# Test Criteria: 170.315.h.1 – Direct Project

|  |  |
| --- | --- |
| **Testing Result** |  |
| Participant and Product-with-version |  |
| Setting (Ambulatory or Inpatient) |  |
| Test Proctor |  |
| Test Date |  |
| Test Result | Pass:  Fail:  No Attempt: |
| Error Description (if applicable) |  |
| Modifications to Product Under Test |  |
| Additional Software Used |  |
| Additional Proctor Notes |  |

### Overview

In this document you will find:

* [Test Data and Test Tools](#_Test_Data_and)
* [Standards Support](#_Demonstrate_Standards_Support)
* [Drummond Test Report (Instructions, Expected Results, Points to Remember)](#_170.315(h)(1)(i)_Applicability_Stat)
* [Test Procedures](#_Test_Procedures)
* [Appendix A: Testing Guide](#_Appendix_A:_Testing)
* [Appendix B: ONC Criteria](#_Appendix_B:_ONC)
* [Appendix C: (h1) Attestation Template](#_Appendix_C:_170.315(h)(1))

### Version of ONC Test Method

1.3

### Scope of Proctoring Sheet

The ONC test method associated with this criterion is the only approved test method for technology Meaningful Use certification. This Proctoring Sheet is not a replacement test method but a test procedure document for performing the ONC test method and recording the results. Proctoring Sheet describe test data, test criteria and expected results. It is assumed the Health IT developer or Participant under Test is familiar with the associated ONC test method.

# Robustness and Reliability Requirement

To satisfy the module criteria, it is expected that the Product-Under-Test is able to complete the testing requirements reliably, including repeat testing with the same result without error, and with a satisfactory level of robustness. This includes unexpected error messages produced through normal operation, multiple unintended restarts of the application or any other “buggy” facets of the product displayed while testing. These errors are record in the Additional Proctor Notes of the proctor sheet. Lack of reliability and robustness of design will result in failure of the module.

# Test Data and Tools

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| --- | --- |
| **Test Data Source:** | ONC-Supplied  DG-Supplied:  Developer-Supplied: |
| **Pre-Test Data Setup:**  Health IT developer downloads:   * DCDT Discovery Test Trust Anchor and configures in their Direct instance * ETT Direct Testing ETT Trust Anchor and configures in their Direct system trust store * ETT Direct Testing ETT Public Cert and configures in their Direct system trust store   Health IT developer provides:   * Attestation letter to Test Proctor prior to test event (see [Appendix C](#_Appendix_C:_170.315(h)(1)) for template). * Endpoints to be used for sending/receiving with the Edge Test Tool (ETT). | |
| **Test Data:**  ONC-Supplied test data supplied in test tools or health IT developer may opt to use own C-CDA for use in the “Send” test. If supplying own data, notify Test Proctor before test event. | |
| **Test Tools:**   * [2015 Edition Direct Certificate Discovery Tool (DCDT)](https://ttpedge.sitenv.org/ttp/#/direct/certdiscovery/dcdt2) * [Edge Testing Tool (ETT)](https://ttpedge.sitenv.org/ttp/#/home) – Direct Testing & HISP System Message Tracking, XDR Test Cases | |

# Demonstrate Standards Support

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| --- | --- |
| **Test Result:** | PASS:  FAIL:  No Attempt: |
| **Instructions:** Implement standards to demonstrate compliance to the Direct Project. | |

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| --- | --- | --- |
|  | **Standard** |  |
|  | § 170.202(a)(2) | [Applicability Statement for Secure Health Transport, Version 1.2, August 2015](http://wiki.directproject.org/file/view/Applicability+Statement+for+Secure+Health+Transport+v1.2.pdf) |
|  | § 170.202(e)(1) | [Implementation Guide for Delivery Notification in Direct, Version 1.0, June 29, 2012](http://wiki.directproject.org/file/view/Implementation+Guide+for+Delivery+Notification+in+Direct+v1.0.pdf) |

