
HIMSS and RSNA
Integrating the Healthcare Enterprise

IHE/MESA Cross Reference Mgr
Tests

Electronic Radiology Laboratory
Mallinckrodt Institute of Radiology
510 South Kingshighway Blvd.
St. Louis, MO 63110
314.362.6965 (Voice)
314.362.6971 (Fax)

Revision 9.0.0
20-September-2005

1	Cross Reference Manager Tests	3
1.1	Introduction	3
1.2	Patient Identification	3
1.3	Configuration.....	3
1.4	Starting the MESA Servers	3
1.5	Installation Test	4
1.6	Submission of Results	4
2	Test Cases: PIX.....	5
2.1	Test Case 10501: PIX Query Case 1 and Case 2.....	6
2.2	Test Case 10502: PIX Query Case 3	7
2.3	Test Case 10503: PIX Query Case 4	8
2.4	Test Case 10506: PIX Query, Patient Update	9
2.5	Test Case 10511: PIX Patient Feed: A01	10
2.6	Test Case 10512: PIX Patient Feed: A04	10
2.7	Test Case 10513: PIX Patient Feed: A05	11
2.8	Test Case 10514: PIX Patient Feed: A08	11
2.9	Test Case 10515: PIX Patient Feed: A40	11
2.10	Test Case 10531: PIX Update Notification: MESA 1	12
2.11	Test Case 10532: PIX Update Notification: MESA 2	12
2.12	Test Case 10533: PIX Update Notification: MESA 3	12
2.13	Test Case 10541: PIX Integrated Test 1	12
2.14	Test Case 10542: PIX Integrated Test 2	12
2.15	Test Case 10543: PIX Integrated Test 3	13
3	Test Cases: PSA.....	14
4	Test Cases: CT	15

1 Cross Reference Manager Tests

1.1 Introduction

The MESA tests include a number of cases each of which rely on a sequence of messages between actors. These tests range across different integration profiles:

- Retrieve Information for Display
- Enterprise User Authentication
- Patient Identity Cross Reference for MPI
- Patient Synchronized Application
- Consistent Time

This document lists the transactions and messages for a number of cases. It may not describe the clinical scenario behind each case, but listing the transactions should clearly define what is expected of each actor. These are all of the transactions involving all of the actors. When you test with your particular actor, you may see only a subset of these messages.

1.2 Patient Identification

1.3 Configuration

The MESA scripts are run from the directory *\$MESA_TARGET/ mesa_tests/iti/xref_mgr*. The ASCII configuration file *xref_mgr.cfg* contains parameters that identify the Cross Reference Manager under test and the MESA Cross Reference Manager.

Edit the configuration file and modify the two entries that begin with TEST to identify your Cross Reference Manager. The value for TEST_XREF_HOST_HL7 can specify an IP address or a host name (assuming the host table or DNS is accurate).

The default port number for the MESA Cross Reference Manager is 3600. You should only change this port number if there is a conflict with another service on the MESA test computer. There will be no conflicts with other MESA servers; the only conflict would occur with something from the operating system or other software package.

1.4 Starting the MESA Servers

MESA servers are started from a DOS/CMD window or a terminal emulator. Follow these steps for Unix systems

1. `cd $MESA_TARGET/ mesa_tests/rid/actors/xref_manager`
2. `scripts/start_mesa_servers.csh`

To stop the servers:

```
scripts/stop_mesa_servers.csh
```

The start instructions for MESA tools on a Windows system are:

1. cd %MESA_TARGET%\mesa_tests\rid\actors\xref_manager
2. scripts\start_mesa_servers.bat

To stop the MESA servers:

Kill the server using ^C in the same DOS window where you started the server. When you started the server, it ran the server in the foreground.

1.5 Installation Test

1.6 Submission of Results

Test descriptions below inform the reader to “submit results to the Project Manager”. This is does not mean “email”. The current submission process should be documented by the Project Manager, but will not include emailing files directly to the Project Manager.

2 Test Cases: PIX

This section describes test cases that are generally associated with the PIX Integration Profile. There may be some overlap with other profiles.

Each test case involves a series of transactions involving one test patient. Some patients may require that a single actor participate in multiple transactions. The tables in this section give the order of messages for an integrated system with all actors. This is provided as a centralized reference. To test an individual IHE actor, refer to the appropriate test document.

2.1 Test Case 10501: PIX Query Case 1 and Case 2

Test case 10501 covers the PIX Query Case 1 and 2. One patient (ALPHA) is registered in two different domains. A second patient (SIMPSON) is registered in a single domain. Three registration messages are sent to a Cross Reference Manager.

A PIX Query is sent to resolve a reference to ALPHA. A second PIX Query is sent to resolve a reference to SIMPSON. Because SIMPSON is not registered in the second domain, the response to that PIX Query will indicate no data.

