
HIMSS and RSNA
Integrating the Healthcare Enterprise

IHE/MESA Order Placer Tests

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Revision 9.0.0
20-September-2005

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1 Order Placer Tests

1.1 Introduction

Read the document *IHE Tests: Transaction Sequences*. This document lists all the transactions in a series of use cases which drive tests for individual actors. Order Placers will participate in a subset of the transactions. Reading that document will allow you to understand the full set of transactions for each test.

Each test is run using the same procedure. We assume you are using an interactive terminal or terminal emulator and are logged on to the MESA test system. Change directory to `$MESA_TARGET/ mesa_tests/rad/actors/ordplc`. Make sure the `$MESA_TARGET` and `$MESA_STORAGE` environment variables are set properly.

1.1.1 Integration Profiles and Test Procedures

This document lists a number of tests for Order Placer Systems. You may not be responsible for all of these tests.

Please refer to the Connectathon web tool to list the required tests for your system. The web address of this tool depends on the year and project manager. Please contact the appropriate project manager to obtain this information.

1.2 Message Attributes

ORM and other HL7 messages contain attributes that are not used or required by the IHE Technical Framework: Year 3. This section contains a table defining those attributes that will be evaluated in the Order Placer tests. Other values may be required by the Technical Framework but not evaluated with this software.

In the table below, the columns marked *Value* and *Present* indicate the scope of the evaluation for these messages. Fields that are marked in the *Value* column indicate the tests will expect a specific value in the field (for example, we specify the patient name). Fields marked in the *Present* column are tested to see if the field contains a value, but the tests cannot evaluate for a specific value.

Some fields only make sense in the context of a specific transaction. The fields evaluated for an ORM message differ from those evaluated for an ORR message.

Fields Evaluated for ORM Message from Order Placer

Segment	Field #	Description	Value	Present
MSH	1	Field Separator	x	
	2	Encoding Characters	x	
	3	Sending Application		x
	4	Sending Facility		x
	5	Receiving Application		x
	6	Receiving Facility		x
	9	Message Type	x	
	10	Message Control ID		x
	11	Processing ID	x	
	12	Version ID	x	
PID	3	Patient ID List	x	
	5	Patient Name	x	
	18	Patient Account Number	x	
PV1	2	Patient Class	x	
ORC	1	Order Control	x	
	2	Placer Order Number		x
	7	Quantity/Timing	x	
	12	Ordering Provider	x	
	17	Entering Organization	x	
OBR	2	Placer Order Number		x
	4	Universal Service ID	x	
	16	Ordering Provider	x	
	27	Quantity/Timing	x	
	31	Reason for Study	x	

Fields Evaluated for ORR Message from Order Placer

Segment	Field #	Description	Value	Present
MSH	1	Field Separator	x	
	2	Encoding Characters	x	
	3	Sending Application		x

	4	Sending Facility		x
	5	Receiving Application		x
	6	Receiving Facility		x
	9	Message Type	x	
	10	Message Control ID		x
	11	Processing ID	x	
	12	Version ID	x	
MSA	1	Acknowledgment Code	x	
	2	Message Control ID	x	
ORC	1	Order Control	x	
	2	Placer Order Number		x
	3	Filler Order Number	x	
	7	Quantity/Timing	x	
	9	Date/Time of Transaction		x
	12	Ordering Provider	x	
	17	Entering Organization	x	
OBR	2	Placer Order Number		x
	3	Filler Order Number	x	
	4	Universal Service ID	x	
	16	Ordering Provider	x	
	27	Quantity/Timing	x	
	31	Reason for Study	x	

1.3 Message Values

Each test described in section 2 expects ORM or ORR messages with specific content. The MESA test system includes files that describe these messages and expected values. Use a web browser to open the file: *\$MESA_TARGET/ mesa_tests/rad/msgs/doc/index.html*. This file contains links to the message sequence for each test. You can examine the test messages to see what values are expected by the MESA software.

1.4 Configuration

The Order Placer scripts described below use an ASCII configuration file to identify parameters such as host names and port numbers. The configuration file is named *ordplc_test.cfg* and is included in the directory *\$MESA_TARGET/ mesa_tests/rad/actors/ordplc*. Edit the file and change entries (host name, port number) which pertain to your system. Your system is identified by entries that begin with TEST.

The MESA Order Filler is configured to receive HL7 messages on port 2200.

Read the *Runtime Notes* section of the *Installation Guide* to determine the proper settings for the MESA runtime environment.

