

Exchange EAS Test Suite Deployment Guide

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# Overview

The Exchange Server EAS Protocol Test Suites are implemented as synthetic clients running against a server-side implementation of a given Exchange protocol. They are designed in a client-to-server relationship and were originally developed for the in-house testing of the Microsoft Open Specifications. Test Suites have been used extensively in Plugfests and Interoperability Labs to test partner implementations.

The Exchange EAS Test Suite Deployment Guide introduces the hardware and software requirements of the test suite client, and the requirements of the system under test (SUT) if the test suites run against Exchange Server. The guide also introduces how to deploy, configure and run the test suites, and view test suite reports.

# Prerequisites

This section describes the hardware and software requirements for the test suites. In an Exchange server environment, the test suite deployment takes place on both the client and server side. The following information will help test suite users to plan their deployment.

## Hardware requirements

### System under test

The SUT is the server side of the test suite environment. Exchange server(s) and Active Directory have defined system requirements which should be taken into account during deployment. The Exchange Server EAS Protocol test suites do not have any additional SUT resource requirements.

### Test suite client

The test suite client is the client side of the test suite environment. The following table shows the minimum resource requirements for the test suite client.

Test suite client resource requirements

|  |  |
| --- | --- |
| Component | Test suite client minimum requirement |
| RAM | 2GB |
| Hard Disk | 3G of free space |
| Processor | >= 1GHz |

## Software requirements

### System under test

This section is only relevant when running the test suites against the following versions of Exchange Server:

* Microsoft Exchange Server 2007 Service Pack 3 (SP3)
* Microsoft Exchange Server 2010 Service Pack 3 (SP3)
* Microsoft Exchange Server 2013 Service Pack 1 (SP1)
* Microsoft Exchange Server 2016

The following table describes the necessary server roles required for a test suite deployment with a Microsoft implementation. Installing Exchange Server on a domain controller (DC) is not recommended.

Required SUT roles

|  |  |
| --- | --- |
| Role | Description |
| **Active Directory Domain Controller (AD DC)** | Active Directory Domain Controller is used to provide secure data for users and computers. An AD DC can coexist with an Exchange server. A typical test configuration has an AD DC and Exchange Server installed on separate machines. |
| Domain Name System Server (DNS) | Domain Name System (DNS) Server provides a name resolution for TCP/IP networks. A DNS Server is easier to manage when it is installed on the server as Active Directory Domain Services. |
| **Exchange Server (SUT)** | The Exchange server in the topology. |

The following diagram is an example of what a typical Exchange test suite environment may look like. This example uses an IPv4, but IPv6 is also supported by the test suites.

**Note** AD DC and SUT are in the same machine, test cases for MS-ASRM will be failed.



### Test suite client

This section describes the prerequisite software for installing the Exchange Server EAS Protocol test suites on the test suite client. The following table outlines the software dependencies for the test suite client.

Test suite client software dependencies

|  |  |
| --- | --- |
| **Operating systems** | Windows 7 x64 Service Pack 1 and above  Windows 8 x64 and above  Windows 2008 R2 x64 Service Pack 1 and above |
| **Software** | Microsoft Visual Studio 2013 Professional  Microsoft Protocol Test Framework 1.0.2220.0 and above |

# Deploying the test suites

This section describes the deployment of the Exchange Server EAS Protocol test suites on the test suite client and the SUT. The Exchange Server EAS Protocol test suites are packaged in a .zip file which is available on [Microsoft Connect](http://go.microsoft.com/fwlink/?LinkId=516921). Once you download the test suites, you need to perform the following steps in order to be able to successfully configure the test suites.

1. Extract the **Exchange Server EAS Protocol Test Suites** folder to a directory of your choice on the test suite client.
2. Copy the **SUT** folder under **…\Exchange Server EAS Protocol Test Suites\Setup** to a directory of your choice on the SUT. The SUT configuration scripts are the only requirement for the SUT. The scripts facilitate the SUT configuration process and are contained within the **ExchangeServerEASProtocolTestSuites.zip** file.

**Note**   If your computer blocks scripts downloaded from the Internet for security reasons, you will need to follow these steps to unblock PowerShell scripts and the MS\_OXWSDLGM\_ServerAdapter.dll file.

|  |  |
| --- | --- |
| 1. Right-click xxxx.ps1, and then click **Properties**. |  |
| 1. Click **Unblock,** and then click **OK**. |  |

To unblock MS\_OXWSDLGM\_ServerAdapter.dll, do the following:

1. Browse to file **MS\_OXWSDLGM\_ServerAdapter.dll** within the **\Setup\SUT**.

|  |  |
| --- | --- |
| 1. Right click “**MS\_OXWSDLGM\_ServerAdapter.dll”,** and then click **Properties**. |  |
| 1. Click **Unblock,** and then click **OK**. |  |

# Test suite directories

In this section you will find a list of the folder structures that are contained within the **ExchangeServerEASProtocolTestSuites.zip** file.