2.1.1 References

ITI TF-2: 3.9.4.2.2

2.1.2 Instructions

To run this test, follow these steps using a DOS window or terminal emulator:

1. Set the current directory to \$MESA_TARGET/ mesa_tests/iti/actors/xref_mgr.
2. Edit the file xref_mgr.cfg. This file describes your server that receives HL7 messages. Modify the values that begin with "TEST" to accurately describe your server.
3. Make sure the MESA servers have been started. See section 1.4 for details.
4. Run the test script as follows:

```
perl scripts/xref_mgr_pix.pl 10501 <log level>
```

where <log level> is a value between 1 and 4.

5. The test script will send three A04 registration messages to your system. After the three A04 messages, the test script sends two PIX queries. Your system will respond with appropriate PIX responses.

2.1.3 Evaluation

To evaluate your response to this test:

1. Run the evaluation script

```
perl 10501/eval_10501.pl 4
```

2. The output file is 10501/grade_10501.txt. This test is successfully completed when the last line in the output file indicates 0 errors.
3. Submit the grade file to the Project Manager

Notes:

1. The evaluation script takes a single argument, <log level>. When debugging output, it is sometimes helpful to use a log level of 1 to see only differences. When submitting results, we prefer the output with the most verbose level, 4.

2.2 Test Case 10502: PIX Query Case 3

Test case 10502 covers the PIX Query case 3. Two patients are registered in a single domain. A PIX consumer sends a query for a third patient who is not recognized as one of the two registered patients.

2.2.1 References

ITI TF-2: 3.9.4.2.2

2.2.2 Instructions

To run this test, follow these steps using a DOS window or terminal emulator:

1. Set the current directory to \$MESA_TARGET/ mesa_tests/iti/actors/xref_mgr.
2. Edit the file xref_mgr.cfg. This file describes your server that receives HL7 messages. Modify the values that begin with "TEST" to accurately describe your server.
3. Make sure the MESA servers have been started. See section 1.4 for details.
4. Run the test script as follows:

```
perl scripts/xref_mgr_pix.pl 10502 <log level>
```

where <log level> is a value between 1 and 4.

5. The test script will send two A04 registration messages to your system. After the two A04 messages, the test script sends one PIX query for a third patient. Your system will respond with the appropriate PIX response.

2.2.3 Evaluation

To evaluate your response to this test:

1. Run the evaluation script

```
perl 10502/eval_10502.pl 4
```

2. The output file is 10502/grade_10502.txt. This test is successfully completed when the last line in the output file indicates 0 errors.
3. Submit the grade file to the Project Manager

Notes:

1. The evaluation script takes a single argument, <log level>. When debugging output, it is sometimes helpful to use a log level of 1 to see only differences. When submitting results, we prefer the output with the most verbose level, 4.

2.3 Test Case 10503: PIX Query Case 4

Test case 10503 covers the PIX Query case 4. No new patients are registered. A PIX query is sent with a Patient ID that includes an unknown issuer (value is 'XXXX'). The Cross Reference Manager responds appropriately.

2.3.1 References

ITI TF-2: 3.9.4.2.2

2.3.2 Instructions

To run this test, follow these steps using a DOS window or terminal emulator:

1. Set the current directory to \$MESA_TARGET/ mesa_tests/iti/actors/xref_mgr.
2. Edit the file xref_mgr.cfg. This file describes your server that receives HL7 messages. Modify the values that begin with "TEST" to accurately describe your server.
3. Make sure the MESA servers have been started. See section XXX for details.
4. Run the test script as follows:

```
perl scripts/xref_mgr_pix.pl 10503 <log level>
```

where <log level> is a value between 1 and 4.

5. The test script will send one PIX query with a PID that includes the issuer XXXX. This issuer is unknown to the Cross Reference Manager. The Cross Reference Manager should respond as defined in Case 4.

2.3.3 Evaluation

To evaluate your response to this test:

1. Run the evaluation script

```
perl 10503/eval_10503.pl 4
```

2. The output file is 10503/grade_10503.txt. This test is successfully completed when the last line in the output file indicates 0 errors.
3. Submit the grade file to the Project Manager

Notes:

1. The evaluation script takes a single argument, <log level>. When debugging output, it is sometimes helpful to use a log level of 1 to see only differences. When submitting results, we prefer the output with the most verbose level, 4.

2.4 Test Case 10506: PIX Query, Patient Update

Test case 10506 covers PIX Patient Feed, the ADT^A08 message, and PIX queries. Patient TAU^TERI is registered in domain ADT1 with “correct” demographics. This patient is then registered in ADT2 with incorrect demographics. The demographics are sufficiently different that a Cross Reference Manager should not link these two records.

A patient update message is sent for the patient in domain ADT2 that should synchronize the demographics with those seen in ADT1. The Cross Reference Manager should now link the two records.

