November 29th, 2017
Version 3.5

USER GUIDE

Edge Testing Tool

Table of Contents

1.0 OVERVIEW 3
2.0 TESTING CONFIGURATION FOR EDGE SYSTEM 4
3.0 DIRECT – SYSTEM UNDER TEST (SUT) SENDING 7
4.0 SENDING DIRECT MESSAGES TO THE ETT 8
5.0 SENDING MESSAGES FROM THE EDGE TESTING TOOL TO A SYSTEM UNDER TEST 10
6.0 USING THE EDGE TESTING TOOL MESSAGE STATUS TOOL 12
7.0 SMTP TESTING 13
8.0 SMTP MESSAGE TRACKING 36
9.0 IMAP TESTING 45
10.0 POP3 TESTING 55
11.0 XDR TESTING 64
12.0 XDR MESSAGE TRACKING 86
13.0 XDR TESTS UNDER HISP 106
14.0 MESSAGE VALIDATORS 122
15.0 2015 EDITION TESTING BY CRITERIA 125
16.0 2015 DIRECT CERTIFICATE DISCOVERY TOOL 126
17.0 2015 EDITION SURVEILLANCE TESTING 127

1.0 OVERVIEW

Edge Testing Tool

The Edge Testing Tool (ETT) is a collection of testing utilities originally designed by NIST to test only network "Edge" capabilities. Over time, the ETT assumed HISP and other transport testing abilities, along with C-CDA and content validation utilities. The Edge Testing Tool software is open source and available for download.

Purpose

The purpose of this guide is to provide instruction in how to use the ETT and provide additional information on how to execute each test case.

An Edge System or HISP user can leverage the Edge Test Tool (ETT) to test Direct, Direct + XDM, or XDR and the ETT against the four Edge Protocols. To maintain security while exchanging XDR message information and authentication/authorization data, the ETT implements TLS and SAML.

Access

The ETT can be deployed in three different ways:

- **Web –** The production version of the ETT is accessible online through the following link: www.healthit.gov/ETT. Any product version updates will be published on the announcements page.
- **Local –** A downloadable and executable instance of the ETT is available for use. Please refer to ETT Local Installation and Configuration for further details.
- **Amazon Machine Image (AMI) –** Virtual images that are implemented in the Amazon Cloud that can be setup and configured for local use. After implementation, updates will be added here to keep the AMI interface current.

2.0 TESTING CONFIGURATION FOR EDGE SYSTEM

This section guides the user through the necessary configuration and preparation steps for a web application Profile creation and Test Case execution.

Registration

1. Navigate to the **ETT Home Page**, then **Edge Home**, and select any **Edge Testing** panel (SMTP, Message Tracking, IMAP, POP3, or Validation Report.

2. Click **Login/Sign up** and then **Sign up** to create a unique user account within the ETT. Enter a **Username** email address, **Password**, **Repeat Password,** and then click **Sign Up**.

3. Before executing any tests within the ETT, **Login** using the credentials created during **Sign Up**. A success message will appear upon successful Sign Up and Logout.

4. If either the login **Username** or **Password** is entered incorrectly, an error message will appear prompting the user to re-enter credentials. There are two options to reset your password.

5. To reset an ETT account **Password**, click the "**Forgot password"** link within the **Login** prompt box. This action sends a temporary password to the username's email address.

> ***Note**: The user account **Password** reset is a self-service feature within the ETT. No ETT administrator assistance is required.*

Configuration Steps

In order to operate the ETT as intended and generate expected/successful testing results per Test Case executed, the user must perform the following series of steps.

2.2.1 Profile Creation

To create a Profile for ETT:

1. From the **Edge Testing Tool Homepage**:
    a. **Select Edge Testing**.
    b. Select **SMTP Test Cases** from the navigation bar.
    c. Select **Default Profile**, type in a profile name.

2. Select either the **Sender** or **Receiver** testing role for the SUT.

3. From the testing **Profile**, enter the:

Profile Data Field	Description
Profile Name	The Profile name can be edited and customized based on testing needs by the user. This feature can be accessed by clicking on the Profile header. Saved Profiles can be accessed from within the ETT account created during sign up/registration.
SMTP Hostname / IP	SMTP or IP address of the user's email server. This should directly connect with the user SMTP Email Address
SMTP Email Address	User SMTP Email Address should correspond to the user SMTP Hostname / IP. This email address will be used to send/receive ETT SMTP Test Case validation messages.
SMTP Username and Password	These should correspond to the user SMTP Email Address. The username and password are mainly used for authentication-based Test Cases so the ETT can login to the SUT.

4. Before saving a Profile, assign a unique name (the default Profile name is **Default Profile**). Click the Profile name, delete the existing text, and type a new name. Upon population of the testing Profile, click **Save**. To delete a saved Profile, click **Remove.**

5. A successful message will appear upon successful **Save** or **Remove**.

6. Saved **Profiles** can be retrieved and applied to subsequent/future tests by selecting the target **Profile** from the drop-down menu.

2.2.2 Reporting

During a testing session, the user can review a high-level synopsis of all Test Cases executed through the **Edge Home** tab, **Validations Reports** tab on the navigation bar.

Within the **Validation Reports** tab, tests are organized by ETT testing Profiles. For reference, the **SUT SMTP Address** and **SUT Email Address** configured for each Profile are displayed. For a given testing session, the total number of ETT testing Profiles used will be displayed within the **Validation Reports** tab. You must be logged into your smtp/xdr profiles.

By clicking on **Show Report**, the user is given the Test Case executed, a timestamp of when the test was run, and success or failure of each test. The log for each executed Test Case provides detailed information, including evidence to support success or failure.

Documentation

Documentation relevant to the ETT, including this ETT User Guide, CCDA/C32/CCR samples and test data package, the ONC 2015 test procedures and companion guides, and other development-related artifacts are available in the **Documents** section, accessible from the navigation bar.

Guides

- Edge Testing Tool User Guide
- Slides from 2015 Edition ETT Detailed Training

Samples

- 2015 Edition C-CDA Test Data Package
- C32/CCR Samples
- Miscellaneous Samples

Documents

- 2015 Test Procedures and Companion Guides
- Local Installation Guide
- Installing using the AMI (Amazon Machine Image)

3.0 DIRECT – SYSTEM UNDER TEST (SUT) SENDING

Within the following Test Cases, tests are executed from the following actor perspective:

Test Actor	Testing Role
SUT	Sends test message in alignment with Testing Procedures and Conformance Test Details
ETT	Receives test message and validates alignment with Testing Procedures and Conformance Test Details

Register a Direct Contact Address

1. To register a Direct web address within the ETT environment, users must navigate to the ETT Home Page and click on **Direct Testing**.

2. On the **Register Direct** tab, users will be asked to provide a Direct Email Address. Users who do not register their Direct web address will not be recognized by the ETT and therefore will be unable to send or receive Direct or Direct/XDM messages.

3. Once users have registered, they will be placed on a list of approved email addresses from which the ETT will accept messages. After user registration is complete and email addresses are successfully created/ added, navigate back to the Home Page.

4.0 SENDING DIRECT MESSAGES TO THE ETT

Send a Direct Message to the ETT

Sending messages via Direct is the required mechanism for Message Tracking (MT) outlined by the Objectives contained within the 2014/2015 Edition of the ONC Standard s & Certification Criteria. The prerequisite to sending messages to the ETT via Direct is registering a Direct email address. To register a Direct From email address, refer to Section 3.0 of this User Guide.

Once registered with the ETT:

1. From the Direct Home tab, select Message format, Document and Direct (To) address from the list under content validation.
2. The sender will include the public key signing certificate in messages sent to the ETT.
3. The sending content will automatically be validated and a validation report will be sent to the contact email address entered during sign up/registration.
4. Enter the manage contact email addresses (for receipt of validation report)
5. Compose an email with the direct to: ETT address.

Send a Direct + XDM Message to the ETT

The prerequisite to sending messages to the ETT via Direct + XDM is registering a Direct email address. To register a Direct email address, refer to Section 3.0 of this User Guide.

1. Once registered with the ETT, select the appropriate document and filename to send. The sent content will automatically be validated.
2. A validation report will be sent to the contact email address entered during sign up/registration.
3. Select the Direct email addresses to send the content. The object validation and reference file must match – this will send the validation report.

Send a XDR Message to the ETT

> ***Note**: Users utilizing the XDR send and receive features of the ETT do not need to pre-register on the Register Direct tab. However, users will **need to register their endpoints** used to access the ETT. This will be completed at the time of message sending and/or receiving. Because the process is interactive, the validation results are displayed on the user's screen, so there is no need to register a contact email address.*

Sending messages via XDR is a mechanism for Message Tracking (MT). Unlike the previous mechanisms, Direct and Direct + XDM, XDR allows a user to make a remote function call over the internet using the same process one would for a normal web address.

There are two Objectives for which a user can send messages via XDR:

- Transitions of Care (*Ambulatory*)
- Transitions of Care (*Inpatient*)

5.0 SENDING MESSAGES FROM THE EDGE TESTING TOOL TO A SYSTEM UNDER TEST

A user may receive CCR, CDA, and/or C32 files from the ETT via Direct messages**.** The process to receive Direct messages is outlined below.

ONC's Standards & Certification Criteria 2015 Edition, includes three mechanisms in which users can receive messages with CCR, C-CDA, or C32 attachments from the ETT:

Table 1: ETT Message Receiving

Send a Direct Message From ETT to a System Under Test

From the Home Page, click **Direct Testing**, and then click on the **Send Direct Message** tab on the toolbar.

1. Data input into the **Direct From Address** field must align with the address the SUT is expecting to receive email from. The MDN will be sent back to the ETT using this address and the associated name will appear in the From field of the message sent.

2. In the **Direct To Address** field, input the Direct address where the message will be sent. This field will only accept one email address; not multiple. Send a Direct message with the attached C-CDA document to an authorized email addresses.

3. Complete the **Subject** line and enter a **Text Message**, if desired.

4. Select from one of the six samples within the **Choose document to be sent** as the message content pull-down menu. There are two C-CCDA, two CCR and two C32 samples to select from. Or, you may **Upload your own CCDA** by clicking the **Upload File** button or **Drag and Drop** your file into the upload box. There is an XDM version for each of the samples. Do not select samples ending with "…_in_XDM.ZIP".

5. Select a message format of **Wrapped** or **Unwrapped**. These actions will either wrap (or not) a message according to RFC 5751. All applications must support Unwrapped. Wrapped is optional.

6. Select the **Signing Certificate** or select **message with invalid digest** (message which has been altered).

7. Select the **Encryption Certificate**.

8. Click the **Send** button to send the Direct message.

9. Verify the MDN was received using the instructions within this User Guide.

Send a Direct + XDM Message to a System Under Test

A user may receive CCR, C-CDA, and/or C32 attachments from the ETT via Direct + XDM. The process to receive Direct + XDM messages is outlined below.

1. From the ETT Home Page, click **Direct Testing**, and then click on the **Send Direct Message** tab. When the ETT is sending a Direct message to a SUT, no validation report will be sent to the SUT's contact email address.

2. In the Direct **From** Address field, this must be the address the SUT is expecting to receive mail from. The MDN will be sent back to ETT using this address and this name will appear in the message sent in the **From** field.

3. In the Direct **To Address** field, input the Direct address where the message will be sent. This field will only accept one email address; not multiple. Send a Direct message with the attached C-CDA document to an authorized email addresses.

4. Complete the **Subject** line and enter a **Text Message**, if desired.

5. Select from one of the six samples within the **Choose document to be sent as the message content** pull-down menu. There are two C-CCDA, two CCR and two C32 samples to select from. Or, you may **Upload your own CCDA** by clicking the **Upload File** button or **Drag and Drop** your file into the upload box. There is an XDM version for each of the samples. Select samples ending with "…_in_XDM.ZIP"

6. Select a message format of **Wrapped** or **Unwrapped**. These actions will either wrap (or not) a message according to RFC 5751. All applications must support Unwrapped. Wrapped is optional.

7. Select the **Signing Certificate** or select **message with invalid digest** (message which had been altered).

8. Select the **Encryption Certificate**.

9. Click the **Send** button to send the Direct message.

10. Verify the MDN was received using the instructions within this User Guide.

6.0 USING THE EDGE TESTING TOOL MESSAGE STATUS TOOL

The Message Status tool is available for the validation of incoming and outgoing Direct messages. To use the tool, the user needs to be logged into the Edge Test Tool with the account used during registration.

1. The **Message Status** tool has a slider tool that allows the user to view **Incoming** and **Outgoing** DIRECT messages for validation.
2. **Incoming messages**: The messages are listed using the message 'From' address that was registered for the user account.
    a. An example for use, send a message from the SUT, with the registered account to one of the Direct (To) Addresses listed under Content Validation after selecting the CCDA R2.1 document type on the Edge Test Tool – DIRECT Home page. The messages are listed in order they are received, with an increment counter to show the number of messages received from that address.
    b. Selecting the address will open the list array of messages received from your address. If the counter hasn't changed after sending a message, selecting the **Reload** button will force the page to reload, checking for new messages.
    c. Selecting the message from the list, using the Message ID column, will open the **Validation Report** for that specific message.
3. **Outgoing messages:** The messages are listed using the message 'To' address, using the sent address that was registered during user setup.
    a. An example for use, send a message from the 'Send Direct Message' tool on the Edge Test Tool – DIRECT portal. The 'To' address will be listed under the **Outgoing** Message Status option.
    b. Selecting the 'To' address in the list on the page will open the 'From' details, along with the Message ID, Time, and Status. The messages are list in order they are sent, with an increment counter to show the number of massages received from that address. If the counter hasn't changed after sending a message, selecting the **Reload** button will force the page to reload, checking for new messages.
    c. A message validation report is available for successful transmissions by selecting the message from the Status column. Messages with errors will not have a validation report available.