ExchangeServerEASProtocolTestSuites.zip file contents

|  |  |  |  |
| --- | --- | --- | --- |
| Directory/file | Description | | |
| EULA.rtf | The End-User License Agreement | | |
| ReadMe.txt | A file that contains information about the deployment guide and prerequisite software. | | |
| Exchange Server EAS Protocol Test Suites |  | | |
| - Docs | A directory that contains documents of all protocol test suites. | | |
| - ExchangeEASTestSuiteDeploymentGuide.docx | A file relevant to the protocol test suite deployment guidance | | |
| + MS-XXXX | MS-XXXX Help documentation | | |
| - [MS-XXXX].pdf | The technical specification for the protocol. | | |
| - MS-XXXX \_SUTControlAdapter.chm | Contains information about the SUT control adapter class library such as declaration syntaxes and their description. | | |
| - MS-XXXX \_RequirementSpecification.xlsx | A spreadsheet that outlines all requirements associated with the technical specification. | | |
| - Setup | A directory that contains configuration scripts. | | |
| - Test Suite Client | A directory that contains the configuration script to configure the test suite client. | | |
| - ExchangeClientConfiguration.cmd | A command file that runs the ExchangeClientConfiguration.ps1 file to configure the properties for the protocol test suites. | | |
| - ExchangeClientConfiguration.ps1 | A configuration script that will be triggered by the ExchangeClientConfiguration.cmd. | | |
| - SUT | A folder that contains the configuration script to configure the Exchange Server | | |
| - ExchangeSUTConfiguration.cmd | A command file that runs the ExchangeSUTConfiguration.ps1 file to create resources and configure settings on the SUT. | | |
| - ExchangeSUTConfiguration.ps1 | A configuration script that will be triggered by ExchangeSUTConfiguration.cmd. | | |
| - Source | A folder with Microsoft Visual Studio solutions that contain source code for the test suites. | | |
| - Common | A folder with Microsoft Visual Studio projects that contains source code that are common to the test suites. | | |
| - ExchangeCommonConfiguration.deployment.ptfconfig | The common configuration file. | | |
| - ExchangeServerEASProtocolTestSuites.runsettings | A configuration file used for unit test. | | |
| - ExchangeServerEASProtocolTestSuites.sln | A Visual Studio solution that contains projects of the test suites source code. | | |
| - ExchangeServerEASProtocolTestSuites.testsettings | A configuration file used for running test cases. | | |
| - MS-XXXX | MS-XXXX test suite code directory. | | |
| - MS-XXXX.sln | A Microsoft Visual Studio solution that contains projects of the MS-XXXX test suite. | | |
| - MS-XXXX.runsettings | | A configuration file used for MS-XXXX unit test. |
| - MS-XXXX.testsettings | | A configuration file used for MS-XXXX running test cases. |
| + Adapter | Adapter test suite code. | | |
| + TestSuite | Test suite code. | | |
| - Scripts | Exchange Server EWS test suites can be run using Visual Studio or through batch scripts. The Scripts directory contains a collection of command files that allows users to run specific test cases in the test suite or the entire test suite. | | |
| - RunAllExchangeEASTestCases.cmd | A script that can be used to run all test cases in the whole package. | | |
| - MS-XXXX | A folder containing scripts that belong to the MS-XXXX test suite. | | |
| - RunAllMSXXXXTestCases.cmd | A script that can be used to run all test cases of MS-XXXX. | | |
| - RunMSXXXX\_SXX\_TCXX\_Name.cmd | A script that can be used to run a single test case of MS-XXXX. | | |

# Configuring the test suites

This section provides the necessary guidance to configure the Exchange Server EAS Protocol test suites on the SUT and the test suite client. The configuration should be done in this order: configure the SUT, and then configure the test suite client.

For the configuration script, the exit code definition is as follows:

* A normal termination will set the exit code to 0.
* An uncaught THROW will set the exit code to 1.
* Script execution warning and issues will set the exit code to 2.
* Exit code is set to the actual error code for other issues.