2.4.1 References

ITI TF-2: 3.9.4.2.2

2.4.2 Instructions

To run this test, follow these steps using a DOS window or terminal emulator:

1. Set the current directory to \$MESA_TARGET/mesa_tests/iti/actors/xref_mgr.
2. Edit the file xref_mgr.cfg. This file describes your server that receives HL7 messages. Modify the values that begin with “TEST” to accurately describe your server.
3. Make sure the MESA servers have been started. See section XXX for details.
4. Run the test script as follows:

```
perl scripts/xref_mgr_pix.pl 10506 <log level>
```

where <log level> is a value between 1 and 4.

5. The test script will send one PIX query with a PID that includes the issuer XXXX. This issuer is unknown to the Cross Reference Manager. The Cross Reference Manager should respond as defined in Case 4.

2.4.3 Evaluation

To evaluate your response to this test:

1. Run the evaluation script

```
perl 10506/eval_10506.pl 4
```

2. The output file is 10506/grade_10506.txt. This test is successfully completed when the last line in the output file indicates 0 errors.
3. Submit the grade file to the Project Manager

Notes:

1. The evaluation script takes a single argument, <log level>. When debugging output, it is sometimes helpful to use a log level of 1 to see only differences. When submitting results, we prefer the output with the most verbose level, 4.

2.5 Test Case 10511: PIX Patient Feed: A01

Test case 10511 covers PIX Patient Feed and the ADT^A01 message.

2.5.1 References

ITI TF-2: 3.8.4

2.6 Test Case 10512: PIX Patient Feed: A04

Test case 10512 covers PIX Patient Feed and the ADT^A04 message. These behaviors are tested:

- Patient Identity Source formulates an A04 message with the proper content
- Patient Identity Cross-reference Manager can receive and process a properly constructed ADT^A04 message.

The nominal patient name is EPSILON^ELLIE.

2.6.1 References

ITI TF-2: 3.8.4

2.6.2 Instructions

To run this test, follow these steps using a DOS window or terminal emulator:

1. Set the current directory to \$MESA_TARGET/mesa_tests/iti/actors/xref_mgr.
2. Edit the file xref_mgr.cfg. This file describes your server that receives HL7 messages. Modify the values that begin with "TEST" to accurately describe your server.
3. Make sure the MESA servers have been started. See section XXX for details.
4. Run the test script as follows:

```
perl scripts/xref_mgr_pix.pl 10512 <log level>
```

where <log level> is a value between 1 and 4.

5. The test script will send an A04 registration message to your system.

2.6.3 Evaluation

1. Create evidence that this patient has been captured by your system:
 - a. Obtain a screen capture (software, digital camera) a UI screen
 - b. Extract a section of a log file
2. Name the output file xref_10512.xxx where xxx is the appropriate extension.
3. Zip/tar the screen capture file with other results and Submit to the Project Manager.

2.7 Test Case 10513: PIX Patient Feed: A05

Test case 10513 covers PIX Patient Feed and the ADT^A05 message.

2.7.1 References

ITI TF-2: 3.8.4

2.8 Test Case 10514: PIX Patient Feed: A08

Test case 10514 covers PIX Patient Feed and the ADT^A08 message.

2.8.1 References

ITI TF-2: 3.8.4

2.9 Test Case 10515: PIX Patient Feed: A40

Test case 10515 covers PIX Patient Feed and the ADT^A40 message.

2.9.1 References

ITI TF-2: 3.8.4

2.10 Test Case 10531: PIX Update Notification: MESA 1

Test case 10531 covers a use case involving the PIX Update Notification transaction and behavior of the Cross-reference Manager.

2.10.1 References

ITI TF-2: 3.10

2.11 Test Case 10532: PIX Update Notification: MESA 2

Test case 10532 covers a use case involving the PIX Update Notification transaction and behavior of the Cross-reference Manager.

2.11.1 References

ITI TF-2: 3.10

2.12 Test Case 10533: PIX Update Notification: MESA 3

Test case 10533 covers a use case involving the PIX Update Notification transaction and behavior of the Cross-reference Manager.

2.12.1 References

ITI TF-2: 3.10

2.13 Test Case 10541: PIX Integrated Test 1

Test case 10541 covers a use case with several PIX transactions integrated into a larger test.

2.13.1 References

ITI TF-2: 3.10

2.14 Test Case 10542: PIX Integrated Test 2

Test case 10542 covers a use case with several PIX transactions integrated into a larger test.

2.14.1 References

ITI TF-2: 3.10

2.15 Test Case 10543: PIX Integrated Test 3

Test case 10543 covers a use case with several PIX transactions integrated into a larger test.

2.15.1 References

ITI TF-2: 3.10

3 Test Cases: PSA

This section describes test cases that are generally associated with the PSA Integration Profile. There may be some overlap with other profiles.

Each test case involves a series of transactions involving one test patient. Some patients may require that a single actor participate in multiple transactions. The tables in this section give the order of messages for an integrated system with all actors. This is provided as a centralized reference. To test an individual IHE actor, refer to the appropriate test document.

4 Test Cases: CT

This section describes test cases that are generally associated with the CT component. There may be some overlap with other profiles.