7.0 SMTP TESTING

SMTP Test Cases

> ***Note**: Within the ETT User Interface (UI), SMTP Test Cases 8, 14, and 18 are condensed into a single executable test. Therefore, the testing steps performed for these Test Cases are consistent across the set.*

7.1.1 EDGE - SMTP Test Cases 8, 14, 18 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can initiate and execute the correct sequence of SMTP protocols and commands needed to successfully establish a connection with a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and create a single new message. This message must be accurately formed and in the correct syntax. The SUT will send the message to the target ETT endpoint recipient: wellformed1@ttpedge.sitenv.org . The SUT will attempt to initiate a secure connection with the ETT based on the STARTTLS protocols.

2. The user validates that the SUT successfully transmitted the message, executed the correct sequence of STARTTLS protocols and commands to establish a secure connection with the ETT, received the correct STARTTLS response command, and conformed to the specified requirements within RFC 2487, Section 5.

This is a conditional test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.2.3 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 14 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and §170.314(b)(8) – 3.01 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.1.1 Testing Steps

To execute SMTP Test 8, 14, 18 and assess the SUT's ability to accurately create a conformant message and establish a secure connection with the ETT through using the correct sequence of STARTTLS protocols and commands, the user must perform the following steps:

> Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

Test Navigation: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

2. To initiate SMTP Test Case 14 (in ETT UI as SMTP Test 8, 14, 18), the user navigates to the Test Case's execution interface.

3. To gain additional information concerning SMTP Test 8, 14, 18's intended purpose (including description and user/SUT roles), click the **More Info** link for the Test Case.

4. SASL authentication credentials for the SUT can be found on the More Info page.

5. With the Profile saved, More Info reviewed, and **SMTP Test 8, 14, 18** selected, the user performs the following test steps:

6. Navigate to the SUT's messaging client/interface for **user SMTP Email Address** (specified in the Profile).

7. Create a single new message and send it to the ETT endpoint recipient wellformed1@ttpedge.sitenv.org.

8. Navigate to the ETT and SMTP Test 8, 14, 18 execution interface.

9. Wait at least 60 seconds from sending the message to allow for successful transmission to the ETT endpoint recipient.

10. Click **Run** to execute the test.

11. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, reference Section 2.0 Testing Configuration for Edge System and Section 2.2.1 Profile Creation of this ETT User Manual to assure that the accurate configurations have been implemented.

12. To validate that the test results conformed to the testing Objective(s) and gain additional information concerning the results or outcome of SMTP Test 8, 14, 18, click the **Logs** link.
13. SMTP Test 18 is accomplished by connecting the SUT to the supplied address in the "More Info" section of the ETT page for this test. This tests the requirements for SASL authentication.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time elapsed**, **Request responses**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.2 SMTP Test Cases 9, 16, and 20 (Receiver)

> ***Note**: Within the ETT User Interface, , SMTP Test Cases 9, 16, and 20 are condensed into a single executable test. Thus, the Testing Steps performed for these Test Cases are consistent across the set.*

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can accept a request from the HISP (i.e., ETT), acting as the sender, to establish a secure connection and execute the needed sequence of SMTP protocols and commands.

The testing details for conformance testing flow are as follows:

1. Using the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will have the header of Testing STARTTLS & PLAIN SASL AUTHENTICATION (Test Cases 9, 16, 20*)* and a CCDA_Ambulatory.XML attachment (attachment contains sample metadata).

4. The user validates that the SUT successfully transmitted the message, the message header and attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the *Direct Edge Protocols* spreadsheet and TP170.314(b)(8) – 5.07, TP170.314(b)(8) – 5.08, and TP170.314(b)(8) – 5.09 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a tester (i.e., user) to view validation results by Profile configured and Test Case(s) executed.*

7.1.2.1 Testing Steps

To execute SMTP Test Case 9 and assess the SUT's ability to accept a request from the ETT to initiate a secure session using SMTP protocols/commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Case 9, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 9's intended purpose (including Description, User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 9** selected, the user performs the following Test Steps:

    - Click **Run** to execute the test.
    - Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    - Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    - Check the **User SMTP Email Address** to validate that a new message is present.

7. The test will process and render one of two results in the Test Case execution interface:

Pass or **Fail**.

- A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
- A test Fail prompts the user to **Retry** the test.
- The **Clear** button resets the test and any data input field values.
- For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 9, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.3 SMTP Test Case 10 (Receiver – Reject Invalid Data)

The objective of this **negative test** sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can reject invalid data (e.g., bad line feeds) sent from a HISP (i.e., ETT), acting as the sender, as a DATA command component during a secure connection attempt.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. Upon test execution, the user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check to ensure that a new message from the ETT. The presence of a new message indicates a test fail.

3. The user validates that the SUT successfully acknowledged the ETT's invalid DATA command and rejected the connection attempt, successfully rejected the ETT sending endpoint's message transmission attempt, and that testing conformed to the specified requirements within RFC 2821.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 10 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and TP170.314(b)(8) – 5.10 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.3.1 Testing Steps

To execute SMTP Test Case 10 and assess the SUT's ability to successfully acknowledge and reject a connection attempt from a HISP using an invalid DATA command, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Case 10, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 10's intended purpose (including description and user/SUT roles), click the **More Info** link for the Test Case.

With the Profile saved, More Info reviewed, and **SMTP Test 10** selected, perform the following Test Steps:

> ***Note**: The user, in execution of SMTP Test Case 10, should not receive a message in the User SMTP Email Address from the ETT. This is a negative test attempting to assess the capability of the SUT to reject a connection attempt that uses an invalid DATA command. Thus, the SUT should reject the data and terminate the connection before receiving the transmission of a message from the ETT. The presence of an email from this endpoint indicates a test Fail.*

1. Click **Run** to execute the test.

2. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
3. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.

4. Check the **User SMTP Email Address** to validate that a new message is <u>not</u> present from the ETT. (This is a negative test).

5. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For tests with Failed results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

6. To validate that the test results conformed to the testing Objective(s) and gain additional information concerning the results or outcome of SMTP Test 10, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.4 SMTP Test Case 11 (Receiver – Reject Bad Commands)

The objective of this **negative test** sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can reject an invalid command sent from a HISP (i.e., ETT), acting as the sender, during an SMTP session connection attempt.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the User SMTP Hostname/IP, User SMTP Email Address, User SMTP Username, and User Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. Upon test execution, the user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check to assure a new message from the ETT has not been sent. The session should terminate before a message transaction has been sent.

3. The user validates that the SUT successfully acknowledged the ETT's attempt to connect using invalid SMTP commands, successfully rejected the SMTP connection attempt from the ETT, and that testing conformed to the specified requirements within RFC 2821, Sections 4.1.1 and 4.1.4.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 11 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and TP 170.314(b)(1) the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.4.1 Testing Steps

To execute SMTP Test Case 11 and assess the SUT's ability to successfully acknowledge and reject a connection attempt from a HISP using an invalid SMTP commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Case 11, the User navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 11's intended purpose (including description and user/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 11** selected, the user performs the following test steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is not present (this is a negative test).

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.

- A test Fail prompts the user to **Retry** the test.
- The **Clear** button resets the test and any data input field values.
- For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing Objective(s) and gain additional information concerning the results or outcome of SMTP Test 11, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.5 SMTP Test Case 13 (Receiver – Command Timeout)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can successfully initiate, establish, and close an active session with a HISP (i.e., ETT), acting as the sender, in conformance with SMTP timeout specifications.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the User SMTP Hostname/IP, User SMTP Email Address, User SMTP Username, and User Password with accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user will identify the constrainable target timeout duration (represented in seconds) the SUT will be tested against.

3. Upon test execution, the user performing this Test Case will wait for the timeout value entered to expire.

4. The user validates that the SUT successfully initiated and established a SMTP connection with the ETT, the SUT closed the active session per the entered timeout value, and that testing conformed to the specified requirements within RFC 2821, Section 4.5.3.2.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 13 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet TP170.314(b)(8) – 5.13 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.5.1 Testing Steps

To execute SMTP Test Case 13 and assess the SUT's ability to successfully initiate, establish, and close an active SMTP session per specified timeout constraints, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Case 13, the User navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 13's intended purpose (including Description, User/SUT roles), click **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 13** selected, the user performs the following test steps.'
    - On the SMTP Test 13's execution interface, enter the specific timeout threshold to test the SUT against in the **Command Timeout in Seconds** field

7. Click **Run** to execute the test.

8. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.

- For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

9. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 13, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

Note 1: *The user, in execution of SMTP Test Case 13, must enter the timeout threshold value specific to the SUT testing need. RFC 2821, Section 4.5.3.2 does not require specific time dependent testing restrictions. However, examples of testable timeout constraints include:*
Initial 220 Message: 300 seconds
MAIL Command: 300 seconds
RCPT Command: 300 seconds
DATA Initiation: 120 seconds

Note 2*: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The* ***Validation Report*** *represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.6 SMTP Test Case 22 (Receiver - Reject Invalid Username/Password)

The objective of this **negative test** sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can reject an authentication attempt from a HISP (i.e., ETT), acting as the sender, using invalid PLAIN SASL credentials (username/password).

The testing details for conformance testing flow are as follows:

1. The Tester (i.e., User) navigates to the SMTP Test Case Profile and populates the User SMTP Hostname/IP, User SMTP Email Address, User SMTP Username, and User Password with accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case.

2. Upon test execution, the User performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check to assure a new message from the ETT has not been sent. The session should terminate before a message transaction has been sent.

3. The User validates that the SUT successfully acknowledged the ETT's authentication attempt, identified the ETT's invalid PLAIN SASL credentials and rejected the

authentication attempt, and that testing conformed to the specified requirements within RFC 2831 and RFC 4616.

This is a conditional test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.2.4 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 22 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and TP170.314(b)(8) – 5.05 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.6.1 Testing Steps

To execute SMTP Test Case 22 and assess the SUT's ability to reject an authentication connection attempt using invalid PLAIN SASL credentials, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Case 22, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 22's intended purpose (including Description, User/SUT roles), click **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 22** selected, the User performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is not present (this is a negative test).

***Note**: The user, in execution of SMTP Test Case 22, should not receive a message in the User SMTP Email Address from the ETT. This is a negative test attempting to assess the capability of the SUT to reject a connection attempt that uses invalid PLAIN SASL credentials. Thus, the SUT should reject the data and terminate the connection before receiving the transmission of a message.*

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 22, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.7 SMTP Test Cases 25(a)-(f) (Receiver - Text and CCDA, Pdf and CCDA, Text and XDM, CCDA and Text, CCDA and Pdf, and XDM and Text)

The objective of this test series of tests is to determine if an Edge System (i.e., SUT), acting as the receiver, can receive the following from the HISP (i.e., ETT), acting as the sender:

1. 25(a) Text and CCDA attachments;
2. 25(b) Pdf and CCDA attachments;
3. 25(c) Text and XDM attachments;
4. 25(d) CCDA and Text attachments;
5. 25(e) CCDA and Pdf attachments, and
6. 25(f) XDM and Text attachments.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with

accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will have the attachment outline above that is appropriate to each test containing sample metadata.

4. The user validates that the SUT successfully transmitted the message, the message attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements within RFC 2821.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.7.1 Testing Steps

To execute SMTP Test Cases 25(a-f) and assess the SUT's ability to accept attachments, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Cases 25(a-f), the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test Cases 25(a-f) intended purpose (including Description, User/SUT roles), click **More Info** link for the Test Case. An example is below:

6. With the Profile saved, More Info reviewed, and **SMTP Test 25(a-f)** selected, the user performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is present.

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 25(a-f), click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.8 SMTP Test Cases 26(a/b) (Receiver – Receive Bad CCDA)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can accept a request from the HISP (i.e., ETT), acting as the sender, to establish a secure connection, execute the needed sequence of SMTP protocols and commands and receive a bad CCDA.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will contain a CCDA document that either (1) includes a broken reference to a style-sheet or (2) with a good reference to an invalid style-sheet.

4. The user validates that the SUT successfully transmitted the message, the message header and attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements within RFC 2821.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.8.1 Testing Steps

To execute SMTP Test Cases 26(a/b) and assess the SUT's ability to accept a request from the ETT to initiate a secure session using SMTP protocols/commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Cases 26(a-b), the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 26(a-b)'s intended purpose (including Description, User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 26(a/b)** selected, the user performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is present.