For IHE Basic Security tests, all messages are exchanged using TLS. MESA servers are run on the same ports but with the TLS option. The configuration file that identifies your information is *ordplc_secure.cfg*. This separate file allows you to use different port numbers for secure and standard configurations. You may decide to use the same port numbers for both types of communication. The MESA software will only use all secure or all standard communication for a test; we do not mix communication protocols.

1.5 Starting the MESA Servers

These instructions assume you are using a terminal emulator on Unix systems or an MS DOS command window under Windows NT. Each test uses a command line interface; there is no graphical user interface. Before you start the test procedure, you need to start the MESA Order Placer and MESA Order Filler servers. Make sure the appropriate database is running (PostgreSQL, SQL Server). To start the MESA servers:

1. Enter the Order Placer exam folder: *mesa_tests/rad/actors/ordplc*
2. Execute the appropriate script to start the servers:

```
scripts/start_mesa_servers.csh [loglevel] (Unix)
```

```
scripts\start_mesa_servers.bat (Windows)
```

In the unix environment, *loglevel* is an optional argument (0 is default). Log levels are:

- | | |
|---|---------------------------------|
| 0 | no logging |
| 1 | errors |
| 2 | warnings |
| 3 | verbose |
| 4 | conversational (really verbose) |

To set the log level for Windows NT, set the environment variable *LOGLEVEL* to the desired value before invoking the batch file.

When you are finished running one or more tests, you can stop the servers:

```
scripts/stop_mesa_servers.csh (Unix)
```

`scripts\stop_mesa_servers.bat` (Windows)

Log files are stored in `$MESA_TARGET/logs`.

For the security tests, the MESA servers are started with different scripts. These are `scripts/start_mesa_secure.csh` and `scripts\start_mesa_secure.bat`. The log levels are the same as for the standard tests. The MESA servers are stopped using these scripts: `scripts/stop_mesa_secure.csh` and `scripts\stop_mesa_secure.bat`.

1.6 Unique Identifiers

1.7 Test Instructions

Please note the test instructions change starting with the 6.7.0 release.

Each test is independent of the others. You must collect the results of one test before starting a new test.

1. Enter the Order Placer exam directory: `mesa_tests/rad/actors/ordplc`.
2. Remember the MESA servers were started according to the directions in section 1.5.

Workflow tests (1xx series) use a test engine that manages the test process. This test engine is used for all 1xx series tests and is driven by a text file that describes the events for a specific test. Each test below will indicate which script is appropriate (usually the `swf` script for Scheduled Workflow). The arguments to the script are the test number and the log level for output:

- | | |
|---|---|
| 1 | errors only |
| 2 | warnings |
| 3 | verbose |
| 4 | reference information (pointers into IHE Technical Framework) |

An example of the syntax used to invoke the script for the 131 test is:

```
perl scripts/ordplc_swf.pl 131 1
```

The test script will announce what events are about to happen and will request that you send specific events according to the sequence defined in *IHE Tests: Transaction Sequences*. When you have completed the sequence of events, results can be evaluated by running the evaluation script:

```
perl <test>/eval_<test>.pl <log level>
```

For example: `perl 131/eval_131.pl 3`

The log level for evaluation is defined as:

- | | |
|---|--|
| 1 | errors only |
| 2 | warnings |
| 3 | context information (verbose) |
| 4 | reference information (pointer into IHE Technical Framework) |
-

Starting with version 6.7.0 of the MESA software, the user can change the patient name and patient ID of the test subject prior to running the test. This allows one to rerun a test without clearing the database of the prior subject. This is done from the directory *\$MESA_TARGET/ mesa_tests/rads/msgs*.

A perl script is used to query the user for a new patient name and other demographics; the script automatically generates the new patient identifier. The perl script can also use an existing text file to specify the new demographics. The software is shipped with text files that are designed for IHE United States. It would be a simple task to make different text files for other countries. As listed in each section below, invoke the perl script with no arguments for interactive questions. If you specify an argument, it is the name of a text file with the demographic values.

For all 1xx series tests, users should reset the MESA HL7 files as described above if the user tests different actors using the same MESA test configuration. An example is a system that tests as both an Order Placer and an Order Filler. The MESA tests for one actor may leave the HL7 messages in the wrong state for those same tests by the other actor. By regenerating the HL7 messages before you run the test script, you will avoid those problems.

Each test is independent of the others. You must collect the results of one test before starting a new test.

1.8 Submission of Results

Test descriptions below inform the reader to “submit results to the Project Manager”. This 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 Individual Tests

The set of events for a complete test scenario are defined in *IHE Tests: Transaction Sequences*. Each section below lists the messages from the Order Placer that are evaluated by the MESA software.