# 170.315(h)(1)(i) Applicability Statement for Secure Health Transport (Direct) - Send

|  |  |
| --- | --- |
| **Test Result:** | PASS:  FAIL:  No Attempt: |
| **Instructions:**  Health IT developer:   * Downloads the DCDT Discovery test Trust Anchor and configures in their Direct instance. * Sends Direct message per instructions of each DCDT test case (refer to DCDT test tool) to show that the health IT (HIT) module can properly discover hosted certificates. * Sends a CCDA payload via a Direct “wrapped” message to the appropriate ETT Direct Testing tool email address. | |
| **Expected Test Result:**   * Able to send health information in accordance with the standards specified in §170.202(a)(2), including formatted only as a “wrapped” message. * Health IT module demonstrates successful discovery of certificates hosted in DNS and LDAP based on error-free validation reports from the DCDT. * ETT can successfully decrypts and validates received Direct messages from the Health IT module. * Health IT module successfully sends encrypted and signed health information to three partner HISPs using Direct v1.2 in accordance with the standard specified at §170.202(a)(2): Applicability Statement for Secure Health Transport. The verification includes:   + - Sent “Wrapped” RFC-5751 messages; and     - Received processed Message Disposition Notifications (MDNs) upon receiving the Direct message from the health IT module.   from each of the three partner HISPs | |
| **Points to Remember:**   * For certification to this criterion, it is required to send and receive messages in only “wrapped” format even though the specification allows use of “unwrapped” messages. | |

### Test Procedures

### 1.1 Discover Certificates: Positive Test Cases

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| --- | --- |
|  | User downloads the DCDT Trust Anchor and upload into the HIT module’s Direct trust store. |
|  | Using the DCDT, user registers the Health IT developer’s Direct email address and maps it to Proctor’s non-direct email address.  **Direct From email address: <type here>** |
|  | Using the HIT module functionality, user sends a direct message to each test case ‘Direct To’ email address. |
|  | Using DCDT validation reports, Proctor verifies health IT module correctly discovers and uses address-bound and domain-bound certificates hosted in both DNS and LDAP. |

<INSERT SCREEN SHOTS or LOG FILE – Direct Certificate Discovery Tool discovery of EHR certificates>

* D1 Valid address-bound certificate discovery in DNS
* D2 Valid domain-bound certificate discovery in DNS
* D3 Valid address-bound certificate discovery in LDAP
* D4 Valid domain-bound certificate discovery in LDAP
* D9 Valid address-bound certificates over invalid certificate in DNS
* D10 Certificate discovery in LDAP with one unavailable LDAP server
* D14 Discovery of certificate large than 512 bytes in DNS
* D15 Certificate discovery in LDAP based on SRV priority value
* D16 Certificate discovery in LDAP based on SRV weight value
* D17 – CRL-based revocation checking for address-bound cert discovery in DNS
* D18 – AIA-based intermediate issuer cert retrieval for address-bound cert discovery in DNS

### 1.2 Discover Certificates: Negative Test Cases

|  |  |
| --- | --- |
|  | Using the HIT module functionality, user sends a direct message to each test case ‘Direct To’ email address. |
|  | Proctor verifies HIT module does NOT send email because a certificate in Direct Certificate Discovery Tool discovery test was correctly not found. |

<INSERT SCREEN SHOTS – Negative Test Cases>

* D5 – Invalid address-bound certificate discovery in DNS
* D6 – Invalid domain-bound certificate discovery in DNS
* D7 – Invalid address-bound certificate discovery in LDAP
* D8 – Invalid domain-bound certificate discovery in LDAP
* D11– No certificates discovered in DNS CERT records and no SRV records
* D12 – No certificates found in DNS CERT records and no available LDAP servers
* D13 – No certificates discovered in DNS CERT records or LDAP servers

### 1.3 Register Direct Address

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| --- | --- |
|  | Using the ETT Register Direct functionality, user registers the Health IT developer’s Direct From email address and maps it to Proctor’s non-direct email address.  **Direct From email address: <type here>** |