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 26(a-b), click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.9 SMTP Test Cases 27 (Receiver – Receive XDM with Bad XHTML)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can accept a request from the HISP (i.e., ETT), acting as the sender, to establish a secure connection, execute the needed sequence of SMTP protocols and commands and receive an XDM package containing a bad XHTML file.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT sending endpoint wellformed1@ttpedge.sitenv.org. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will contain an XDM package containing a bad XHTML file

4. The user validates that the SUT successfully transmitted the message, the message header and attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements within RFC 2821.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.9.1 Testing Steps

To execute SMTP Test Cases 27 and assess the SUT's ability to accept a request from the ETT to initiate a secure session using SMTP protocols/commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Cases 27, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 27's intended purpose (including Description, User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 27** selected, the user performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is present.

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 27, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.10 SMTP Test Case 28 (Receiver - Receive XDM with MIME type 'application/octet-stream')

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can accept a request from the HISP (i.e., ETT), acting as the sender, to establish a secure connection, execute the needed sequence of SMTP protocols and commands and receive an XDM package with MIME-type 'application/octet-stream' at the SMTP layer.

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT sending endpoint wellformed1@ttpedge.sitenv.org. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will contain an XDM package with MIME-type 'application/octet-stream' at the SMTP layer.

4. The user validates that the SUT successfully transmitted the message, the message header and attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements within RFC 2821.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.10.1 Testing Steps

To execute SMTP Test Cases 28 and assess the SUT's ability to accept a request from the ETT to initiate a secure session using SMTP protocols/commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Cases 28, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 28's intended purpose (including Description, User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 28** selected, the user performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is present.

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 28, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note:*** *Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The* ***Validation Report*** *represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

7.1.11 SMTP Test Case 29 (Receiver – Receive XDM with MIME type 'application/xml')

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can accept a request from the HISP (i.e., ETT), acting as the sender, to establish a secure connection, execute the needed sequence of SMTP protocols and commands and receive an XDM package with MIME-type 'application/xml' at the XDM layer (in METADATA.XML)

The testing details for conformance testing flow are as follows:

1. The user navigates to the SMTP Test Case Profile and populates the user SMTP Hostname/IP, user SMTP Email Address, user SMTP Username, and user Password with accurate information (all fields should correlate so the ETT and SUT can communicate to execute this Test Case; reference 2.2.1 Profile Creation).

2. The user executes the test by clicking **Run** in the ETT for the target Test Case. Once the ETT processes the test, the user is presented with a **Waiting Validation** prompt.

3. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and check for a new message from the ETT sending endpoint wellformed1@ttpedge.sitenv.org. If successful, the ETT will leverage the SMTP Profile data and send a message to the SMTP email client. This message will contain an XDM package with MIME-type 'application/xml' at the XDM layer (in METADATA.XML).

4. The user validates that the SUT successfully transmitted the message, the message header and attachment conformed to testing details/parameters, the SUT accepted the ETT's request to initiate a secure session using SMTP protocols/commands, and testing conformed to the specified requirements within RFC 2821.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.2.1 and 1.2.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 9 of the SMTP Test Cases tab within the Direct Edge Protocols spreadsheet and the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

7.1.11.1 Testing Steps

To execute SMTP Test Cases 29 and assess the SUT's ability to accept a request from the ETT to initiate a secure session using SMTP protocols/commands, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then SMTP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Test Cases 29, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Test 29's intended purpose (including Description, User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 29** selected, the user performs the following Test Steps:

7. Click **Run** to execute the test.

8. Navigate the to SUT's messaging client/interface for **User SMTP Email Address** (specified in the Profile).
    a. Wait at least 60 seconds from executing the test to allow successful transmission to the SUT.
    b. Check the **User SMTP Email Address** to validate that a new message is present.

9. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 29, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

8.0 SMTP MESSAGE TRACKING

SMTP Message Tracking (MT) Test Cases

8.1.1 SMTP MT Test Case 17 - Generate Unique Message-ID (Processed MDN suite)

The objective of this test sequence is to verify the ability of the receiving system to reject invalid STARTTLS commands. This test determines if an Edge System (i.e., SUT), acting as a sender, can successfully generate and transmit a series of email messages containing unique message IDs to a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement processed MDN tracking as defined within Applicability Statement for Secure Health Transport v1.1 for the mechanism used to assure, verify, and trust message delivery.

2. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and create three (3) new messages. These messages must be accurately formed and in the correct syntax. Each of the 3 messages must contain a unique message ID and no duplicates (the user must be able to manipulate the message ID to accurately execute this Test Case). The SUT will send the 3 messages (in a series) to the target ETT endpoint recipient: wellformed14@ttpds.sitenv.org. Upon sending each message, the SUT will generate and send to the ETT a standard conformant processed MDN notification. The ETT will receive the 3 messages and processed MDN notifications and validate that each message ID is indeed unique.

3. The user validates that the SUT successfully transmitted the 3 messages, the ETT successfully received the 3 messages, the ETT detected that each of the 3 messages had unique IDs, the SUT successfully transmitted a process MDN notification for each of the 3 messages, and the specified requirements within RFC 5322 were conformed to.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.1.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 17 of the MU Tracking tab within the Direct Edge Protocols spreadsheet and TP170.314(b)(8) – 3.08 within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

8.1.1.1 Testing Steps

To execute SMTP Message Tracking (MT) 17 and assess the SUT's ability to successfully generate and transmit a series of email messages containing unique message IDs and send standard conformant processed MDNs, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then Message Tracking from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Message Tracking (MT) 17, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Message Tracking (MT) 17's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP Test 17** selected, the user performs the following Test Steps:

7. Navigate the to SUT's messaging client/interface for **user SMTP Email Address** (specified in the Profile).

8. Create three (3) new messages:
   - Each message must contain a unique message ID (no duplicates).
   - The 3 messages must be transmitted in a series.
   - The messages must be sent to the ETT endpoint recipient wellformed14@ttpds.sitenv.org.

9. Navigate to the ETT and SMTP Test 17 execution interface:
   a. Wait at least 60 seconds from sending the final message (in the series) to allow successful transmission to the ETT endpoint recipient.
   b. Click **Run** to execute the test.

10. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

11. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 17, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

8.1.2 SMTP MT Test Case 45 - Generate Unique Message-ID (IG for Delivery Notification Suite)

The objective of this test sequence is to verify the ability of the sending system to send messages with unique message-IDs. This test determines if an Edge System (i.e., SUT), acting as a sender, can successfully generate and transmit a series of email messages containing unique message IDs to a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement processed MDN tracking as defined within Applicability Statement for Secure Health Transport v1.1 for the mechanism used to assure, verify, and trust message delivery.

2. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and create three (3) new messages. These messages must be accurately formed and in the correct syntax. Each of the 3 messages must contain a unique message ID and no duplicates (the user must be able to manipulate the message ID to accurately execute this Test Case). The SUT will send the 3 messages (in a series) to the target ETT endpoint recipient: wellformed14@ttpds.sitenv.org. Upon sending each message, the SUT will generate and send to the ETT a standard conformant processed MDN notification. The ETT will receive the 3 messages and processed MDN notifications and validate that each message ID is indeed unique.

3. The user validates that the SUT successfully transmitted the 3 messages, the ETT successfully received the 3 messages, the ETT detected that each of the 3 messages had unique IDs, the SUT successfully transmitted a process MDN notification for each of the 3 messages, and the specified requirements within RFC 5322 were conformed to.

4. This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message

exchanges. See Section 1.5.1.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 45 of the MU Tracking tab within the Direct Edge Protocols spreadsheet and the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

8.1.2.1 Testing Steps

To execute SMTP Message Tracking (MT) 45 and assess the SUT's ability to successfully generate and transmit a series of email messages containing unique message IDs and send standard conformant processed MDNs, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then Message Tracking from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Message Tracking (MT) 45, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Message Tracking (MT) 45's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP MT Test 45** selected, the user performs the following Test Steps:

7. Navigate the to SUT's messaging client/interface for **user SMTP Email Address** (specified in the Profile).

8. Create three (3) new messages:
    a. Each message must contain a unique message ID (no duplicates).
    b. The 3 messages must be transmitted in a series.
    c. The messages must be sent to the ETT endpoint recipient wellformed14@ttpds.sitenv.org.

9. Navigate to the ETT and SMTP MT Test 45 execution interface:
    a. Wait at least 60 seconds from sending the final message (in the series) to allow successful transmission to the ETT endpoint recipient.

b. Click **Run** to execute the test.

10. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

11. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 17, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

8.1.3 SMTP MT Test Case 46 (Generate Disposition Notification Options Header)

The objective of this test sequence is to verify the ability of the sending system to send messages with a correct Disposition Notification Options Header. This test determines if an Edge System (i.e., SUT), acting as a sender, can successfully send an email messages to a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement processed MDN tracking as defined within Applicability Statement for Secure Health Transport v1.1 for the mechanism used to assure, verify, and trust message delivery.

2. The user performing this Test Case and in operation of the SUT will navigate to their SMTP email client and create a new message. This message must be accurately formed and in the correct syntax. The messages must contain the correct disposition notification options header. This test will result will be displayed Logs as: retry (a large red retry button displays when no message processes), fail (a large red error button appears when no disposition notification is received), or pass (a green button) displays.
3. Run' will cause ETT to check for the correct header. If the 'Retry' button appears, check logs for the error message. If the following error appears: ERROR: No messages found!

Try again, make sure the vendor email address is entered correctly and matches the source or "from" email address.

4. If successful, the SUT will send the messages to the target ETT endpoint recipient: wellformed14@ttpds.sitenv.org. The ETT will receive the message and validate that the header is correct.

5. The user validates that the SUT successfully transmitted the message, the ETT successfully received the message, the ETT detected that the message contained the correct header, and the specified requirements within RFC 5322 were conformed to.

This test and maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.1.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 17 of the MU Tracking tab within the Direct Edge Protocols spreadsheet and the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

8.1.3.1 Testing Steps

To execute SMTP Message Tracking (MT) 46 and assess the SUT's ability to successfully generate and transmit a message with a correct Generate Disposition Notification Options Header, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then Message Tracking from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Message Tracking (MT) 46, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Message Tracking (MT) 46's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP MT Test 46** selected, the user performs the following Test Steps:

7. Navigate the to SUT's messaging client/interface for **user SMTP Email Address** (specified in the Profile).

8. Create a new message to be sent to the ETT endpoint recipient wellformed14@ttpds.sitenv.org.

9. Navigate to the ETT and SMTP Test 46 execution interface:
    a. Wait at least 60 seconds from sending the final message (in the series) to allow successful transmission to the ETT endpoint recipient.
    b. Click **Run** to execute the test.

10. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

11. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP Test 46, click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

8.1.4 SMTP MT Test Cases 47 & 47(a) - Accept failure message for invalid recipient (IG for Delivery Notification Suite - IMAP/POP Receiver & SMTP Receiver)

The objective of this test sequence is to verify the ability of the receiving system to accept failure messages for some of the recipients. This test determines if an Edge System (i.e., SUT), acting as a sender, can successfully generate and transmit an email messages containing to a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement processed MDN tracking as defined within Applicability Statement for Secure Health Transport v1.1 for the mechanism used to assure, verify, and trust message delivery.

2. For Test 47, the system shall send a single email to multiple recipients: valid one (dispatchedonly-plain@ttpedge.sitenv.org) and an invalid address (noaddressfailure9-plain@dnsops.ttpedge.sitenv.org). The MDNs are delivered to the 'Mail From' address. The failure MDN for invalid recipient noaddressfailure9-plain@dnsops.ttpedge.sitenv.org needs to be verified.

3. The user validates that the SUT successfully transmitted the message, the ETT successfully received the message, and the specified requirements within RFC 5322 were conformed to.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.1.2 of the Implementation Guide for Direct Edge Protocols document.

This test correlates to Test ID 17 of the MU Tracking tab within the Direct Edge Protocols spreadsheet and within the ONC 2014 Edition approved Test Procedure requirements document. The exact same requirements included in the 2014 Edition are intended to duplicate in the 2015 Edition for this specific criterion.

8.1.5.1 Testing Steps

To execute SMTP Message Tracking (MT) 47 & and assess the SUT's ability to successfully accept failure message for some of the recipients, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then Message Tracking from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate SMTP Message Tracking (MT) 47 &, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning SMTP Message Tracking (MT) 47 & 47(a)'s intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved, More Info reviewed, and **SMTP MT Test 47 or** selected, the user performs the following Test Steps:

a. Navigate the to SUT's messaging client/interface for **user SMTP Email Address** (specified in the Profile).
b. For Test 47, Create the new message to multiple recipients: valid one (dispatchedonly-plain@ttpedge.sitenv.org) and an invalid address (noaddressfailure9-plain@dnsops.ttpedge.sitenv.org). The MDNs are delivered to the 'Mail From' address. The failure MDN for invalid recipient noaddressfailure9-plain@dnsops.ttpedge.sitenv.org needs to be verified.
c. Navigate to the ETT and SMTP MT Test 47) execution interface:
d. Wait at least 60 seconds from sending the final message to allow successful transmission to the ETT endpoint recipient.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**. The test is manually verified by inspecting the SUT's logs. Execute the test by sending an email to the ETT, select Run, then process the validation steps and acceptance. Accepting successful results is denoted by a **Pass** and is indicated by a green check and a test **Fail** is indicated by a red X. A test Fail prompts the user to **Retry** the test.