2.1 Order Placer Test 103: Unidentified Patient Registered at ADT and Ordered at the Order Placer

Test Case 103 involves transactions for the patient Jay Silverheels and tests the Unidentified Case 1: Unidentified Patient Registered at ADT and Ordered at the Order Placer (see IHE TF Vol I, section 4.4.1).

2.1.1 References

2.1.2 Instructions

The nominal patient name is SILVERHEELS^JAY.

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 103 <log>
```

4. Run the evaluation script below.

2.1.3 Evaluation

1. Run the evaluation script

```
perl 103/eval_103.pl <log>
```

2. The evaluation output is found in 103/grade_103.txt. The final result should indicate 0 errors. Submit the result run at log level 4 to the Project Manager.

2.1.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/msgs  
perl mesa_reset/103.pl ihe-us/103.var (or)  
perl mesa_reset/103.pl
```

2.2 Order Placer Test 104: Green

This test has become obsolete; it is replaced by other tests. Do not use this test.

2.3 Order Placer Test 105: PIR Case #3: Unidentified Patient Registered at ADT but Completed at Modality Prior to Order

Test Case 105 involves transactions for the patient Stephen Mustard and tests the Unidentified Case 3: Unidentified Patient Registered at ADT but Completed at Modality Prior to Order (see IHE TF Vol I, section 4.4.3).

2.3.1 References

2.3.2 Instructions

The nominal patient name is MUSTARD^STEPHEN.

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 105 <log>
```

4. Run the evaluation script below.

2.3.3 Evaluation

1. Run the evaluation script

```
perl 105/eval_105.pl <log>
```

2. The evaluation output is found in 105/grade_105.txt. The final result should indicate 0 errors. Submit the result run at log level 4 to the Project Manager.

2.3.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/messages  
perl mesa_reset/105.pl ihe-us/105.var (or)  
perl mesa_reset/105.pl
```

2.4 Order Placer Test 107: Status Update

Test Case 107 is a specialized test for Administrative and Procedure Performance Process Flow in the Scheduled Workflow profile (see IHE TF Vol I, section 3.2.1). In this test, your Order Placer *will* receive Order Status Update messages from the MESA Order Filler (see IHE TF Vol II, section 4.3.4.2).

2.4.1 References

2.4.2 Instructions

The nominal patient name is ROSE^CARL.

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

1. Set the current directory to \$MESA_TARGET/mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 107 <log>
```

4. Run the evaluation script below.

2.4.3 Evaluation

This test has no evaluation for Order Placers. You should run this test to make certain you can receive the status messages and process them. There is no expected action that these tools can test.

2.4.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/mesa_tests/rad/msgs
perl mesa_reset/107.pl ihe-us/107.var (or)
perl mesa_reset/107.pl
```

2.5 Order Placer Test 131: Administrative and Procedure Performance Process Flow

Test 131 covers Administrative and Procedure Performance Process Flow in the Scheduled Workflow profile (see IHE TF Vol I, section 3.2.1). In this test, you *will not* receive Order Status Update messages from the MESA Order Filler (see IHE TF Vol II, section 4.3.4.2).

2.5.1 References

2.5.2 Instructions

The nominal patient name is BLACK^CHARLES.

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 131 <log>
```

4. Run the evaluation script below.

2.5.3 Evaluation

1. Run the evaluation script

```
perl 131/eval_131.pl <log>
```

2. The evaluation output is found in 131/grade_131.txt. The final result should indicate 0 errors. Submit the result run at log level 4 to the Project Manager.

2.5.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/msgs  
perl mesa_reset/131.pl ihe-us/131.var (or)  
perl mesa_reset/131.pl
```

2.6 Order Placer Test 132: Order Change Flow Initiated by Order Filler

Test 132 covers order change flow initiated by the Order Filler in the Scheduled Workflow profile (see IHE TF Vol I, section 3.2.4). In this test, you will not receive Order Status Update messages from the MESA Order Filler (see IHE TF Vol II, section 4.3.4.2).

2.6.1 References

2.6.2 Instructions

The nominal patient name is WISTERIA^MATTHEW.