## Configuring the SUT

You can configure the SUT using automated scripts, as described in section [5.1.2](#_Configuring_the_SUT1_2); or configure the SUT manually, as described in section [5.1.3](#_Configuring_the_SUT1).

**Note**   The scripts should be run by a user who has domain administrator rights with a mailbox on Exchange Server.

### SUT resource requirements

Each test suite contained within the Exchange Server EAS Protocol test suites package may require a varying level of resources on Exchange Server. The following table outlines these resources for each test suite. The SUT configuration scripts will automatically create all the required resources for the Microsoft server implementation.To configure the SUT manually, see section [5.1.3](#_Configuring_the_SUT1).

The client configuration script follows the naming convention shown in the following table. If a change to the resource name is required, the corresponding change to the resource name defined in the client configuration script is required.

Exchange server resources

|  |  |  |  |
| --- | --- | --- | --- |
| Test suite | Resource type | Resource name | Note |
| All | -- | -- | -- |
| MS-ASAIRS | User Mailbox | MSASAIRS\_User01 | -- |
|  | User Mailbox | MSASAIRS\_User02 | -- |
| MS-ASCAL | User Mailbox | MSASCAL\_User01 | -- |
|  | User Mailbox | MSASCAL\_User02 | -- |
| MS-ASCMD | User Mailbox | MSASCMD\_UserY | “Y” represents the numerate value count and the value range of Y is from 01 to 19, since 19 mailbox users will be used. |
|  | User Mailbox | MSASCMD\_SearchUser01 | -- |
|  | User Mailbox | MSASCMD\_SearchUser02 | -- |
|  | DistributionGroup | MSASCMD\_TestGroup | -- |
|  | DistributionGroup | MSASCMD\_LargeGroup | -- |
|  | Folder | MSASCMD\_SharedFolder | The folder is shared and read permissions are granted to user MSASCMD\_User01 and denied to user MSASCMD\_User02. |
|  | TextFile | MSASCMD\_Non-emptyDocument.txt | The document should be created under MSASCMD\_SharedFolder be at least 4 bytes in size. |
|  | TextFile | MSASCMD\_EmptyDocument.txt | The document should be created under MSASCMD\_SharedFolder and be empty. |
|  | Picture | MSASCMD\_User01Photo | The file size should be bigger than 1KB. |
|  | Picture | MSASCMD\_User02Photo | The file size should be smaller than 1KB. |
|  | EMail | MSASCMD\_SecureEmailForTest |  |
| MS-ASCNT | User Mailbox | MSASCNTC\_User01 | -- |
|  | User Mailbox | MSASCNTC\_User02 | -- |
| MS-ASCON | User Mailbox | MSASCON\_User01 | -- |
|  | User Mailbox | MSASCON\_User02 | -- |
|  | User Mailbox | MSASCON\_User03 |  |
| MS-ASDOC | User Mailbox | MSASDOC\_User01 | -- |
|  | Folder | MSASDOC\_SharedFolder | The folder is shared and full control should be granted to the specified user MSASDOC\_User01. |
|  | Folder | MSASDOC\_VisibleFolder | The folder should be created under MSASDOC\_SharedFolder. |
|  | Folder | MSASDOC\_HiddenFolder | The folder is hidden and should be created under MSASDOC\_SharedFolder. |
|  | TextFile | MSASDOC\_VisibleDocument | The document should be created under MSASDOC\_SharedFolder. |
|  | TextFile | MSASDOC\_HiddenDocument | The document is hidden and should be created under MSASDOC\_SharedFolder. |
| MS-ASEMAIL | User Mailbox | MSASEMAIL\_User01 | -- |
|  | User Mailbox | MSASEMAIL\_User02 | -- |
|  | User Mailbox | MSASEMAIL\_User03 | -- |
|  | User Mailbox | MSASEMAIL\_User04 | -- |
|  | User Mailbox | MSASEMAIL\_User05 | -- |
| MS-ASHTTP | User Mailbox | MSASHTTP\_User01 | -- |
|  | User Mailbox | MSASHTTP\_User02 | -- |
|  | User Mailbox | MSASHTTP\_User03 | -- |
|  | User Mailbox | MSASHTTP\_User04 | -- |
| MS-ASNOTE | User Mailbox | MSASNOTE\_User01 | -- |
| MS-ASPROV | User Mailbox | MSASPROV\_User01 | -- |
|  | User Mailbox | MSASPROV\_User02 |  |
|  | User Mailbox | MSASPROV\_User03 |  |
|  | Active sync mailbox policy | MSASPROV\_UserPolicy01 |  |
|  | Active sync mailbox policy | MSASPROV\_UserPolicy02 |  |
| MS-ASRM | User Mailbox | MSASRM\_User01 | -- |
|  | User Mailbox | MSASRM\_User02 | -- |
|  | User Mailbox | MSASRM\_User03 | -- |
|  | User Mailbox | MSASRM\_User04 | -- |
|  | User | MSASRM\_ADUser | A domain user and granted AD RMS Enterprise Administrator permission. |
|  | DistributionGroup | MSASRM\_SuperUserGroup | -- |
|  | Distributed Right Policy Template | MSASRM\_AllRights\_AllowedTemplate | Allowed all rights |
|  | Distributed Right Policy Template | MSASRM\_View\_AllowedTemplate | Denied all rights except View |
|  | Distributed Right Policy Template | MSASRM\_ViewReplyAll\_AllowedTemplate | Allowed View and ReplyAll |
|  | Distributed Right Policy Template | MSASRM\_ViewReply\_AllowedTemplate | Allowed View and Reply |
|  | Distributed Right Policy Template | MSASRM\_ViewReplyReplyAll\_AllowedTemplate | Allowed View, Reply, and ReplyAll |
|  | Distributed Right Policy Template | MSASRM\_EditExport\_NotAllowedTemplate | Allowed all rights except Edit and Export |
|  | Distributed Right Policy Template | MSASRM\_Export\_NotAllowedTemplate | Allowed all rights except Export |
|  | Distributed Right Policy Template | MSASRMReplyAll\_NotAllowedTemplate | Allowed all rights except ReplyAll |
| MS-ASTASK | User Mailbox | MSASTASK\_User01 | -- |
| MS-ASWBXML | -- | -- | -- |