8. The **Clear** button resets the test and any data input field values.

9. For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

10. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of SMTP MT Test 47 click the **Log** link.

Testing outcomes can be reviewed by analyzing the applicable results for **Criteria Met**, **Request Timeout**, **Proctored**, **Time Elapsed**, **Request Response**, and **Attachments**.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Pass or Fail). The Log is generated to view individual test result details (e.g., constraints, conformance details, contributing factors for Pass or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view validation results by Profile configured and Test Case(s) executed.*

9.0 IMAP TESTING

IMAP Message Tracking (MT) Test Cases (Receiver)

9.1.1 IMAP MT Test Cases 19, 20, 24, 21, 25, 27, 28, 29, 30, and 31

> ***Note**: Within the ETT User Interface, IMAP Test Cases 19, 20, and 24 are condensed into a single executable test. Thus, the Testing Steps performed for these Test Cases are consistent across the set.*

The objective of this test sequence is to determine if the User Edge (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with a HISP (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 to receive information from a HISP.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the Edge system to map the various mail accounts and retrieve the data.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

This test correlates to IMAP Tests 19, 20, 24, 21, 25, 27, 28, 29, 30, and 31 of the MU Tracking tab within the Direct Edge Protocols spreadsheet and TP170.315(h)(2) – (i)(C) within the ONC 2015 Edition approved Test Procedure requirements document.

9.1.1.1 Testing Steps

To execute these IMAP Tests and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then IMAP Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate one of these tests, the user navigates to the Test Case's execution interface. Select the test you wish to run. For this example, we illustrated IMAP Test 25.

5. To gain additional information concerning the intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and test selected, the user performs the following Test Steps:
    a. Execute the test by clicking **Run** on the test panel. This is a manual test where the proctor needs to inspect for the required functionality.
    b. After the selecting the "Waiting Validation" prompt, select **Accept** after checking the results as a positive test.
    c. A record of the test pass or fail is recorded in the **Validation Reports** section of the ETT.

IMAP Test Cases (Sender)

9.2.1 IMAP Test Case 1, 2, 3

The objective of this test sequence is to determine if the user HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 CAPABILITIES, NOOP, and LOGOUT commands.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully processes the three IMAP commands.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.1.1 Testing Steps

To execute IMAP Test Cases 1, 2, 3 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

12. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
13. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.
14. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.
15. To initiate the test for IMAP Test 1, 2, 3, the user navigates to the Test Case's execution interface.
16. To gain additional information concerning IMAP Test 1, 2 3's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.
17. With the Profile saved and **IMAP Test 1, 2, 3** selected, the user executes the test by clicking **Run** on the test panel.
18. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.
19. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of IMAP Test 1.2.3, click the **Logs** link.

9.2.2 IMAP Test Cases 8, 11, 15

The objective of this test sequence is to determine if the user HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 AUTHENTICATE, STARTTLS, LOGIN, SELECT, FETCH commands.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the listed IMAP commands.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.2.1 Testing Steps

To execute IMAP4Tests 8, 11, and 15 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for IMAP Tests 8, 11, and 15, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning IMAP Tests 8, 11, and 15's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **IMAP Tests 8, 11, and 15** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **IMAP Tests 8, 11, and 15**, click the **Logs** link.

9.2.3 IMAP Test Cases 9

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 to reject a command when a command with bad syntax is sent.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully rejects the command with bad syntax.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.3.1 Testing Steps

To execute IMAP Test 9 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for IMAP Test 9, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning IMAP Test 9 intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **IMAP Test 9** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **IMAP Test 9**, click the **Logs** link.

9.2.4 IMAP Test 10

The objective of this test sequence is to determine if the user HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 to reject a command when a command with bad syntax is sent.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully rejects the command with right syntax based on the specific state of the connection.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.4.1 Testing Steps

To execute IMAP Test 10 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for IMAP Test 10, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning IMAP Test 10 intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **IMAP Test 10** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **IMAP Test 10**, click the **Logs** link.

9.2.6 IMAP Test 17

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 to reject incorrect authentication parameters.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user verifies the ability of the User HISP to reject incorrect username/password.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.6.1 Testing Steps

To execute IMAP Test 17 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for IMAP Test 17, the user navigates to the Test Case's execution interface.

5. To gain additional information concerning IMAP Test 17 intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **IMAP Test 17** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **IMAP Test 17**, click the **Logs** link.

9.2.7 IMAP Test 32 (Receive + Validate)

The objective of this test sequence is to determine if the user HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an EDGE (i.e., ETT).
The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the IMAP4 to receive information.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user verifies the ability of the SUT to host attachments and make it available for fetching through IMAP. The CCDA is validated using the MDHT validator.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

9.2.7.1 Testing Steps

1. To execute IMAP Test 32 and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

2. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

3. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then IMAP Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

4. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

5. To initiate the test for IMAP Test 32, the user navigates to the Test Case's execution interface.

6. To gain additional information concerning IMAP Test 32 intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

    a. With the Profile saved and **IMAP Test 32** selected, the user performs the following Test Steps:

    b. In the tool, select the document type you are validating from the "Select Document" tab.

7. Execute the test and click **Run** on the test panel to verify the results.

8. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

9. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **IMAP Test 32**, click the **Logs** link.

10. The logs will show the test results and a report for the test that passes with options to view the report.

10.0 POP3 TESTING

10.1 POP Test Cases

10.1.1 POP Tests 1 and 2

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of IMAP protocols and commands needed to successfully establish a connection with an Edge (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement POP3 CAPABILITIES, NOOP, and LOGOUT commands.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 commands listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

10.1.1.1 Testing Steps

To execute POP Tests 1 and 2, and assess the SUT's ability to successfully receive and process the necessary IMAP commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for POP Tests 1 and 2, navigate to the Test Case's execution interface.

5. To gain additional information concerning POP Test 1 and 2's intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Test 1, 2** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Test 1, 2**, click the **Logs** link.

10.1.2 POP Tests 5, 11, 15

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of POP3 protocols and commands needed to successfully establish a connection with an Edge (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement **POP3 STAT, STLS, RETR, LIST, RSET and QUIT** commands.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 commands listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

10.1.2.1 Testing Steps

To execute **POP Tests 5, 11, and 15**, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for **POP Tests 5, 11, and 15**, navigate to the Test Case's execution interface.
5. To gain additional information concerning **POP Tests 5, 11, and 15's** intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Tests 5, 11, and 15** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Tests 5, 11, and 15**, click the **Logs** link.

10.1.3.1 Testing Steps

To execute **POP Test 9**, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testcing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for **POP Test 9**, navigate to the Test Case's execution interface.

5. To gain additional information concerning **POP Test 9** intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Test 9** selected, the user performs the following Test Steps:

7. Execute the test by clicking **Run** on the test panel.

8. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

9. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Test 9**, click the **Logs** link.

10.1.4 POP Test 10

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of POP3 protocols and commands needed to successfully establish a connection with an Edge (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT **verify the ability to reject a command with bad state utilizing POP3**.2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 requirement listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

10.1.4.1 Testing Steps

To execute **POP Test 10**, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home, HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for **POP Test 10**, navigate to the Test Case's execution interface.

5. To gain additional information concerning **POP Test 10** intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Test 10** selected, the user executes the test by clicking **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.

    - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
    - A test Fail prompts the user to **Retry** the test.
    - The **Clear** button resets the test and any data input field values.
    - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Test 10**, click the **Logs** link.

10.1.6 POP Test 17

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of POP3 protocols and commands needed to successfully establish a connection with an Edge (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT is **to reject authentication when a bad username/password is used**.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 requirement listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

10.1.6.1 Testing Steps

To execute **POP Test 17**, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for **POP Test 32**, navigate to the Test Case's execution interface.

5. To gain additional information concerning **POP Test** intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Test 17** selected, the user performs the following Test Steps:

7. Execute the test by clicking **Run** on the test panel.

8. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

9. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Test 17**, click the **Logs** link.

10.1.7 POP Test 32

The objective of this test sequence is to determine if the User HISP (i.e., SUT) has implemented the correct sequence of POP3 protocols and commands needed to successfully establish a connection with an Edge (i.e., ETT).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT is **to host attachments and make it available for fetching through POP3, the CCDA is validated using the MDHT validator**.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 requirement listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges by inspecting the logs in the ETT.

10.1.7.1 Testing Steps

To execute **POP Test 32 (Receive + Validate)**, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. To initiate the test for **POP Test 32**, navigate to the Test Case's execution interface.

5. To gain additional information concerning **POP Test** intended purpose (including description and User/SUT roles), click the **More Info** link for the Test Case.

6. With the Profile saved and **POP Test 32** selected, the user performs the following Test Steps:
   a. Execute the test by selecting a document to test with from the drop-down.
   b. Click **Run** on the test panel.

7. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.
   - For test with Fail results, refer to Section 2.0 (Testing Configuration for Edge System) and Section 2.2.1 (Profile Creation) of this ETT User Guide to ensure that the accurate configurations have been implemented.

8. To validate that the test results conformed to the testing objective(s) and gain additional information concerning the results or outcome of **POP Test 32**, click the **Logs** link.

10.2.1 POP Tests 19, 20, 24, 27, 28, 29(a), 29(b) 30, and 31.

The objective of this test sequence is to determine if the User Edge (SUT) has implemented the correct sequence of POP3 protocols and commands needed to successfully establish a connection with a HISP in order to retrieve or fetch email.

The testing details for conformance testing flow are as follows:

1. As a precondition for these test cases, the SUT is **retrieve or fetch email from the various pre-configured email accounts**.

2. The user performing this Test Case and in operation of the SUT, will enter the SUT information under the Default Profile section in the ETT.

3. The user validates that the SUT successfully process the POP3 requirement listed.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges.

10.2.1.1 Testing Steps

To execute these tests, and assess the SUT's ability to successfully process the necessary POP3 commands:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then POP3 Test Cases, and then Your system as Sender in the test profile panel.

3. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 5 within 2.2.1 Profile Creation.

4. Each test requires the SUT to be configured to the **email account** identified in the test panel. The full username/password can be found by selecting the **"More Info"** on each test panel.

5. Manually configure the SUT to the address identified in the test case, select "Run" and manually validate on the SUT that the mail was retrieved.

   a. Click **Run** on the test panel.
   b. Select "Waiting Validation" and check the SUT logs.
   c. Upon inspection, select the appropriate result.

6. The test will process and render one of two results in the Test Case execution interface: **Pass** or **Fail**.
   - A test **Pass** is indicated by a green check and a test **Fail** is indicated by a red X.
   - A test Fail prompts the user to **Retry** the test.
   - The **Clear** button resets the test and any data input field values.

7. The validation report for all POP3 Test cases can be viewed under the validation reports tab.

11.0 XDR TESTING

11.1.1 XDR Test Case 1 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can create and transmit an XDR message to a HISP (i.e., ETT), acting as the receiver, per give conformance specifications.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by sending the ETT generated TLS / Non-TLS endpoint an XDR message from the SUT. The correct syntax of the message must meet accuracy requirements for XDR Message Checklist, XDS Metadata Checklist for **Limited Metadata** Document Source, and Direct Address Block.

5. The user validates through **Log** review that the SUT successfully transmitted a message to the ETT generated endpoint, the message met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.1.1 Testing Steps

To execute **XDR Test Case 1** and assess the SUT's ability to create and transmit an XDR message per give conformance specifications for XDR Message Checklist, XDS Metadata Checklist for **Limited Metadata** Document Source, and Direct Address Block, the User must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

Test Navigation: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

2. To gain additional information concerning XDR Test 1's intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

3. To initiate XDR Test 1, the User must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

4. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

5. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. The new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

6. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

7. The ETT checks the generated endpoints for the presence of newly received XDR messages. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button

8. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test 1, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR message.

9. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately attempted to established a connection with the ETT;
    b. Formed/transmitted the XDR message correctly; and
    c. Successfully initiated XDR-based communication with the ETT;
    d. Successfully included an XDR-based payload with Limited metadata along with the message transmission.

10. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the

negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

11. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

12. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the User to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., contributing factors for Success or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view result outcomes. This enables the user to validate the acceptance of the message received by the SUT.*

13. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.2 XDR Test Case 2 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can create and transmit an XDR message to a HISP (i.e., ETT), acting as the receiver, per given conformance specifications.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the User navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by sending the ETT generated TLS / Non-TLS endpoint an XDR message from the SUT. The correct syntax of the message must meet accuracy requirements for XDR Message Checklist, XDS Metadata Checklist for **Full Metadata** Document Source, and Direct XDS Checklist.

5. The user validates through **Log** review that the SUT successfully transmitted a message to the ETT generated endpoint, the message met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.2.1 Testing Steps

To execute XDR Test Case 2 and assess the SUT's ability to create and transmit an XDR message per give conformance specifications for XDR Message Checklist, XDS Metadata Checklist for **Full Metadata** Document Source, and Direct XDS Checklist, the User must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. To gain additional information concerning XDR Test 2's intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test 2, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. The new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoints for the presence of a newly received XDR message. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button

9. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives

for XDR Test 2, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR message.

10. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately attempted to established a connection with the ETT;
    b. Formed/transmitted the XDR message correctly; and
    c. Successfully initiated XDR-based communication with the ETT;
    d. Successfully included an XDR-based payload with Full XDS metadata along with the message transmission.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms to expectations and testing objectives, then the **Accept XDR** button is selected. However, if the User does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The User can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., contributing factors for Success or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view result outcomes. This enables the user to validate the acceptance of the message received by the SUT.*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.3 XDR Test Case 6 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can establish a mutual TLS connection with a HISP (i.e., ETT), acting as the receiver, and successfully authenticate before transmitting data.

The testing details for conformance testing flow are as follows:

1. The user ensures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by sending the ETT generated TLS / Non-TLS endpoint a message from the SUT.

5. The user validates through **Log** review that the SUT successfully established a Mutual TLS connection with the ETT generated endpoint, the SUT authenticated with the ETT generated endpoint before transmitting data, the message met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.3.1 Testing Steps

To execute XDR Test Case 6 and assess the SUT's ability to successfully authenticate during a Mutual TLS connection attempt before transmitting data, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. To gain additional information concerning XDR Test 6's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test 6, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. The new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated for the presence of newly received XDR messages. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button

9. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test 6, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR message.

10. Within the **Log**, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Formed/transmitted the XDR message correctly; and
    c. Completed a mutual TLS handshake with the ETT before transmitting data.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms to expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.4 XDR Test Case 7 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can detect an invalid certificate provided by a HISP (i.e., ETT), acting as the receiver, during a Mutual TLS connection attempt and successfully disconnect.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **IP Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates an endpoint (IP address and port).

4. The user executes the second Test Step by sending the ETT generated endpoint a message from the SUT.

5. The user validates through **Log** review that the SUT attempted to established a Mutual TLS connection with the ETT generated endpoint, the SUT identified during authentication invalid certificates provided by the ETT, the SUT successfully disconnected from the ETT without authenticating and/or transmitting any data, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.4.1 Testing Steps

To execute XDR Test Case 7 and assess the SUT's ability to successfully identify invalid certificates provided during a Mutual TLS connection attempt and terminate a session, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. To gain additional information concerning XDR Test 7's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test 7, the user must provide the **Direct From Address** for the (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

5. Once the SUT's IP Address has been populated in the Test Case, clicking **Run** initiates the first testing step. Note: A DNS address will not work with the Edge Test Tool.

6. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. The new message must be accurately formed in the correct syntax. The User will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoints for the presence of newly received XDR messages. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

9. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test 7, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR message.

10. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    - Formed/transmitted the XDR message correctly;
    - Attempted to established a connection with the ETT;
    - Acknowledged the certificate provided by the ETT as invalid; and
    - Successfully rejected a mutual TLS connection with the ETT.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.5 XDR Test Case 3 (Receiver)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can process a transmitted XDR message from a HISP (i.e., ETT), acting as the sender, that conforms to given specifications.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Non TLS Endpoint** field with the SUT's accurate information (all fields should correlate so the ETT and SUT can communicate to execute this test; reference Section 2.2.1 Profile Creation of this ETT User Guide).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case.

4. The user validates through **Log** review that the SUT successfully received/processed the transmitted XDR message from the ETT and generated the correct response, the XDR message was correctly formatted with **Limited Metadata** and met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.5.1 Testing Steps

To execute XDR Test Case 3 and assess the SUT's ability to receive/process/respond to an XDR message with Limited Metadata and created in conformance of given specifications, the User must perform the following steps. Within the ETT, XDR Test Case 3 is broken down into four executable tests: 3, 3 – HITSP/C32, 4c, and 3 – CCR. The steps of each are described within the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

   Test Navigation: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

2. To gain additional information concerning a target XDR Test Case 3's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

3. To initiate XDR Test Case 3, the user must provide the **Endpoint** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **Endpoint** of the SUT is the message recipient for this Test Case.

4. Once the SUT's Non TLS Endpoint has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

5. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective. To compete this, the user clicks the **Waiting Validation** button.

6. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 3, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted.

7. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT provided the appropriate testing objective responses for receiving a properly formatted XDR message with Limited Metadata and a Consolidated CDA document attachment.

8. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms to expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

9. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

10. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The User can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

11. All completed testing session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.6 XDR Test Cases 4a & 4b (Receiver)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can reject multiple invalid XDR messages from a HISP (i.e., ETT), acting as the sender.

The testing details for conformance testing flow are as follows:

1. If the user is using a secure endpoint, (HTTPS), ensure that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Endpoint** field with the SUT's accurate information (all fields should

correlate so the ETT and SUT can communicate to execute this test; reference Section 2.2.1 Profile Creation of this ETT User Guide).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case.

4. The user validates through **Log** review that the SUT successfully received/processed the transmitted XDR messages from the ETT and generated the correct response, the SUT detected the XDR messages contained the invalid conditions of: invalid/inaccurate XDR Body Details; missing Metadata elements; missing associations between ebRIM constructs; and missing Direct Address Block, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.6.1 Testing Steps

To execute XDR Test Case 4 and assess the SUT's ability to receive/process and reject XDR messages with the invalid construct elements of invalid/inaccurate XDR Body Details, missing Metadata elements, missing associations between ebRIM constructs, and missing Direct Address Block, the user must perform the following steps. Within the ETT, XDR Test Case 4 is broken down into four executable tests: 4a, 4b, 4c, and 4d. The steps of each are described within the following steps.

11.1.6.1.1 XDR Test 4a

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning a target XDR Test Case 4a's intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test Case 4a, the user must provide the **Non TLS Endpoint** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **Non TLS Endpoint** of the SUT is the message recipient for this Test Case.

5. Once the SUT's Non TLS Endpoint has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

6. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective. To compete this, the user clicks the **Waiting Validation** button.

7. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 4a, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted.

8. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determining if the SUT provided the appropriate testing objective responses for receiving a malformed XDR message with an invalid XDR header.

9. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

10. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

11. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

12. All completed testing session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.6.1.2 XDR Test 4b

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. For this target XDR test, select **XDR Test Cases** from the navigation bar.

3. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

4. To gain additional information concerning a target XDR Test Case 4b's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

5. To initiate XDR Test Case 4b, the user must provide the **Non TLS Endpoint** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **Non TLS Endpoint** of the SUT is the message recipient for this Test Case.

6. Once the SUT's Non TLS Endpoint has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

7. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective. To compete this, the User clicks the **Waiting Validation** button.

8. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 4b, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted.

9. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determining if the SUT provided the appropriate testing objective responses for receiving a malformed XDR message with an invalid XDR body.

10. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

11. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

12. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

13. All completed testing session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.7 XDR Test Case 5 (Receiver)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can receive/process a properly formatted XDR message from a HISP (i.e., ETT), acting as the sender.

The testing details for conformance testing flow are as follows:

1. If the user is using a secure endpoint, (HTTPS), ensure that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Endpoint** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case.

4. The user validates through **Log** review that the SUT successfully received and processed the transmitted XDR message from the ETT and generated the correct response, the SUT acknowledged the message contained **Full Metadata**, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.7.1 Testing Steps

1. To execute XDR Test Case 5 and assess the SUT's ability to receive/process a properly formatted XDR message with Full Metadata, the user must perform the following steps:

2. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

3. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

4. To gain additional information concerning XDR Test 5's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

5. To initiate XDR Test 5, the user must provide the **Endpoint** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **Endpoint** of the SUT is the message recipient for this Test Case

6. Once the SUT's Endpoint has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

7. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective(s). To compete this, the user clicks the **Waiting Validation** button. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 5, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted.

8. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determining if the SUT provided the appropriate testing objective responses for receiving a properly formatted XDR message with Full XDS metadata.

9. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms to expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

10. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

11. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the User to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. **The Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

11.1.8 XDR Test Case 8 (Receiver)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can establish a mutual TLS connection with a HISP (i.e., ETT), acting as the sender, and successfully authenticate before transmitting data.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **IP Address** and **Port** fields with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case.

4. The user validates through **Log** review that the SUT successfully received the ETT's request to establish a Mutual TLS connection, the SUT authenticated with the ETT before transmitting data, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.8.1 Testing Steps

To execute XDR Test Case 8 and assess the SUT's ability to accept an authentication attempt from the ETT and successfully establish a mutual TLS connection, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning XDR Test Case 8's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test Case 8, the user must provide the **IP Address** and **Port** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **IP Address** and **Port** of the SUT is the message endpoint recipient for this Test Case.

5. Once the SUT's IP Address and Port has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

6. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective. To compete this, the user clicks the **Waiting Validation** button.

7. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 8, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted. The user validates that the SUT completed a mutual TLS handshake with the ETT before sending data.

8. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT completed a mutual TLS handshake with the ETT before transmitting any data.

9. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

10. The ETT presents user conformation based upon the selection made.

11. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

12. All completed testing session data is then available through the ETT's **Validation Report** tab on the navigation bar.

11.1.9 XDR Test Case 9 (Receiver)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the receiver, can detect an invalid certificate provided by a HISP (i.e., ETT), acting as the sender, during a Mutual TLS connection attempt and successfully disconnect.

The testing details for conformance testing flow are as follows:

1. The Tester user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **IP Address** and **Port** fields with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case.

4. The user validates through **Log** review that the SUT attempted to established a Mutual TLS connection with the ETT, the SUT identified during authentication invalid certificates provided by the ETT, the SUT successfully disconnected from the ETT without authenticating and/or transmitting any data, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Sections 1.1 of the Implementation Guide for Direct Edge Protocols document.

11.1.9.1 Testing Steps

To execute XDR Test Case 9 and assess the SUT's ability to successfully identify invalid certificates provided during a Mutual TLS connection attempt and terminate a session, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning XDR Test Case 9's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Test Case 9, the user must provide the **IP Address** and **Port** for the SUT (e.g., operated and managed Edge system). This enables the ETT to communicate with and send an XDR message to the SUT. The provided **IP Address** and **Port** of the SUT is the message endpoint recipient for this Test Case.

5. Once the SUT's IP Address and Port has been inserted, clicking **Run** initiates the test and XDR message transmission from the ETT to SUT.

6. Once the XDR message has been sent, the user is prompted to manually validate if the test results conformed to the testing objective. To compete this, the user clicks the **Waiting Validation** button.

7. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Test Case 9, the user will select the **Response** tab to review the ETT logged response received from the SUT after the XDR message has been transmitted. The user validates that the SUT attempted to establish a connection to the ETT, received/detected an invalid certificate during the mutual TLS handshake process, and terminated the connection to the ETT before any data was transmitted.

8. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT terminated a mutual TLS connection attempt from the ETT due to an invalid certificate (this is a negative test).

9. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms to expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

10. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

11. Acceptance or rejection of the XDR message Log content results in the overall success of failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for **Success or Fail)** and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

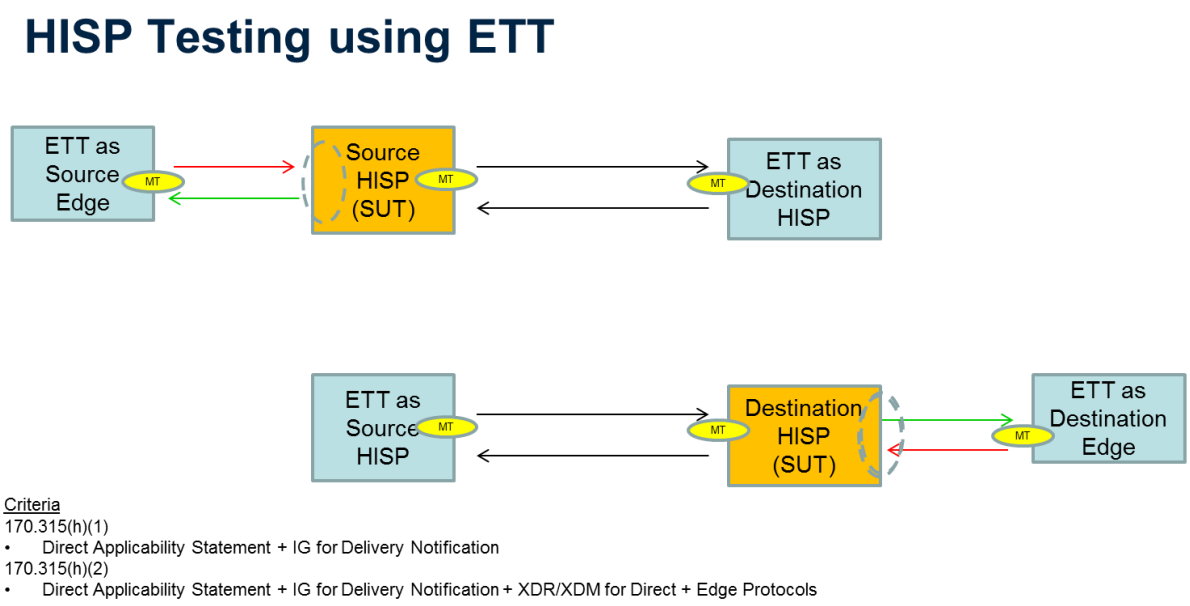
12. All completed testing session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.0 XDR MESSAGE TRACKING

12.1 Message Tracking (MT) Test Cases

The objective of this test sequence is to determine if SUT can establish a connection to a HISP acting as the receiver, and successfully generate and transmit a series of XDR messages that conform to the required tests. The ETT will be acting as the Edge or HISP, depending on the test scenario.