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 132 <log>
```

4. Run the evaluation script below.

2.6.3 Evaluation

1. Run the evaluation script

```
perl 132/eval_132.pl <log>
```

2. The evaluation output is found in 132/grade_132.txt. The final result should indicate 0 errors. Submit the result run at log level 4 to the Project Manager.

2.6.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/msgs  
perl mesa_reset/132.pl ihe-us/132.var (or)  
perl mesa_reset/132.pl
```

2.7 Order Filler Test 151: Appointment Notification – New Bookings

Test case 151 involves transactions for patient Joe Periwinkle and tests new appointment bookings notification from Order Placer to Order Filler (see IHE TF Supplements, section 4.48.4.1)

2.7.1 References

2.7.2 Instructions

The nominal patient name is PERIWINKLE^JOE

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 151 <log>
```

4. Run the evaluation script below.

2.7.3 Evaluation

There is no evaluation that produces output for this test. You should accept the notification message and determine if it meets your expectations. Inform the Project Manager that you have completed this test. Inform the Project Manager if the test data you receive needs repair.

2.7.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/msgs
perl mesa_reset/151.pl ihe-us/151.var (or)
perl mesa_reset/151.pl
```

2.8 Order Filler Test 152: Appointment Notification – Reschedule Bookings

Test case 152 involves transactions for patient Joe Periwinkle and tests reschedule appointment bookings notification from Order Placer to Order Filler (see IHE TF Supplements, section 4.48.4.1)

2.8.1 References

2.8.2 Instructions

The nominal patient name is PERIWINKLE^JOE

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
2. Make sure the MESA servers have been started as described in section 1.5 above.
3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 152 <log>
```

4. Run the evaluation script below.

2.8.3 Evaluation

There is no evaluation that produces output for this test. You should accept the notification message and determine if it meets your expectations. Inform the Project Manager that you have completed this test. Inform the Project Manager if the test data you receive needs repair.

2.8.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/ mesa_tests/rad/msgs  
perl mesa_reset/152.pl ihe-us/152.var (or)  
perl mesa_reset/152.pl
```

2.9 Order Filler Test 153: Appointment Notification – Cancel Bookings

Test case 153 involves transactions for patient Joe Periwinkle and tests cancel appointment bookings notification from Order Placer to Order Filler (see IHE TF Supplements, section 4.48.4.1)

2.9.1 References

2.9.2 Instructions

The nominal patient name is PERIWINKLE^JOE

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

1. Set the current directory to \$MESA_TARGET/ mesa_tests/rad/actors/ordplc.
 2. Make sure the MESA servers have been started as described in section 1.5 above.
-

3. Run the test script as follows:

```
perl scripts/ordplc_swf.pl 153 <log>
```

4. Run the evaluation script below.

2.9.3 Evaluation

There is no evaluation that produces output for this test. You should accept the notification message and determine if it meets your expectations. Inform the Project Manager that you have completed this test. Inform the Project Manager if the test data you receive needs repair.

2.9.4 Miscellaneous

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/mesa_tests/rad/msgs  
perl mesa_reset/153.pl ihe-us/153.var (or)  
perl mesa_reset/153.pl
```


3 Basic Security Tests

This section describes tests that are specific to the IHE Basic Security integration profile. If you have the MESA servers running for the “standard” tests, you should stop those servers now. You will need to start the MESA secure servers with a different script.

3.1 Order Placer Test 1240: Basic Security, Registration

Test case 1240 exercises ADT registration messages (ADT^A04) in the context of Basic Security. No audit messages are included in this test.

The nominal patient name is BOSTON^BOB.

Notes:

Before starting this test, make sure you have stopped the MESA servers for the standard mode tests and started the MESA servers for the secure mode tests.

To run this test:

```
perl scripts/ordplc_secure.pl 1240 <log>
```

To evaluate this test:

```
perl 1240/eval_1240.pl <log>
```

To change patient name, patient ID prior to the test:

```
cd $MESA_TARGET/mesa_tests/rad/msgs
perl mesa_reset/1240.pl ihe-us/1240.var (or)
perl mesa_reset/1240.pl
```

3.2 Order Placer Test 1531: Basic Security, Administrative and Procedure Performance Process Flow

Test case 1531 uses the same transactions as defined for test 131: Administrative and Procedure Performance Process Flow.

The nominal patient name is BLACK^CHARLES.

Notes:

Before starting this test, make sure you have stopped the MESA servers for the standard mode tests and started the MESA servers for the secure mode tests.

To run this test (the reference to 131 is intentional):

```
perl scripts/ordplc_secure.pl 131 <log>
```

To evaluate this test (use 1531 in the command below):

```
perl 1531/eval_1531.pl <log>
```

To change patient name, patient ID prior to the test (the reference to 131 is intentional):

```
cd $MESA_TARGET/mesa_tests/rad/msgs
perl mesa_reset/131.pl ihe-us/131.var (or)
perl mesa_reset/131.pl
```