### Configuring SUT using the setup configuration script

The setup configuration script is only used for configuring Exchange Server on the Windows platform.

To configure SUT using the setup configuration script, navigate to the **SUT** folder, right-click **ExchangeSUTConfiguration.cmd** and select **Run as administrator**.

### Configuring SUT manually

If the SUT is a non-Microsoft implementation of Exchange Server, you will not be able to run the setup configuration script. The following steps explain what needs to be created or configured on the SUT in order to run the test suites.

1. Create the following mailbox users:

MSASAIRS\_User01, MSASAIRS\_User02, MSASCAL\_User01, MSASCAL\_User02, MSASCMD\_UserY, MSASCMD\_SearchUser01, MSASCMD\_SearchUser02, MSASCNTC\_User01, MSASCNTC\_User02, MSASCON\_User01, MSASCON\_User02, MSASCON\_User03, MSASDOC\_User01, MSASEMAIL\_User01, MSASEMAIL\_User02, MSASEMAIL\_User03, MSASEMAIL\_User04, MSASEMAIL\_User05, MSASHTTP\_User01, MSASHTTP\_User02, MSASHTTP\_User03, MSASHTTP\_User04, MSASNOTE\_User01, MSASPROV\_User01, MSASPROV\_User02, MSASPROV\_User03, and MSASTASK\_User01

1. Create the mailbox user MSASCMD\_UserY specified in the SUT resource requirements table in section 5.1.1.
2. Add a delegate of MSASCMD\_User07 to MSASCMD\_User08, and also add a delegate of MSASEMAIL\_User04 to MSASEMAIL\_User05., The delegated user will be granted Edit permissions on Calendar, Tasks, Inbox, Contacts, Notes and Journal.
3. Set the following properties for MSASCMD\_User01.

* SamAccountName: "MSASCMD\_User01"
* GivenName: "MSASCMD\_FirstName"
* Surname: "MSASCMD\_LastName"
* Office: "D1042"
* Company: “MS”
* Title: “Manager”
* HomePhone: “22222286”
* OfficePhone: “55555501”
* MobilePhone: “8612345678910”

1. Create the following distribution groups:   
   MSASCMD\_TestGroup, MSASCMD\_LargeGroup, MSASRM\_SuperUserGroup.
2. Create two ActiveSync mailbox policies MSASPROV\_UserPolicy01 and MSASPROV\_UserPolicy02
3. Create a shared folder MSASCMD\_SharedFolder. Also, remove read permissions to MSASCMD\_User02. Under the folder MSASCMD\_SharedFolder, create a non-empty document named MSASCMD\_Non-emptyDocument.txt, and an empty document named MSASCMD\_EmptyDocument.txt.