To execute the HISP XDR MT Test Cases, use the example for XDR MT Test 13.



12.1.1 XDR MT Test 13

The specifications detailed will show how an error should be reported back asynchronously, but do not specify when this method should be used. Therefore, it is acceptable for a system to send back a registry response failure synchronously, or a message delivery failure asynchronously.

ETT Action: The ETT will send a message to the SUT where the final address is non-existent.

SUT Action: The SUT will respond either synchronously or asynchronously. If it is synchronous, a registry response failure will be sent. If it is asynchronously, a delivery failure message will be delivered.

Proctor Action: The individuals operating the SUT will inform the Proctor how their system responds when a message is asked to be delivered to an address that is non-existent. In the UI, the same logs screen will be used in either the synchronously or the asynchronously case. Depending on whether the communication, the Proctor will expect to see a registry response

failure in the response tab of the logs (synchronously) or a message delivery failure on the request tab of the logs (asynchronously).

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the additional constraints defined within Implementation Guide for Message Tracking (MT) for Direct v1.0 for Message Tracking (MT) messaging and increased levels of message transmission assurance.

2. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test. The user will also need to have the receiving end-point, and the SUT's receiving email address.

12.1.1.1 Testing Steps

To execute XDR MT Test 13, follow the step below:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

   Test Navigation: From the Edge Testing Tool Home page, select HISP Testing & Delivery Notification, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

2. From the test list, scroll to XDR MT Test 13, enter the required information:
   a) **The Endpoint**: The SUT end-point the ETT is sending to.
   b) **The Direct From Address**: The return address the SUT needs to send back to the ETT to allow a return trip for in inbound XDR. (This isn't required for synchronous delivery notifications.)
   c) **The Outgoing (ETT -> SUT) Direct From Address**: The address of the SUT, sending from the ETT to the SUT. (This is used for the outbound XDR message.)

3. Make note of the Endpoint in the test, this is where you need to send the message back to and enter into the SUT.

4. Selecing **More Info** will give you additional information for the test, as well as, additional information that may required to execute it.

5. Enter the required information, then hit the **Run** button.

6. Depending on whether your system is synchronous or asynchronous, the following test flow will vary.

7. Click **Pending Refresh**.

8. Select **Waiting Validation** to view the logs. (Wait a few minutes, asynchronous, to allow the systems to receive the messages before selecting the Waiting Validation button.
9. Upon validation, select **Accept** to results.

Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to Retry the test. The user can select the Clear button to reset the test. XDR message acceptance results in a green check. The user can select the Clear button to reset the test.

All completed test session data is then available through the ETT's Validation Report tab on the navigation bar.

12.1.2 XDR MT Test 19

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by navigating to the SUT's messaging client and creating three (3) new XDR messages. These new message must be accurately formed in the correct syntax and contain unique message IDs (no duplicates). The SUT will send the 3 XDR messages in a series to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

5. The user validates through **Log** review that the SUT successfully transmitted the 3 XDR messages, each transmitted message has a unique ID (no duplicates) in the WS-Addressing header element, the SUT successfully transmitted message tracking information to the ETT through a processed MDN notification for each of the 3 messages, established a connection (Mutual TLS) with the ETT generated endpoint, the SUT authenticated with the ETT generated endpoint before transmitting data, the messages met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.2.2 of the Implementation Guide for Direct Edge Protocols document.

12.1.2.1 Testing Steps

To execute XDR MT Test 19 and assess the SUT's ability to successfully generate and transmit a series of XDR messages containing unique IDs, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning XDR Message Tracking (MT) 19's intended focus, purpose/descriptions, expected test results, user role, and Metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR MT Test 19, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT process/present log data accordingly.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create three (3) new XDR messages. These new messages must be accurately formed in the correct syntax and contain unique message IDs (no duplicates). The user will send the 3 XDR messages in a series to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the 3 XDR messages have been transmitted from the SUT to the ETT endpoints, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoints for the presence of newly received XDR messages. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

9. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR MT Test 19, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR messages.

10. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Formed/transmitted 3 XDR messages with unique IDs; and
    c. Generated conformant Processed MDNs for messaging tracking purposes.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., factors for Success or Fail) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.3 XDR MT Test Cases 20a & 20b (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can initiate an XDR message transaction with both a valid and invalid HISP recipient (i.e., ETT), acting as the receiver, and generate process MDNs successfully.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields

should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes the first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by navigating to the SUT's messaging client and creating two new XDR messages. These new message must be accurately formed in the correct syntax. The SUT will send the 2 XDR messages in a series to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify a valid and invalid recipient for each of the 2 XDR messages (these are in addition to the ETT generated endpoints).

5. The user validates through **Log** review that the SUT successfully transmitted the 2 XDR messages, each transmitted message included a valid/invalid recipient, the SUT successfully transmitted message tracking information to the ETT through a processed MDN notifications for each of the 2 messages, the SUT generated and handled appropriately the process MDNs for both the valid and invalid recipients, the messages met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.2.2 of the Implementation Guide for Direct Edge Protocols document.

12.1.3.1 Testing Steps

To execute XDR Message Tracking (MT) 20a & 20b and assess the SUT's ability to send an XDR message to both valid/invalid recipients and generate/handle process MDNs successfully, the user must perform the following steps. Within the ETT, XDR Message Tracking (MT) 20 is broken down into two executable tests: 20a and 20b. The steps of each are described within the following steps.

12.1.3.1.1 XDR MT Test 20a

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

3. To gain additional information concerning XDR Message Tracking (MT) 20a's intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Message Tracking (MT) 20a, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly. For this Test Case, the TLS Endpoint is provided by the user.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create two a new XDR message. These new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify a valid recipient for the XDR messages (in addition to the ETT generated endpoint).

7. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoint(s) for the presence of a newly received XDR message. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

9. The User is presented with the Test Case **Log** screen. The user is prompted to check the SUT's local logs and validate that the process MDNs generated as a result of sending the XDR message to both the ETT and valid recipients were handled correctly.

10. After the user has reviewed and validated the SUT's log, the user navigates back to the ETT's Log screen for XDR Message Tracking (MT) 20a. The user finalizes the review of the testing data by viewing the Log's option tabs message **Request** and **Response** data.

11. The user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Correctly created and transmitted the XDR message to the provided ETT endpoint recipient and additional valid message recipient;
    c. Produced conformant process MDNs for messaging tracking purposes (valid recipient);
    d. Correctly receive and handle a process MDN notification sent from the ETT.

12. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the

negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

13. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

14. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., contributing factors for Success or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view result outcomes. This enables the user to validate the acceptance of the message received by the SUT.*

15. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.3.1.2 XDR MT Test 20b

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. For this target XDR test, select **XDR Test Cases** from the navigation bar.

3. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Sender in the test profile panel.

4. To gain additional information concerning XDR Message Tracking (MT) 20b's intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

5. To initiate XDR Message Tracking (MT) 20b, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

6. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step. For this Test Case, the TLS Endpoint is provided by the user.

7. The user is prompted to navigate to the SUT's messaging client and create two a new XDR message. These new message must be accurately formed in the correct syntax. The

user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify an invalid recipient for the XDR messages (in addition to the ETT generated endpoint).

8. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

9. The ETT checks the generated endpoint(s) for the presence of a newly received XDR message. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

10. The user is presented with the Test Case **Log** screen. The User is prompted to check the SUT's local logs and validate that the process MDNs generated as a result of sending the XDR message to both the ETT and invalid recipients were handled correctly.

11. After the user has reviewed and validated the SUT's log, the user navigates back to the ETT's Log screen for XDR Message Tracking (MT) 20b. The user finalizes the review of the testing data by viewing the Log's option tabs message **Request** and **Response** data.

12. The User reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Correctly created and transmitted the XDR message to the provided ETT endpoint recipient and additional valid message recipient;
    c. Produced conformant process MDNs for messaging tracking purposes (valid recipient);
    d. Correctly received and handled a process MDN failure notification sent from the ETT.

13. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

14. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

15. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the Log directly references a single Test Case's generated test results (either a Success or Fail). The Log is generated to view individual test result details (e.g., contributing factors for Success or Fail outcomes) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to view result outcomes. This enables the user to validate the acceptance of the message received by the SUT.*

16. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.4 XDR MT Test Case 48 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can establish successfully generate and transmit a series of XDR messages containing unique IDs to a HISP (i.e., ETT), acting as the receiver.

The testing details for conformance testing flow are as follows:

1. As a precondition for this Test Case, the SUT must implement the additional constraints defined within Implementation Guide for Message Tracking (MT) for Direct v1.0 for Message Tracking (MT) messaging and increased levels of message transmission assurance.

2. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

3. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

4. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

5. The user executes the second Test Step by navigating to the SUT's messaging client and creating three (3) new XDR messages. These messages must be accurately formed in the correct syntax and contain unique message IDs (no duplicates). The SUT will send the 3 XDR messages in a series to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

6. The user validates through **Log** review that the SUT successfully transmitted the 3 XDR messages, each transmitted message had a unique ID (no duplicates) in the WS-Addressing header element, the SUT successfully transmitted message tracking information to the ETT through a processed MDN notification for each of the 3 messages, established a Mutual TLS connection with the ETT generated endpoint, the

SUT authenticated with the ETT generated endpoint before transmitting data, the messages met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.2.2 of the Implementation Guide for Direct Edge Protocols document.

12.1.4.1 Testing Steps

To execute XDR Message Tracking (MT) 48 and assess the SUT's ability to successfully generate and transmit a series of XDR messages containing unique IDs in conformance with message tracking using Implementation Guide for Message Tracking (MT) requirements, the user must perform the following steps:

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.
3. To gain additional information concerning XDR Message Tracking (MT) 48's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Message Tracking (MT) 48, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create three (3) new XDR messages. These new messages must be accurately formed in the correct syntax and contain unique message IDs (no duplicates). The user will send the 3 XDR messages in a series to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the 3 XDR messages have been transmitted from the SUT to the ETT endpoints, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoints for the presence of newly received XDR messages. The User is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the User clicks the **Waiting Validation** button.

9. The User is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Message Tracking (MT) 48, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR messages.

10. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Formed/transmitted 3 XDR messages with unique message IDs;
    c. Upheld conformance with message tracking using Implementation Guide for Message Tracking (MT) requirements;
    d. Generated conformant process MDNs for messaging tracking purposes.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents User conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the **Log** directly references a single Test Case's generated test results (either a **Success** or **Fail**). The **Log** is generated to view individual test result details (e.g., factors for **Success** or **Fail**) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.5 XDR MT Test Case 49 (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can form and send an XDR message to a HISP (i.e., ETT), acting as the receiver, that conforms to standards for Direct address blocks and Message Tracking (MT) elements.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (TLS and Non-TLS).

4. The user executes the second Test Step by navigating to the SUT's messaging client and creating a new XDR message. This message must be accurately formed in the correct syntax and contain a Direct address block in conformant with Section 4.0 of the XDR and XDM for Direct Messaging v1.0 publication and Section 1.3 of the Implementation Guide for Direct Edge Protocols publication. The SUT will send the XDR message in to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

5. The User validates through Log review that the SUT successfully transmitted the XDR message, each transmitted message had a conformant Direct address block (reference Section 4.0 of the XDR and XDM for Direct Messaging v1.0 publication and Section 1.3 of the Implementation Guide for Direct Edge Protocols publication), assured the messages met testing constraints, and testing adhered to the specified requirements within IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.2.2 of the Implementation Guide for Direct Edge Protocols document.

12.1.5.1 Testing Steps

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, then XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning XDR Message Tracking (MT) 49's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Message Tracking (MT) 49, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step. Instructions are labeled in sequential order (e.g., **Step 1**, **Step 2**, **Step 3**, etc.) in the content description of the Test Case.

6. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. These new message must be accurately formed in the correct syntax and contain a Direct address block in conformant with Section 4.0 of the XDR and XDM for Direct Messaging v1.0 publication and Section 1.3 of the Implementation Guide for Direct Edge Protocols v1.0, 29 June 2012. . The user will send the message to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case.

7. Once the message has been transmitted from the SUT to the ETT endpoints, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoints for the presence of newly received XDR messages. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

9. The user is presented with the Test Case **Log** screen. The Log contains option tabs for viewing ETT messaging **Request** and **Response** data. For the specific testing objectives for XDR Message Tracking (MT) 49, the user will select the **Response** tab to review the ETT logged response received from the SUT after transmission of the XDR messages.

10. Within the Log, the user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    a. Accurately established a connection with the ETT;
    b. Formed/transmitted the XDR messages; and
    c. Upheld compliance with the Direct address block conformance requirements within Section 4.0 of the XDR and XDM for Direct Messaging v1.0 publication and Section 1.2 of the Implementation Guide for Direct Edge Protocols publication.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The User can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the **Log** directly references a single Test Case's generated test results (either a **Success** or **Fail**). The **Log** is generated to view individual test result details (e.g., factors for **Success** or **Fail**) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.6 XDR MT Test Cases 50a & 50b (Sender)

The objective of this test sequence is to determine if an Edge System (i.e., SUT), acting as the sender, can create and transmit both valid and invalid XDR messages to a HISP (i.e., ETT), acting as the receiver, and process the cases accurately.