<INSERT SCREEN SHOTS>

### 1.4 Send Health Information Using Direct

|  |  |
| --- | --- |
|  | Using HIT Module functionality, user sends an encrypted and signed Direct “wrapped” message payload to the ETT Direct To email address. |
|  | Using the ETT validation report, Proctor verifies message payload:   * Encrypted using the ETT’s Public Key * Transmitted via Direct “wrapped” message format * Message successfully decrypted |

<INSERT SCREEN SHOT – HIT Module sending message>

<INSERT SCREEN SHOT OR LINK TO FILE – ETT Validation Report>

### 1.5 Send Using Direct: Three HISP Partners

|  |  |
| --- | --- |
|  | Health IT developer provides documentation as evidence of successful send of Direct v1.2 “wrapped” messages to three partner HISPs:   * **Partner 1: <type here>** * **Partner 2: <type here>** * **Partner 3: <type here>**   Developer should include a signed attestation that health IT module supports “message wrapping” as a sender as this is not easily discernible in data captures/logs. |
|  | Health IT developer provides documentation as evidence of successfully processed MDNs received from the three partner HISPs identified above upon sending the Direct messages. |

<INSERT SCREEN SHOT OR LINK TO FILE – HISP Partner Supporting Documents>

<INSERT SCREEN SHOT OR LINK TO FILE – HISP MDN Processing>

# 170.315(h)(1)(i) Applicability Statement for Secure Health Transport (Direct) - Receive

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| --- | --- |
| **Test Result:** | PASS:  FAIL:  No Attempt: |
| **Instructions:**   * Health IT developer identifies the HIT module’s Public Key for encryption of messages to be sent by TTT to the HIT module. * Demonstrate DCDT Hosting test case based on: * address-bound or domain-bound; and * DNS or LDAP. * Health IT module receives (4) CCDA payloads via a Direct “wrapped” message from the Edge Test Tool (ETT). * Health IT module rejects health information not in accordance with the standard specified at §170.202(a)(2) based on the “negative test cases” within the ETT. | |
| **Expected Test Result:**   * Able to receive health information in accordance with the standards specified in §170.202(a)(2), including formatted only as a “wrapped” message. * Health IT module rejects health information not in accordance with the standard specified at §170.202(a)(2). * Health IT module demonstrates hosted certificates are discoverable based on error-free validation from the DCDT. * Health IT module successfully receives four “wrapped” Direct message payloads from the ETT. * Health IT module generates and sends valid MDN notifications for all received Direct messages. * Health IT module successfully receives encrypted and signed health information from three partner HISPs using Direct v1.2 in accordance with the standard specified at §170.202(a)(2): Applicability Statement for Secure Health Transport. The verification includes:   + - Sent “Wrapped” RFC-5751 messages; and     - Received processed Message Disposition Notifications (MDNs) upon receiving the Direct message from the health IT module.   from each of the three partner HISPs | |
| **Points to Remember:**   * For certification to this criterion, it is required to send and receive messages in only “wrapped” format even though the specification allows use of “unwrapped” messages. | |

### Test Procedures

### 1.6 Hosting Certificates

|  |  |
| --- | --- |
|  | Health IT developer provides the Direct To email address to use for DCDT Hosting test.  **Direct To email address: <type here>** |
|  | Proctor executes at least one of the following DCDT Hosting test case based on health IT module’s implementation:   * **H1 - Normal address-bound certificate search in DNS** * **H2- Normal domain-bound certificate search in DNS** * **H3 - Normal address-bound certificate search in LDAP** * **H4 - Normal domain-bound certificate search in LDAP** |
|  | Proctor verifies health IT module’s hosted certificates are discoverable based on DCDT test case validation. |