**Note** The file size of MSASCMD\_Non-emptyDocument.txt should be at least 4 bytes.

1. Create a shared folder named MSASDOC\_SharedFolder. Also, grant full control to MSASDOC\_User01. Under the folder MSASDOC\_SharedFolder, create a hidden folder named MSASDOC\_HiddenFolder, a visible folder named MSASDOC\_VisibleFolder, a hidden document named MSASDOC\_HiddenDocument.txt, and a visible document MSASDOC\_VisibleDocument.txt.

**Note** The document MSASDOC\_HiddenDocument.txt and MSASDOC\_VisibleDocument.txt should not be empty.

1. Grant local administrator permissions to the following mailbox users:  
   MSASCMD\_User03, MSASHTTP\_User04, MSASPROV\_User01
2. Grant administrator permissions to the SUT for the following mailbox users:

MSASCMD\_User03, MSASPROV\_User01.

1. Grant distribute message permissions to the group MSASCMD\_TestGroup, and add the following mailbox users into the group:

MSASCMD\_User01, MSASCMD\_User02.

1. Grant distribute message permissions to the group MSASCMD\_LargerGroup, and add 19 mailbox users specified in MSASCMD\_UserY section 5.1.1, MSASCMD\_SerachUser01, and MSASCMD\_SearchUser02 into the group MSASCMD\_LargerGroup.
2. Apply the following policy settings for the Mobile Device mailbox policy MSASPROV\_UserPolicy02. The value of *Allow non-provisionable devices* must be set to false, while the value for other properties listed below are not restricted.

* Allow non-provisionable devices
* Password expiration (days)
* Maximum attachment size (KB)
* Number of failed attempts allowed
* Time without user input before password must be re-entered (in minutes)
* Minimum password length
* Blocked applications
* Allowed applications

1. Set the mailbox policy MSASPROV\_UserPolicy01 MSASPROV\_User01 and MSASPROV\_UserPolicy02 to MSASPROV\_User02.
2. Enable the setting of moving meeting forward notification email to Deleted Items for MSASCMD\_User01 and MSASHTTP\_User03.
3. Disable ActiveSync for MSASCMD\_User04.
4. Add an SMTP email address to MSASCMD\_User01.
5. Configure external URL of ActiveSync virtual directory on the server.
6. Configure the web site which contains the application that implements the EAS protocols.
7. Configure Secure Sockets Layer (SSL) as not required and ignore client certificates on the following sites: Default Web Site, Server ActiveSync website, and Autodiscover website.
8. Configure Certificate Authority and Certificate Authority Web enrollment services.
9. Create and export a user certificate named MSASCMD\_PfxFile to be able to send a secure email to MSASCMD\_User03.
10. MSASCMD\_User03 should send an email to MSASCMD\_User09.  
    ***Note*** *The subsequent steps in this procedure are only necessary for Exchange Server 2010 or Exchange Server 2013.*
11. Add the photo MSASCMD\_User01Photo.jpg to MSASCMD\_User01 and MSASCMD\_User02Photo.jpg to MSASMCD\_User02.
12. Create a user named MSASRM\_ADUser.
13. Create a local group named AD RMS Enterprise Administrators and add the user MSASRM\_ADUser into this group.
14. Create mailbox users MSASRM\_User01, MSASRM\_User02, MSASRM\_User03, and MSASRM\_User04.
15. Grant local administrator permission to MSASRM\_User04.
16. Create a distribution group named MSASRM\_SuperUserGroup.
17. Install the Active Directory Right Management Service (AD RMS) role .
18. Configure the website which contains the application that implements the EAS protocols.
19. Configure Secure Sockets Layer (SSL) as not required and ignore client certificates on the following sites:  
    Default Web Site/\_wmcs Default Web Site/\_wmcs/admin   
    Default Web Site/\_wmcs/certification Default Web Site/\_wmcs/licensing
20. Add Read and Execute permission for the groups Users, Product Servers, and AD RMS Service Group on the ServerCertification.asmx file.
21. Add Read and Execute permission for the group Product Servers on the license.asmx file.
22. Add RMS shared identity user into the distribution group MSASRM\_SuperUserGroup.
23. Set MSASRM\_SuperUserGroup as the super user group.
24. Create the following distributed rights policy templates:

