ARM®SBSA Architecture Compliance Kit

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UEFI Shell Application User Guide

Non-Confidential – Alpha

ARM

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ARM®SBSA Architecture Compliance Kit
UEFI Shell Application User Guide

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The following changes have been made to this document.

Change History

Issue	Date	Confidentiality	Change
A	30 November 2016	Non-Confidential	Release for alpha

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Confidentiality Status

This document is non-confidential.

Product Status

The information in this document is for an alpha product, that is a product under development.

Web Address

http://www.arm.com

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1. SBSA Architecture Compliance Suite – UEFI Shell Application

For general introduction and Build steps for SBSA ACS, please refer to https://github.com/ARM-software/sbsa-acs/blob/master/README.md

For more details on the Validation Methodology, please refer to **https://github.com/ARM-software/sbsa-acs/tree/master/docs**.

1.1 Application arguments

uefi shell> Sbsa.efi [-v <n>] [-l <n>] [-skip <n>] [-s]

Parameters	Description
V	This is for the Print Level. 1 – DEBUG & above 2 – INFO & above 3 – TEST & above 4 – WARN & ERROR 5 - ERROR
l	This is for the level of compliance to be tested against. (0 thru
skip	This will override the suite to skip the execution of a particular test(s). Example 33 will skip test case with ID 33. 30 will skip all tests in module with ID = 30. 50 will skip all tests in module with ID = 50. (refer to test ID section below for more details on Module IDs)
s	This will run secure tests before executing non-secure tests. (requires EL3 secure-firmware to be ported) Not giving this option will run only non-secure tests

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Shell>Sbsa_acs.efi –v 2 –l 3 –skip 36

These set of parameters will

- print messages with verbosity of 2 and above
- test for compliance against SBSA level 3
- skip execution of test number 36

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1.2 Memory requirements

Code

Binary size – 112KB

Data

EfiBootServicesData

Data Structure	Size (in Bytes)
PE_INFO_TABLE	8192
GIC_INFO_TABLE	1024
TIMER_INFO_TABLE	1024
WD_INFO_TABLE	512
PCIE_INFO_TABLE	64
PERIPHERAL_INFO_TABLE	1024
PE_SHARED_MEMORY	(num_of_pe) * 16
PE_SECONDARY_STACK	(num_of_pe) * 256
Total (Assuming 48 PEs)	**24,896**

EfiRuntimeServicesData

None

1.3 Interfaces consumed by Shell Application

Libraries

- UefiLib
- ShellLib
- BaseMemoryLib
- ShellCEntryLib
- UefiBootServicesTableLib
- UefiRuntimeServicesTableLib

Protocols

- gEfiAcpiTableProtocolGuid
- gHardwareInterruptProtocolGuid
- gEfiPciIoProtocolGuid

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2. Toolchain

Linaro aarch64 5.3 toolchain was used to compile this application.

The toolchain is located at http://releases.linaro.org/components/toolchain/binaries/5.3-2016.02/aarch64-linux-gnu/

3. System Dependencies

3.1 PSCI

The compliance suite makes the following PSCI calls:

ARM_SMC_ID_PSCI_CPU_SUSPEND_AARCH64 (0xc4000001)
ARM_SMC_ID_PSCI_CPU_OFF (0x84000002)
ARM_SMC_ID_PSCI_CPU_ON_AARCH64 (0xc4000003)

3.2 Platform Override

It is anticipated that on certain platforms, the underlying ACPI infrastructure to provide information on the system is not implemented yet. To enable running SBSA ACS on these platforms, override hooks are provided for certain modules which will take the relevant hardware information from the override file rather that the underlying UEFI framework.

See *<acs_local_path>/sbsa-acs/platform/pal_uefi/include/platform_override.h* file in the source code for available options.

4. Test ID

Test ID of each test is generated as an addition of Module-ID and Unit Test ID.

For a given module, Unit Test ID begins from 1.

Module-IDs are as follows.

Module Name	Module ID
PE	0
GIC	20
Timer	30
Watchdog	40
PCIe	50
SMMU	60
Power & Wakeup	70
Peripheral	80
Secure	900

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5. UEFI implementation of PAL APIs

The following table lists the UEFI interfaces used for the implementation of the Platform Abstraction Layer (PAL) APIs mentioned in the ***SBSA Validation Methodology Document.*** **(https://github.com/ARM-software/sbsa-acs/tree/master/docs/SBSA_Val_Methodolgy.pdf)**

5.1 Infrastructure APIs

PAL API	UEFI Interfaces used
Pal_print	AsciiPrint
Mem_alloc	gBS->AllocatePool
Mem_free	gBS->FreePool
Mem_alloc_shared	gBS->AllocatePool
Mem_free_shared	gBS->FreePool
Mem_get_shared_addr	None
Mmio_read	None
Mmio_write	None

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4.2 Module Specific APIs

PAL API	UEFI Interfaces consumed	ACPI Table consumed
Pe_create_info_table	gST->ConfigurationTable CompareGuid IndustryStandard/Acpi61.h	MADT Table
Call_smc	None	
Pe_execute_payload	None	
Pe_install_esr	gEfiCpuArchProtocolGuid Cpu->RegisterInterruptHandler	
Gic_create_info_table	gST->ConfigurationTable CompareGuid IndustryStandard/Acpi61.h	MADT table
Gic_install_isr	gHardwareInterruptProtocolGuid RegisterInterruptSource EnableInterruptSource	
Timer_create_info_table	gST->ConfigurationTable CompareGuid IndustryStandard/Acpi61.h	GTDT Table
Timer_system_start_countdown	To be implemented	
Wd_create_info_table	gST->ConfigurationTable CompareGuid IndustryStandard/Acpi61.h	GTDT Table
Pcie_create_info_table	gST->ConfigurationTable CompareGuid IndustryStandard/Acpi61.h	MCFG Table
Pcie_get_mcfg_ecam	gST->ConfigurationTable CompareGuid, IndustryStandard/Acpi61.h IndustryStandard/MemoryMappedConfigurationSpaceAccessTable.h	MCFG Table
Peripheral_create_info_table	gEfiPciIoProtocolGuid Pci->GetLocation Pci->Pci.Read	
Memory_create_info_table	gBS->GetMemoryMap	

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