<INSERT SCREEN SHOTS>

### 1.7 Receive Direct Message

|  |  |
| --- | --- |
|  | If the certificate is not discoverable in DNS, Health IT developer provides Proctor with the HIT module’s public key to use for sending messages from the ETT Direct. |
|  | Using the ETT Send Direct Message functionality, Proctor sends four Direct “wrapped” messages for the following type of xml payloads and verifies receipt by the HIT module:   * **CCDA Ambulatory** * **CCDA Inpatient** * **C32 Sample1 or C32 Sample2** * **CCR Sample1 or CCR Sample2** |
|  | Proctor verifies that HIT module generated and sent MDNs for the four received messages and were received by the ETT. |

<INSERT SCREEN SHOTS – All four messages received>

<INSERT SCREEN SHOTS – All MDNs sent>

### 1.8 Reject Receipt of Direct Message: Negative Testing

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| --- | --- |
|  | Proctor executes each of the “Negative” test cases below. This is done in the ETT Direct by selecting one of the payloads and then select one of the signing certs to send a “Wrapped” direct message:   * **Invalid Certificate** * **Different Trust Anchor** * **Expired Certificate** * **Bad AIA Extension** * **Invalid Message Digest** |
|  | Proctor verifies no MDNs were received for any of the negative test cases above. |

<INSERT SCREEN SHOTS>

### 1.9 Receive Using Direct: Three HISP Partners

|  |  |
| --- | --- |
|  | Health IT developer provides documentation as evidence of successful receipt of Direct v1.2 “wrapped” messages from three partner HISPs:   * **Partner 1: <type here>** * **Partner 2: <type here>** * **Partner 3: <type here>**   Developer should include a signed attestation that health IT module supports “message wrapping” as a receiver as this is not easily discernible in data captures/logs. |
|  | Health IT developer provides documentation as evidence of successfully generated MDNs sent to the three partner HISPs identified above upon receipt of the Direct messages. |

<INSERT SCREEN SHOT OR LINK TO FILE – HISP Partner Supporting Documents>

<INSERT SCREEN SHOT OR LINK TO FILE – HISP MDN Processing>

**170.315(h)(1)(ii) Delivery Notification In Direct – Receive**

|  |  |
| --- | --- |
| **Test Result:** | PASS:  FAIL:  No Attempt: |
| **Instructions:**   * Health IT module electronically receives health information from the Edge Test Tool (ETT). | |
| **Expected Test Result:**   * Able to receive health information in accordance with the standard specified in § 170.202(e)(1). | |
| **Points to Remember:**   * Testing for this criterion will require the processing of invalid test cases that frequently occur in real-world situations so that Security/Trust Agents (STAs) can demonstrate error handling abilities, including handling XDM packages and message disposition. | |

### Test Procedures

### 2.1 SMTP Tests: Disposition-Notification-Options Header

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| --- | --- |
|  | SMTP/IMAP MT Test 39 - Message with Good Header |
|  | SMTP/IMAP MT Test 40 - Message with Bad Header |

<INSERT SCREEN SHOTS – Test Case Logs>

### 2.2 SMTP Tests: Failure Notifications

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| --- | --- |
|  | SMTP/IMAP MT Test 41 – No Dispatched MDN |

# Appendix A: Testing Guide

*This appendix contains more details and background on the testing requirements, including explanation on underlying standards, notable issues and best practice suggestions.*

Rev 01-Mar-2016 Additions

* Use of the Applicability Statement for Secure Health Transport (“Direct”) is required to meet this certification criterion. There is no exemption or additional possible transport standard for certification to this criterion.
* Testing and certification will not focus on particular deployments or configurations, but rather on what will remain constant across those variances— technology's ability to correctly produce and receive SMTP + S/MIME messages formatted in accordance with the Applicability Statement for Secure Health Transport Version 1.2 specification. We do not intend for testing and certification to focus on the particular email protocols that may be implemented to support the routing of these messages, such as Internet Message Access Protocol (IMAP), Post Office Protocol (POP) and other vendor-specific proprietary protocols. These capabilities and others such as mailbox management, storage, and forwarding of received messages that would be implementation or deployment specific would not be assessed as part of testing or as a condition of certification.
* The Implementation Guide for Delivery Notification in Direct, Version 1.0, June 29, 2012 functionality supports interoperability and exchange, particularly for both sending and receiving parties. It provides guidance for enabling health information service providers (HISPs) to provide a high level of assurance to senders that a message has arrived at its destination, a necessary component to interoperability. The IG also outlines the various exception flows that result in compromised message delivery and the mitigation actions that should be taken by STAs to provide success and failure notifications to the sending system.