|  |  |
| --- | --- |
| Template Name | Rights |
| MSASRM\_View\_AllowedTemplate | View and View Rights |
| MSASRM\_ViewReplyAll\_AllowedTemplate | View, Reply All, and View Rights |
| MSASRM\_ViewReply\_AllowedTemplate | View, Reply, and View Rights |
| MSASRM\_ViewReplyReplyAll\_AllowedTemplate | View, Reply, Reply All, and View Rights |
| MSASRM\_EditExport\_NotAllowedTemplate | View, Print, Forward, Reply, Reply All, Extract, Allow Macros, and View Rights |
| MSASRM\_Export\_NotAllowedTemplate | View, Edit, Save, Print, Forward, Reply, Reply All, Extract, Allow Macros, View Rights, and Edit Rights |
| MSASRMReplyAll\_NotAllowedTemplate | View, Edit, Save, Export, Print, Forward, Reply, Extract, Allow Macros, View Rights, and Edit Rights |
| MSASRM\_AllRights\_AllowedTemplate | View, Edit, Save, Export, Print, Forward, Reply, Reply All, Extract, Allow Macros, View Rights, and Edit Rights |

1. Configure IRM features to enable licensing for internal messages.
2. Enable IRM features to allow the client to access the SUT.

## Configuring the test suite client

The test suite client is managed through a common configuration file, two test suite-specific configuration files, and three SHOULD/MAY configuration files that all have a “.ptfconfig” extension. These configuration files can be modified directly. The common configuration file and the test suite-specific configuration files can also be modified through a script.

### Common configuration file

The common configuration file contains configurable properties common to all Exchange Server EAS Protocol test suites. This file must be modified to match the characteristics of the environment where the test suites are installed.

|  |  |
| --- | --- |
| **Configuration file** | **Description** |
| ExchangeCommonConfiguration.deployment.ptfconfig | The deployment configuration file provides the environmental details that are common to the test suites. |

### Test-suite specific configuration files

In addition to the common configuration file, each individual test suite has the following two configuration files for test suite-specific modification.

Test-suite specific configuration files

|  |  |
| --- | --- |
| Configuration file | Description |
| MS-XXXX\_TestSuite.deployment.ptfconfig | The deployment configuration file provides the environmental details that are specific to the test suite. The configuration file allows for test suite-specific customization. |
| MS-XXXX\_TestSuite.ptfconfig | The test suite configuration file contains details that specify the behavior of the test suite operation. |

Both files are present in the TestSuite folder inside each test suite directory.

If you need to modify the common configuration values for a specific test suite, you must copy the common properties to the **MS-XXXX\_TestSuite.deployment.ptfconfig** file and change the values of the properties. The specific configuration file will take precedence over the common configuration file when the same property exists in both places.

#### Set the test suite to interactive mode

If the SUT is a non-Microsoft implementation of Exchange Server, it is recommended that you further configure the test suite by setting the test suite to interactive mode. Interactive mode enables the test suite to function in a manual way, enabling you to perform setup, teardown, and other tasks in a step-by-step approach. To enable interactive mode for a specific test suite, do the following:

1. Browse to the **MS-XXXX\_TestSuite.ptfconfig** configuration file within the **\Source\MS-XXXX\TestSuite\**.
2. Set the type value of Adapter property to **interactive** for the SUT control adapter\*\*.

Interactive mode values

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Default value\* | Optional value | Description |
| Adapter | managed or powershell | interactive\*\* | **managed**:  The SUT control adapter is implemented in C# managed code.  **powershell**:  The SUT control adapter is implemented through Windows PowerShell.  **interactive**:  Interactive adapters are used for manually configuring a server. Interactive adapter displays a dialog box to perform a manual test each time one of its methods is called. The dialog box will show the method name, parameter names, and values\*\*\* |

\**The Adapter property value is set to either managed or powershell depending on whether the SUT control adapter was implemented in managed C# code or through PowerShell.*

\*\* *When changing to interactive mode from managed mode, the “adaptertype” attribute must be deleted to avoid a runtime error. When changing to interactive mode from powershell mode, an additional step is required—delete the “scriptdir” attribute to avoid a runtime error.*

\*\*\**When the manual operation completes successfully, enter the return values (if any) in* ***Action Results*** *and click* ***Succeed*** *in the dialog-box. When the manual operation is unable to complete, enter the error messages in the* ***Failure Message*** *text box and click* ***Fail*** *to terminate the test. In this case, the test will be treated as “Inconclusive”.*

Further customization can be done by creating your own SUT control adapter that matches the server implementation. For more information about how to create a SUT control adapter, see the Protocol Test Framework (PTF) user documentation.

#### Configure TSAP broadcast

Test Session Announcement Protocol (TSAP) is used by PTF to broadcast test information when the test suite is running. TSAP broadcasts helps in mapping test cases to captured frames.

