SUCCESS. |
| 5.9.1.4.2 | 0x462c4098, 0xfd65, 0x4005, 0x8e, 0xdb, 0x7b, 0xb5, 0x95, 0x65, 0xc5, 0x11 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoks GetTargetLun() with NULL DevicePath returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL DevicePath. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.4.3 | 0x884c336a, 0xeffd, 0x45b3, 0xb5, 0xcb, 0xc5, 0x50, 0x2a, 0xfa, 0xcf, 0x3f | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoks GetTargetLun() with NULL Target returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL Target. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.4.4 | 0x842b366f, 0x035e, 0x46a7, 0x8f, 0x07, 0x45, 0xd8, 0xd1, 0xe1, 0xe1, 0x72 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Invoks GetTargetLun() with NULL Lun returns EFI\_INVALID\_PARAMETER. | Call GetTargetLun() with NULL Lun. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.4.5 | 0xf29750b2, 0xd353, 0x4baa, 0x8a, 0x44, 0x29, 0xc2, 0x4e, 0xe8, 0x49, 0x43 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.GetTargetLun - Calling GetTargetLun() with unsupported DevicePath returns EFI\_UNSUPPORTED. | Call GetTargetLun() with unsupported DevicePath. It should return EFI\_UNSUPPORTED. |

* ResetChannel()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.5.1 | 0x8af96e89, 0x2209, 0x47d9, 0x9b, 0x84, 0xa1, 0xf6, 0xf2, 0xd1, 0x8a, 0x6b | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.ResetChannel - Invoks ResetChannel() will verify interface correctness via return code of EFI\_SUCCESS or EFI\_UNSUPPORTED. | Call ResetChannel().The return code should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |

* ResetTarget()

|  |  |  |  |
| --- | --- | --- | --- |
| Number | GUID | Assertion | Test Description |
| 5.9.1.6.1 | 0xbac42d29, 0x75cc, 0x4b9b, 0xa3, 0x16, 0xdf, 0x11, 0xca, 0x7c, 0xf1, 0xe4 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTarget - Invoks ResetTarget() will verify interface correctness via return code of EFI\_SUCCESS or EFI\_UNSUPPORTED. | Call GetNextDevice() to get valid Target and Lun. Use the Target and Lun gotten before to call ResetTarget().The return code should be EFI\_SUCCESS or EFI\_UNSUPPORTED. |
| 5.9.1.6.2 | 0x04296f40, 0xe48b, 0x4b5c, 0xb2, 0xcf, 0x49, 0x25, 0xf0, 0x98, 0x5d, 0x82 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTarget - Calling ResetTarget() with an invalid Target returns EFI\_INVALID\_PARAMETER. | Call GetResetTarget() with an invalid Target. It should return EFI\_INVALID\_PARAMETER. |
| 5.9.1.6.3 | 0xc75f3592, 0xee1a, 0x43a3, 0xaa, 0x9b, 0x08, 0x16, 0x9e, 0xca, 0xa6, 0x93 | EFI\_SCSI\_PASS\_THRU\_PROTOCOL.ResetTarget - Calling ResetTarget() with an invalid Lun returns EFI\_INVALID\_PARAMETER. | Call GetResetTarget() with an invalid Lun. It should return EFI\_INVALID\_PARAMETER. |