# Appendix B: ONC Criteria and Standards

*This appendix contains copy of the relevant ONC criteria and standards for this proctor sheet as a reference. In the event of a discrepancy with the ONC Final Rule, the ONC Final Rule takes precedence.*

**§** **170.315(h)(1) Direct Project.**

1. Applicability Statement for Secure Health Transport. Able to send and receive health information in accordance with the standard specified in § 170.202(a)(2), including formatted only as a “wrapped” message.
2. Applicability Statement for Secure Health Transport and Delivery Notification in Direct. Able to send and receive health information in accordance with the standard specified in § 170.202(e)(1).

**§** **170.202(a)(2)** [Applicability Statement for Secure Health Transport, Version 1.2, August 2015](http://wiki.directproject.org/file/view/Applicability+Statement+for+Secure+Health+Transport+v1.2.pdf)

**§ 170.202(e)(1)** [Implementation Guide for Delivery Notification in Direct, Version 1.0, June 29, 2012](http://wiki.directproject.org/file/view/Implementation+Guide+for+Delivery+Notification+in+Direct+v1.0.pdf)

### Appendix C: 170.315(h)(1) Attestation Template

*This appendix contains a template for submitting the 170.315(h)(2) attestation requirements. The attestation letter should be returned on company letterhead addressing the required functionality.*

[Name of Authorized Senior Company Representative]

[Title of Company Representative]

[Company Contact Information]

[Company Name] attests that the System Under Test provides the functionality identified below for the associated ONC 2015 Edition criteria 170.315(h)(1) requirements including support of full message wrapping for incoming (receiver) and outgoing (sender) messages.

**I hereby attest that all above statements are true, as an authorized signing authority on behalf of my organization.**

[Signature]

[Signature Block of Authorized Senior Company Representative]

[Date signed]

**Change Log**

|  |  |
| --- | --- |
| Revision | Change Description |
| 05-Jun-2017 | Removed Invalid Trust Anchor per ONC update. |
| 01-Dec-2016 | Added DCDT test cases 17 and 18. |
| 01-Oct-2016 | Added requirement for “message wrapping” attestation. Updated pretest activities under “Test Data and Tools”. Updated hyperlink for ONC-hosted ETT. |
| 01-July-2016 | Removed Section 2 (Send MDNs from Edge Protocols) and re-added Test 41. |
| 01-May-2016 | Removed SMTP test cases (41 and 42) and XDR notification test cases (MT Test 43 and 44). |
| 01-April-2016 | Based on ONC v1.1 test method, ‘XDR delivery notifications’ sections 2.5, 2.6, 2.7 and Test 22 from Section 2.2 were removed. Corrected link for Edge Test Tool (ETT). |
| 01-Mar-2016 | Initial Release. |
|  |  |

**About Drummond Group LLC**

Drummond Group LLC is a global software test and certification lab that serves a wide range of vertical industries.  In healthcare, Drummond Group tests and certifies Controlled Substance Ordering Systems (CSOS), Electronic Prescription of Controlled Substances (EPCS) software and processes, and Electronic Health Records (EHRs) – designating the trusted test lab as the only third-party certifier of all three initiatives designed to move the industry toward a digital future. Founded in 1999, and accredited for the Office of the National Coordinator Health IT Certification Program as an Authorized Certification Body (ACB) and an Authorized Test Lab (ATL), Drummond Group continues to build upon its deep experience and expertise necessary to deliver reliable and cost-effective services. For more information, please visit <http://www.drummondgroup.com> or email [ehr@drummondgroup.com](mailto:ehr@drummondgroup.com)

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