By default, TSAP packets are broadcasted in the network. User can change a TSAP broadcast by adding an entry “BeaconLogTargetServer” to TestSuite.deployment.ptfconfig to target the TSAP only to the specified machine.

To change the TSAP packet broadcast, do the following:

1. Browse to the **MS-XXXX\_TestSuite.deployment.ptfconfig** configuration file in the **\Source\MS-XXXX\TestSuite\** folder.
2. Add a property “BeaconLogTargetServer” along with the value of the specified machine name.

For example: <Property name="BeaconLogTargetServer" value="dc01" />

### SHOULD/MAY configuration files

The test suite has three SHOULD/MAY configuration files that are specific to all supported versions of the SUT. Each SHOULD/MAY requirement have an associated parameter with a value of either “true” or “false” corresponding to the server version that is supported. “true” represents that the requirement must be validated, whereas “false” means that the requirement must not be validated.

If the SUT is a non-Microsoft implementation of Exchange Server, configure the properties in the configuration file for the Exchange Server which is the closest match to the SUT implementation.

SHOULD/MAY configuration files

|  |  |
| --- | --- |
| Configuration file | Description |
| MS-XXXX\_ExchangeServer2007\_SHOULDMAY.deployment.ptfconfig | Provides the configuration properties for SHOULD and MAY requirements supported by Microsoft Exchange Server 2007 Service Pack 3 (SP3). |
| MS-XXXX\_ExchangeServer2010\_SHOULDMAY.deployment.ptfconfig | Provides the configuration properties for SHOULD and MAY requirements supported by Microsoft Exchange Server 2010 Service Pack 3 (SP3). |
| MS-XXXX\_ExchangeServer2013\_SHOULDMAY.deployment.ptfconfig | Provides the configuration properties for SHOULD and MAY requirements supported by Microsoft Exchange Server 2013 Service Pack 1 (SP1). |

### Configuring the test suite client using setup configuration script

**Note** The setup configuration script is only implemented for configuring the test suite client on the Windows platform.

To configure the test suite using the setup configuration script, navigate to the **Setup\Test Suite Client**\ folder, right-click **ExchangeClientConfiguration.cmd** and select **Run as administrator.**

### Configuring the test suite client manually

If you didn’t use the setup configuration script to configure the test suite client as described in the previous section, follow the steps below to update configuration files and configure the test suite client.

1. Update the property value in the common configuration file and the test suite-specific configuration files according to the comment of the property.
2. By default, the test suites use PowerShell script in the SUT control adapter to configure the SUT. If you chose interactive mode for the SUT control adapter as described in section [5.2.2.1](#_Set_the_test), skip this step.
3. Set the execution policy to **RemoteSigned**.
4. Add the SUT to TrustedHosts to ensure that the Windows Remote Management (WinRM) client can process remote calls against the SUT when the test suite client is not joined to the domain.

# Running test suites

Once the required software has been installed and both the SUT and test suite client have been configured appropriately, the test suite is ready to run. The test suite can run only on the test suite client and can be initiated in one of the following two ways: Visual Studio or batch scripts.

## Microsoft Visual Studio

A Microsoft Visual Studio solution file **ExchangeServerEASProtocolTestSuites.sln** is provided in the **Source** folder. You can run a single or multiple test cases in Visual Studio.

|  |  |
| --- | --- |
| 1. Open **ExchangeServerEASProtocolTestSuites.sln** in Visual Studio |  |
| 1. In the **Solution Explorer** pane, right-click **Solution ‘ExchangeServerEASProtocolTestSuites’**, and then click **Rebuild Solution**. |  |
| 1. Open **Test Explorer**. On the ribbon, click **TEST** then click **Windows**, and finally click **Test Explorer**. |  |
| 1. Select the test case to run. Right-click and then select **Run Selected Tests**. |  |

A Visual Studio solution file **MS-XXXX.sln** is provided in each test suite folder.

|  |  |
| --- | --- |
| 1. Select the test suite you would like to run. Let’s take MS-ASDOC as an example here, so browse to the **Source\MS-ASDOC** directory. | |
| 1. Open **MS-ASDOC.sln** in Visual Studio. |  |
| 1. In the **Solution Explorer** pane, right-click **Solution ‘MS-ASDOC’**, and then click **Rebuild Solution**. |  |
| 1. Open Test Explorer. On the ribbon, click **TEST**, then click **Windows**, and finally click **Test Explorer**. |  |
| 1. Select the test case to run. Right-click and then select **Run Selected Tests**. |  |

## Batch scripts

Exchange Server EAS Protocol test suites are installed with a collection of scripts that enable a user to run individual test cases (RunMSXXXX\_SXX\_TCXX\_Name.cmd) or all test cases in a test suite (RunAllMSXXXXTestCases.cmd), or all test cases of Exchange Server EAS Protocol test suites at once (RunAllExchangeEASTestCases.cmd). These scripts can be found in the **\Source\Scripts** directory.