The testing details for conformance testing flow are as follows:

1. The user assures that the appropriate XDR Certificates have been downloaded from the ETT and imported into the SUT's trust store before executing the test.

2. With the trust relationship established, the user navigates to the target Test Case and populates the **Direct From Address** field with the SUT's accurate information (all fields should correlate so the ETT and SUT and communicate to execute this Test Case; reference 2.2.1 Profile Creation).

3. The user performing this Test Case and in operation of the SUT executes first Test Step by clicking **Run** for the target Test Case. The ETT generates two endpoints (valid and invalid).

4. The user executes the second Test Step by navigating to the SUT's messaging client and creating two new XDR messages. These new messages must be accurately formed in the correct syntax. The SUT will send the 2 XDR messages in a series to one (and only one) of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify a valid and invalid recipient for each of the 2 XDR messages (these are in addition to the ETT generated endpoints).

5. The user validates through Log review that the SUT successfully transmitted both the valid and invalid XDR messages, each transmitted message was sent to both a ETT generated endpoint and valid/invalid endpoint recipient, the SUT generated the correct response for both the valid/invalid endpoint recipients, the SUT handled the valid/invalid cases correctly, assured the messages met testing constraints, and testing adhered to the specified requirements within XDR and XDM for Direct Messaging v1.0 and IHE XDR Profile for Limited Metadata Document Sources.

This test maintains compliance with the secure health data transport messaging formats, processing requirements, and communication standards for Direct Edge message exchanges. See Section 1.5.2.2 of the Implementation Guide for Direct Edge Protocols document.

12.1.6.1 Testing Steps

To execute XDR Test Case 50 and assess the SUT's ability to create and transmit both valid and invalid XDR messages to a HISP and process the cases accurately, the user must perform the following steps. Within the ETT, XDR Test Case 50 is broken down into two executable tests: 50a and 50b. The steps of each are described within the following steps.

12.1.6.1.1 XDR MT Test 50a

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

   Test Navigation: From the Edge Testing Tool Home page, select Edge Testing, XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

2. To gain additional information concerning XDR Message Tracking (MT) 50a's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

3. To initiate XDR Message Tracking (MT) 50a, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly. For this Test Case, the Endpoint is provided by the user.

4. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

5. The user is prompted to navigate to the SUT's messaging client and create a new XDR message. These new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify a valid recipient for the XDR message (in addition to the ETT generated endpoint).

6. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

7. The ETT checks the generated endpoint for the presence of a newly received XDR message. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the User clicks the **Waiting Validation** button.

8. The user is presented with the Test Case **Log** screen. The user is prompted to check the SUT's local logs and validate that the process MDNs generated as a result of sending the XDR message to both the ETT and valid recipients were handled correctly.

9. After the user has reviewed and validated the SUT's log, the user navigates back to the ETT's Log screen for XDR Message Tracking (MT) 50a. The user finalizes the review of the testing data by viewing the Log's option tabs message **Request** and **Response** data.

10. The user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    - Accurately established a connection with the ETT;
    - Correctly created and transmitted the XDR message to the provided ETT endpoint recipient and additional valid message recipient;
    - Produced conformant process MDNs for messaging tracking purposes (valid recipient); and
    - Correctly receive and handle a process MDN notification sent from the ETT.

11. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

12. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

13. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

> ***Note**: Within the Test Procedures, the **Log** directly references a single Test Case's generated test results (either a Success or Fail). The **Log** is generated to view individual test result details (e.g., factors for **Success** or **Fail**) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

14. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

12.1.6.1.2 XDR MT Test 50b

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the Edge Testing Tool Home page, select Edge Testing, XDR Test Cases from the ribbon bar. Set Your system as Receiver in the test profile panel.

3. To gain additional information concerning XDR Message Tracking (MT) Case 50b's intended focus, purpose/descriptions, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

4. To initiate XDR Message Tracking (MT) Case 50b, the user must provide the **Direct From Address** for the SUT (e.g., operated and managed Edge system). This enables the ETT to accept sent XDR message transmissions from the SUT and process/present log data accordingly. For this Test Case, the Endpoint is provided by the user.

5. Once the SUT's Direct From Address has been populated in the Test Case, clicking **Run** initiates the first testing step.

6. The user is prompted to navigate to the SUT's messaging client and create two a new XDR message. These new message must be accurately formed in the correct syntax. The user will send the XDR message to one of the two ETT generated endpoints (TLS or non-TLS) for the Test Case. The user will also specify an invalid recipient for the XDR messages (in addition to the ETT generated endpoint).

7. Once the XDR message has been transmitted from the SUT to the ETT endpoint, the user clicks the **Pending Refresh** button for the Test Case.

8. The ETT checks the generated endpoint for the presence of a newly received XDR message. The user is prompted to manually validate if the test results conformed to the testing objectives. To compete this, the user clicks the **Waiting Validation** button.

9. The user is presented with the Test Case **Log** screen. The user is prompted to check the SUT's local logs and validate that the process MDNs generated as a result of sending the XDR message to both the ETT and invalid recipients were handled correctly.

10. After the user has reviewed and validated the SUT's log, the user navigates back to the ETT's Log screen for XDR Message Tracking (MT) Case 50b. The user finalizes the review of the testing data by viewing the Log's option tabs message **Request** and **Response** data.

11. The user reviews the testing data content/metadata and performs manual validation to determine if the SUT:
    - Accurately established a connection with the ETT;
    - Correctly created and transmitted the XDR message to the provided ETT endpoint recipient and additional valid message recipient;
    - Produced conformant process MDNs for messaging tracking purposes (valid recipient); and
    - Correctly received and handled a process MDN failure notification sent from the ETT.

12. If the user accepts the SUT's provided response to the ETT and determines that the Log data/metadata conforms with expectations and testing objectives, then the **Accept XDR** button is selected. However, if the user does not accept the SUT's provided response after review of Log data/metadata, then the **Reject XDR** button is selected. Accept XDR selections correlate with Test Case Success results. Likewise, Reject XDR selections correlate with Test Case Failures. Only if the testing objective for a Test Case is in the negative, where the user has verified message rejection, will a Reject XDR selection correlate with a Test Success.

13. The ETT presents user conformation (XDR validation passed or failed) based upon the selection made.

14. Acceptance or rejection of the XDR message Log content results in the overall success or failure of a Test Case. XDR message rejection results in a red X and prompts the user to **Retry** the test. The user can select the **Clear** button to reset the test. XDR message acceptance results in a green check. The user can select the **Clear** button to reset the test.

***Note**: Within the Test Procedures, the **Log** directly references a single Test Case's generated test results (either a **Success** or **Fail**). The **Log** is generated to view individual test result details (e.g., factors for **Success** or **Fail**) and stands as a testing artifact. The **Validation Report** represents the aggregation of all Test Cases executed within a given testing session and enables a user to validate the acceptance of the message received by the SUT*

15. All completed test session data is then available through the ETT's **Validation Report** tab on the navigation bar.

13.0 XDR TESTS UNDER HISP

This area provides tests where ETT simulates the role of the Health Information Service Provider (HISP). For those principally interested in testing for the 2015 Edition-please visit the tool "2015 Edition Testing by Criteria" to see what HISP tests are applicable for the respective criteria.

HISP XDR Test Cases (Sender)

XDR Test Cases 10, 11, 12, 16, 17

The following tests include: sending a Direct Message to the SUT, translates and sends it back to the edge, sending a Direct Message plus XDM, translates to an XDR message with Limited Metadata, sending a Direct Message plus XDM, translates to an XDR message with Full Metadata, verifies that a mutual TLS session is established between the sender and receiver before transmitting data, and verifies that the HISP disconnects when the Server provider certificate is invalid.

13.1 XDR Test 10 (Sender)

Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

1. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar. Log into your
2. Set your system as Sender. Provide your Direct To Address.
3. Test Tool sends a Direct message to the SUT. The SUT must translate this to an XDR message and send it back to the Edge. Verify that the HISP can create an XDR message per the specification and forward to Edge. The return endpoint is provided below. The validation report will be sent to the email address registered with the Direct address entered during setup. Direct To Address: The SUT's receiving email endpoint for Direct/XDR translation, ETT to SUT workflow. The SUT will receive a message from testcase10@ttpedge.sitenv.org (XDR Test 10)
4. Hit Run to generate your endpoint.
5. To gain additional information concerning XDR Test 10 intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

13.1.2 XDR Test 11 (Sender)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
1. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
2. Set your system as Sender. Provide your Direct To Address.
3. Test Tool sends a Direct message + XDM to the SUT. The SUT must translate this to an XDR with Limited Metadata and send it back to the Edge. Verify that the HISP can create an XDR message per the specification and forward to Edge. The validation report will be sent to the email address registered with the Direct address entered during setup. Direct To Address: The SUT's receiving email endpoint for Direct/XDR translation, ETT to SUT workflow. The SUT will receive a message from testcase11@ttpedge.sitenv.org (XDR Test 11)
4. Hit Run to generate your endpoint.
5. To gain additional information concerning XDR Test 11 intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

13.1.3 XDR Test 12 (Sender)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Sender. Provide your Direct To Address.
4. Test Tool sends a Direct message + XDM to the SUT. The SUT must translate this to an XDR with Full Metadata and send it back to the Edge. Verify that the HISP can create an XDR message per the specification and forward to Edge. The validation report will be sent to the email address registered with the Direct address entered during setup. Direct To Address: The SUT's receiving email endpoint for Direct/XDR translation, ETT to SUT workflow. The SUT will receive a message from testcase12@ttpedge.sitenv.org (XDR Test 12)
5. Hit Run to generate your endpoint.
6. To gain additional information concerning XDR Test 12 intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

13.1.4 XDR Test 16 (Sender)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Sender. Provide your Direct To Address.
4. XDR Test 16 verifies that a Mutual TLS session has been established between the Sender and Receiver before transmitting data.
5. Hit Run to generate your endpoint.
6. To gain additional information concerning XDR Test 16 intended focus, purpose/description, expected test results, user role, and metadata inclusion, click the **More Info** link for the Test Case.

13.1.5 XDR Test 17 (Sender)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Sender. Provide your Direct To Address.
4. XDR Test 17 verifies that a HISP disconnects when the Server provided certificate is invalid. Only the IP address of the SUT shall be entered. As this is a socket based test, the full endpoint is not required. Only the hostname and port are needed and provided.
5. Provide your IP Address and Hit Run to generate your endpoint.
6. To gain additional information concerning XDR Test 17 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

HISP XDR Test Cases (Receiver)

13.2.0 XDR Test 13, MT 13, 14, MT 14, 15a, 15b, MT 16, 18, 19, MT 30, MT 31, MT 32, MT 33, MT 34, MT 35, MT 36, MT 37, MT 38, MT 43, MT 44 (Receiver)

- XDR Test 13 sends an XDR Message with Limited metadata to the SUT (HISP).
- XDR MT Test 13 verifies the ability of the SUT to appropriately respond to a delivery for a non-existent address.
- XDR Test 14 sends an XDR message with Full (XDS) metadata to the SUT (HISP).
- XDR MT 14 Verifies the ability of the SUT to appropriately respond to a delivery to an untrusted HISP.
- XDR Test 15a verifies the ability of the receiving system to appropriately respond to a malformed message.
- XDR Test 15b verifies the ability of the receiving system to appropriately respond to a malformed message.
- XDR Test 16 verifies the ability of the SUT to appropriately respond in the event of a lack of a Processed MDN. ETT will send a message via XDR to the SUT.
- XDR Test 18 Test Tool authenticates with the HISP using Mutual TLS correctly. Certificates for this testing tool can be downloaded from the top of this page.
- XDR Test 19 authenticates with the HISP using bad certificates. The SUT is expected to disconnect before any meaningful data is sent.
- XDR Test 30 Verifies the ability of the receiving system to appropriately handle a VALID delivery notifications request, including X-DIRECT-FINAL-DESTINATION-DELIVERY data. XDR.
- Test 31 verifies Verify the ability of the receiving system to appropriately handle an INVALID delivery notifications request, including X-DIRECT-FINAL-DESTINATION-DELIVERY data. XDR Test 32 verifies Verify the ability of the SUT to appropriately respond to a delivery to a non-existent address.
- XDR Test 33 Verify the ability of the SUT to appropriately respond to a delivery to an untrusted HISP.
- XDR Test 34 Verifies the ability of the SUT to appropriately respond to a delivery to a HISP which does not have a published certificate. ETT will send a message via XDR to the SUT.
- XDR Test 35 verifies the ability of the SUT to appropriately respond in the event of a lack of a Processed MDN.
- XDR MT Test 36 will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs').
- XDR Test 37 verifies the ability of the SUT to appropriately respond in the event of a message timeout failure.
- XDR Test 38 verifies the ability of the SUT to appropriately respond in the event of positive delivery notification
- XDR Test 43 verifies the ability of the SUT to appropriately provide a delivery failure message if it is unable to deliver the message to the destination.
- XDR MT Test 44 verifies the ability of the receiving system to appropriately respond in the event of a message timeout failure.