**Note**   These scripts depend on having the compiled binaries in the bin folder.

|  |  |
| --- | --- |
| **Batch script** | **Script description** |
| RunAllExchangeEASTestCases.cmd | Runs all the test cases within the Exchange Server EAS Protocol test suites. |
| RunAllMSXXXXTestCases.cmd | Runs all MS-XXXX test cases. |
| RunMSXXXX\_SXX\_TCXX\_Name.cmd | Runs a specific test case within the test suite. |

# Test suite results, logs, and reporting

The test suites provide detailed reporting in a variety of formats that will enable users to quickly debug failures.

## Test suite configuration logs

The configuration logs contain information about whether each configuration step succeeds or not, and detail error information if the configuration step fails.

### SUT configuration logs

The SUT configuration scripts create a directory named **SetupLogs** under **…\Setup\SUT\** at runtime.The SUT configuration scripts save the logs as “ExchangeSUTConfiguration.ps1.debug.log” and “ExchangeSUTConfiguration.ps1.log”.

### Test suite client configuration logs

The configuration scripts create a directory named **SetupLogs** under **…\Setup\Test Suite Client\** at runtime.The test suite client configuration scripts save the logs as “ExchangeClientConfiguration.ps1.debug.log” and “ExchangeClientConfiguration.ps1.log”.

## Test suite reports

### Microsoft Visual Studio

Reports are created only after the package level solution or an individual test suite solution has run successfully in Visual Studio.

* Reporting information for **ExchangeServerEASProtocolTestSuites.sln** is saved in **…\Source\TestResults**.
* Reporting information for an individual test suite **MS-XXXX.sln** is saved in **…\Source\MS-XXXX\TestResults**.

### Batch scripts

If the Exchange Server EAS Protocol test suites are run by the RunAllExchangeEASTestCases.cmd batch file, the reporting information is saved in **…\Source\Scripts\TestResults**.

If the test suite is run by the batch file RunAllMSXXXXTestCases.cmd or RunMSXXXX\_SXX\_TCXX\_Name.cmd, the reporting information is saved in **…\Source\Scripts\MS-XXXX\TestResults.**

By default, a .trx file containing the pass/fail information of the run is created in the TestResults folder, along with an associated directory named **user\_MACHINENAME DateTimeStamp** that contains a log file in XML format and an HTML report.

# Appendix

For more information, see the following:

|  |  |
| --- | --- |
| References | Description |
| [dochelp@microsoft.com](mailto:dochelp@microsoft.com) | Alias for Interoperability documentation help. Provides support for the Open Specifications and protocol test suites. |
| [Open Specifications Forums](http://go.microsoft.com/fwlink/?LinkId=111125) | Microsoft Customer Support Services forums. Actively monitored forums provide support for the Open Specifications and protocol test suites. |
| [Open Specifications Developer Center](http://go.microsoft.com/fwlink/?LinkId=254469) | Open Specifications home page on MSDN |
| [Open Specifications](http://go.microsoft.com/fwlink/?LinkId=179743) | Open Specifications documentation on MSDN |
| [Exchange Products and Technologies Protocols](http://go.microsoft.com/fwlink/?LinkId=119904) | Exchange Server Open Specifications documentation on MSDN |
| [RFC2119](http://go.microsoft.com/fwlink/?LinkId=117453) | Normative language reference |
| [Exchange Server 2013 deployment](http://go.microsoft.com/fwlink/?LinkID=266569) | Exchange Server 2013 planning and deployment on TechNet |
| [Exchange Server 2010 deployment](http://go.microsoft.com/fwlink/?LinkID=517397) | Exchange Server 2010 planning and deployment on TechNet |
| [Exchange Server 2007 deployment](http://go.microsoft.com/fwlink/?LinkID=512508) | Exchange Server 2007 deployment on TechNet |
| [Exchange Server 2016 deployment](https://technet.microsoft.com/en-us/library/aa998636(v=exchg.160).aspx) | Exchange Server 2016 planning and deployment on TechNet |