13.2.0 XDR Test 13 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Receiver. Before this test is run, the vendor must register a Direct Address / Contact address pairing using the Direct portion of the ETT tool.
4. XDR Test 13 sends an XDR Message with Limited metadata to the SUT (HISP). The SUT must then translate the message into Direct and send it back to the ETT which is acting as the Destination HISP. The Direct Address it passes the message along to must match the Direct Address that has been pre-register. A validation report will be sent to the Contact address. Verify that an HISP system can receive a properly formatted XDR message and translate to Direct Message.
5. Provide your Endpoint, and Outgoing (ETT → SUT) Direct from Address. Hit Run to send an XDR message.
6. To gain additional information concerning XDR Test 13 intended focus, purpose, description, and expected test results, click the **More Info** link for the Test Case.

13.2.1 XDR Test MT 13 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Receiver.
4. XDR Test 13 verifies the ability of the SUT to appropriately respond to a delivery for a non-existent address. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the

logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Message Tracking Using Processed MDN test suite.

5. Provide your Endpoint, A Direct From Address, and Outgoing (ETT → SUT) Direct from Address and Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 13 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2 XDR Test 14 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. The Vendor must register a Direct Address / Contact address pairing using the Direct portion of the ETT Tool.

4. XDR Test 14 sends an XDR message with Full (XDS) metadata to the SUT (HISP). The SUT must then translate the message into Direct and send it back to the ETT which is acting as the Destination ISP. The Direct Address it passes the message along to must matach the Direct Address that has been pre-registered. A validation report will be sent to the Contact Address. Verify that an HISP system can receive a properly formatted XDR message and translate to Direct Message.

5. Provide your Endpoint, and Outgoing (ETT → SUT) Direct From Address. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 14 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.3 XDR MT Test 14 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Direct To Address.

4. Verify the ability of the SUT to appropriately respond to a delivery to an untrusted HISP. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETTs reponse has been received. 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Message Tracking Using Processed MDN test suite.

5. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 14 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.4 XDR Test 15a and 15b (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Direct To Address.

4. XDR Test 15a verifies the ability of the receiving system to appropriately respond to a malformed message. This case is of an invalid SOAP header.

   XDR Test 15b verifies the ability of the receiving system to appropriately respond to a malformed message. This case is of an invalid SOAP body.

5. Provide your Endpoint. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 15a intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.5 XDR MT Test 15 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Direct To Address.

4. XDR MT Test 15 verifies the ability of the SUT to appropriately respond to a delivery to a HISP which does not have a published certificate. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received. 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication or the asynchronous communication for an appropriate response. This test is part of the Message Tracking Using Processed MDN test suite.

5. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address. Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 15 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.6 XDR MT Test 16 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Direct To Address.

4. XDR Test 16 verifies the ability of the SUT to appropriately respond in the event of a lack of a Processed MDN. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Message Tracking Using Processed MDN test suite.

5. Provide your Endpoint, a Direct From Address and Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 16 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.7 XDR Test 18 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Receiver. Provide your Direct To Address.
4. XDR Test 18 Test Tool authenticates with the HISP using Mutual TLS correctly. Certificates for this testing tool can be downloaded from the top of this page. This is a socket-level test and therefore a full endpoint is not necessary.
5. Provide your IP Address and Port. Hit Run to send a XDR.
6. To gain additional information concerning XDR Test 18 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.8 XDR Test 19 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Receiver. Provide your Direct To Address.
4. XDR Test 19 authenticates with the HISP using bad certificates. The SUT is expected to disconnect before any meaningful data is sent. Certificates for this testing tool can be downloaded from the top of this page. This is a socket-level test and therefore a full endpoint is not necessary.
5. Provide your IP Address and Port. Hit Run to send a XDR message.
6. To gain additional information concerning XDR Test 19 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.9 XDR MT Test 30 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.
2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar
3. Set your system as Receiver. Provide your Endpoint, A Direct To Address and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 30 Verify the ability of the receiving system to appropriately handle a VALID delivery notifications request, including X-DIRECT-FINAL-DESTINATION-DELIVERY data. ETT will create the Direct address block Header following section 4.1 of the XDR and XDM for Direct Messaging v1.0 and include the X-DIRECT-FINAL-DESTINATION-DELIVERY data following section 1.3 of Implementation Guide for Delivery Notification in Direct v1.0 and send it to the SUT.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 30 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.1 XDR MT Test 31 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 31 verifies Verify the ability of the receiving system to appropriately handle an INVALID delivery notifications request, including X-DIRECT-FINAL-DESTINATION-DELIVERY data. ETT will create the Direct address block Header following section 4.1 of the XDR and XDM for Direct Messaging v1.0 and include INVALID X-DIRECT-FINAL-DESTINATION-DELIVERY data following section 1.3 of Implementation Guide for Delivery Notification in Direct v1.0 and send it to the SUT.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 31 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.2 XDR MT Test 32 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, and Outgoing (ETT → SUT) Direct From Address. Hit Run to send a XDR message.

4. XDR Test 32 verifies Verify the ability of the SUT to appropriately respond to a delivery to a non-existent address. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 32 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.3 XDR MT Test 33 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 33 Verify the ability of the SUT to appropriately respond to a delivery to an untrusted HISP. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 33 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.4 XDR MT Test 34 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 34 Verifies the ability of the SUT to appropriately respond to a delivery to a HISP which does not have a published certificate. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 34 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.5 XDR MT Test 35 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 35 verifies the ability of the SUT to appropriately respond in the event of a lack of a Processed MDN. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 35 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.6 XDR MT Test 36 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Direct To Address.

4. XDR MT Test 36 will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

13.2.2.7 XDR MT Test 37 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide Endpoint. a Direct From Address (ETT → SUT) Direct From Address. Hit Run to send a XDR message.

4. XDR Test 37 verifies the ability of the SUT to appropriately respond in the event of a message timeout failure. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR MT Test 37 intended focus, purpose, description, expected test results, click the More Info link for the Test Case.

13.2.2.8 XDR MT Test 38 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 38 verifies the ability of the SUT to appropriately respond in the event of positive delivery notification. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response. This test is part of the Implementation Guide for Delivery Notification test suite.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 38 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.2.2.9 XDR MT Test 43 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR Test 43 verifies the ability of the SUT to appropriately provide a delivery failure message if it is unable to deliver the message to the destination. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message

will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 43 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

13.3.1 XDR Test 44 (Receiver)

1. Reference Section 2.0 Testing Configuration for Edge System of this ETT User Guide and follow Steps 1 through 3 within 2.1 Registration.

2. **Test Navigation**: From the HISP Home panel, navigate to the XDR Test Cases from the ribbon bar

3. Set your system as Receiver. Provide your Endpoint, a Timeout, A Direct From Address, and Outgoing (ETT → SUT) Direct From Address.

4. XDR MT Test 44 verifies the ability of the receiving system to appropriately respond in the event of a message timeout failure. ETT will send a message via XDR to the SUT. If the SUT's final response is delivered synchronously, that message will be saved in the logs (click 'Logs'). If the SUT's final response is delivered asynchronously: 1) wait until the SUT's message has been sent and the ETT's response has been received, 2) click the Pending Refresh button to continue, 3) the logs for the asynchronous communication will then be available. The proctor will read the logs for the synchronous communication or the asynchronous communication for an appropriate response.

5. Hit Run to send a XDR message.

6. To gain additional information concerning XDR Test 44 intended focus, purpose, description, expected test results, click the **More Info** link for the Test Case.

14.0 MESSAGE VALIDATORS

14.0 Message Validators

The Message Validators section is located on the Home Page.

Usage:

1. Select the Message Validators panel and navigate to the “Login/Sign-up” component in the ribbon bar and double-click to open the tool.

2. Login with the account established or create one per the instructions on Section 2.1.

14.1 CCDA R1.1 Validator with ONC MDHT Tool

1. Select the CCRA R1.1 Validator from the ribbon bar.

2. To upload a CCDA File, select the “Upload File” Button or “Drop and Drag” your file into the tool.

3. Select the criteria to validate against from the selections listed and select “Validate”.

4. The results report will be listed on the bottom section of the page.

14.2 CCDA R2.1 Validator Tool

1. Select the CCRA R2.1 Validator from the ribbon bar.

2. To download a test data file, there are a few options available.
    a. Select either Sender or Receiver Format, then using the “Select document…” button;
    b. Select the document format from the list array and “Download”.
    c. The alternative option, select “Download all files” button to download all the available files.
    d. The files will download to the client device.

3. To validate a CCDA, select the document type to validate against.
    a. Select document reference format.
    b. “Upload” or “Drag and Drop” your CCDA file into the tool.
    c. Select “Validate” and review the results.

14.4 XDM Validator

1. Select the XDM Validator from the ribbon bar.
2. Using the XDM Validator, “Upload” or “Drag and Drop” your file into the tool.

3. Select “Validate” and review the report.

14.5 XDR Validator

14.5.1 XDR Validator Send

1. Select the XDR Validator from the ribbon bar.

2. Selecting “XDR Send” from the options, tests sending an XDR to your SUT.
   a. Enter a “Patient ID”.
   b. Select the sample test data from the “Test Data Set”.
   c. Slide the SAML selector to “ON”.
   d. Enter your SUT endpoint in the text field and “Send”

3. A successful transmission will be indicated by a “Success” banner and display the information sent.

14.5.2 XDR Validator Receive

1. Select the XDR Validator from the ribbon bar.

2. Selecting “XDR Receive” from the options, tests sending an XDR to your SUT.

3. Select “Create your Endpoint”.

4. Select the correct endpoint for your test scenario; whether, TLS or non-TLS.

5. Copy and paste the endpoint into your SUT and send the sample CCDA.

6. Select “Check for Incoming XDR”

7. The tool with indicate whether or not the test passed by navigating the tabs in the report.

14.6 Direct Message Validator

1. Select the Direct Message Validator from the ribbon bar.

2. Using the tool, “Upload” or “Drag and Drop” your file, “Upload” or “Drag and Drop” the certificate, and enter the password in the appropriate boxes.

3. Select the “Validate” button.

4. A report summary will appear for validation.

15.0 2015 EDITION TESTING BY CRITERIA

15.1 2015 Edition Testing by Criteria

The 2015 Edition Testing by Criteria section has been added to align the test cases to the Test Procedures.

Selecting the "2015 Edition Testing by Criteria" panel opens the tool to the Edge Test Tool – 2015 Certification Testing Home landing page. The look and feel of this section is similar to the other sections of the test tool. The tests have been listed in an attempt to map them to the testing criteria that have been identified for the 2015 Edition.

The landing page lists the endpoints used for SMTP testing along with the listing of testing criteria listed across the top ribbon bar as: § 170.315(b)(1), § 170.315(h)(1), and § 170.315(h)(2).

Selecting the test criteria on the ribbon bar, opens that criteria section, displaying any required setup components along with a subsection drop-down tool. The testing criteria are broken down into a logical manner to allow the user to select the tests in a grouping that follow the test procedures.

The tests for each subsection aren't listed in this section of the manual to avoid duplication. Please see the specific tests listed in this manual for descriptions and instructions on performing those tests.

16.0 2015 DIRECT CERTIFICATE DISCOVERY TOOL

For each section, select the Hosting or Discovery Test Case that applies.

16.1 Hosting – Verify your certificate can be discovered

Step 1: Determine the required test cases for your SUT (System Under Test). Notice that there are two options for storage of address-bound and domain-bound certificates.

Step 2: Select a test case that reflects the SUT from the dropdown.

Step 3: Read the Description and Instructions for the selected test case. Then enter the Direct address and submit. Your SUT configuration may require that you select more than one test case. If so, then select one test case at a time, following the instructions to execute the test after each selection.

16.2 Discover DCDT's Certificates

Step 1: Download the Testing Tool's trust anchor. (see the tool for this)

Step 2: Upload the anchor to your Direct instance. This will allow you to send messages to our tool.

Step 3: Using the form below, map the Direct email address from which you will be Sending messages to a non-Direct email address that will receive a regular email containing test results. This email address should be able to receive plain text messages. Make sure you have access to the recipient email address in order to verify the receipt of the messages.

Step 4: Choose a test case from the drop down menu below. Read the test case description below the "Direct Address" field, copy the displayed Direct address and proceed to step 5. You should run all of the tests in order to verify that your system can correctly discover certificates in either DNS CERT records or LDAP servers. (Note: your system MUST NOT already contain a certificate for the address selected or the test case will not be valid).

Step 5: Attempt to send a message to the Direct address that you've just copied. Please only send to one address at a time. The test case results message will indicate the test case results. See the test case instructions for additional information.

17.0 2015 EDITION SURVEILLANCE TESTING

The Surveillance Testing section supports context-free transport testing that aligns with the 2015 Edition certification criteria. These tests can be executed on an ad-hoc basis and do not require any specific data.

Selecting the "Surveillance Testing" panel opens the tool to the Surveillance Testing Home landing page. The look and feel of this section is similar to the other sections of the test tool. The tests have been listed in an attempt to map them to a subset of the testing criteria that have been identified for the 2015 Edition.

Selecting the test criteria on the ribbon bar, opens that criteria section, displaying any required setup components along with a subsection drop-down tool. The testing criteria are broken down into a logical manner to allow the user to select the tests in a grouping that follow the test procedures.

The tests for each subsection aren't listed in this section of the manual to avoid duplication. Please see the specific tests listed in this manual for descriptions and instructions on performing those tests.