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**HIMSS and RSNA**  
**Integrating the Healthcare Enterprise**

**IHE/MESA External Report**  
**Repository Tests**

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# 1 External Report Repository Tests

## 1.1 Introduction

External Report Repositories are tested in two areas. The MESA software will test C-Find responses and will test the structure of SR objects stored in the repository.

### 1.1.1 Integration Profiles and Test Procedures

This document lists a number of tests for External Report Repository 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

These tests will query the External Report Repository for attributes using the DICOM C-Find command. The table below lists the attributes used in the queries.

<b>Attribute Name</b>	<b>Tag</b>
<b>Study Level</b>	
Study Date	0008 0020
Study Time	0008 0030
Accession Number	0008 0050
Patient Name	0010 0010
Patient ID	0010 0020
Study ID	0020 0010
Study Instance UID	0020 000D
Modalities in Study	0008 0061
Referring Physician's Name	0008 0090
Patient's Birth Date	0010 0030
Patient's Sex	0010 0040
Number of Study Related Series	0020 1206
Number of Study Related Instances	0020 1208
<b>Series Level</b>	
Modality	0008 0060

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Series Number	0020 0011
Series Instance UID	0020 000D
Number of Series Related Instances	0020 1209
Request Attribute Sequence	0040 0275
>Requested Procedure ID	0040 1001
>Scheduled Procedure Step ID	0040 0009
Performed Procedure Step Start Date	0040 02444
Performed Procedure Step Start Time	0040 0245
<b>Composite Object Instance Level</b>	
Image Number	0020 0013
SOP Instance UID	0008 0018
SOP Class UID	0008 0016
<b>SR Specific Attributes</b>	
Completion Flag	0040 A491
Verification Flag	0040 A493
Content Date	0008 0023
Content Time	0008 0033
Observation Date Time	0040 A032
Verifying Observer Sequence	0040 A073
> Verifying Organization	0040 A027
> Verification Date Time	0040 A030
> Verifying Observer Name	0040 A075
> Verifying Observer Identification Code Sequence	0040 A088
Referenced Request Sequence	0040 A370
> Study Instance UID	0020 000D
> Accession Number	0008 0050
> Requested Procedure ID	0040 1000
> Rrequested Procedure Code Sequence	0032 1064
>> Code Value	0008 0100
>> Coding Scheme Designator	0008 0102
>> Code Meaning	0008 0104
Concept Name Code Sequence	0040 A043
> Code Value	0008 0100
> Coding Scheme Designator	0008 0102

> Coding Scheme Version	0008 0103
> Code Meaning	0008 0104

### 1.3 Message Values

### 1.4 Configuration

The External Report Repository scripts described below use an ASCII configuration file to identify parameters such as host names and port numbers. The configuration file is named *ext\_repos\_test.cfg* and is included in the directory *\$MESA\_TARGET/ mesa\_tests/rad/actors/ext\_rpt\_repos*. 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 file *\$MESA\_TARGET/runtime/wkstation/ds\_dcm.cfg* is used to configure the MESA Report Reader. The only parameter users should change is the LOG\_LEVEL value. Log levels are defined in section 1.5. DICOM configuration parameters are listed in the table below.

Application	AE Title	Port
MESA Report Reader	WORKSTATION1	3001

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

### 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 Report Reader. Make sure the appropriate database is running (PostgreSQL, SQL Server). To start the MESA servers:

1. Enter the External Report Repository exam folder: *mesa\_tests/rad/actors/ext\_rpt\_repos*
2. Execute the appropriate script to start the servers:

`scripts/start_mesa_servers.csh` (Unix)

`scripts\start_mesa_servers.bat` (Windows)

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*.

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## **1.6 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

### 2.1 External Report Repository Test 1001: Modalities In Study

The DICOM attribute 0008 0061 is named “Modalities in Study”. The 801 series tests will send four Study Level queries to the Report Repository and query on this attribute. The table below lists the four queries (a-d) and the values used for matching key. For the a query, the attribute 0008 0061 is sent as zero length, so this becomes a return key.

Query	Value for Attribute 0008 0061
a	""
b	“SR”
c	“CT”

1. Start the MESA servers as described in section 1.5.
2. Clear your repository of any objects that are not SR objects. Place other objects that should be tested in your repository.
3. Run the script which sends three queries to your External Report Repository. The one argument to the script is the Patient ID of a patient you select with appropriate test data.

```
perl 1001/1001_rptrepos.pl <patient ID>
```

4. Evaluate the response of your system to queries a, b, and c:
5. `perl 1001/eval_1001.pl`

### 2.2 External Report Repository Test 1002: Related Series/SOP Instances

These tests query Report Repositories for DICOM attributes Number of Study Related Series, Number of Study Related SOP Instances.

1. Start the MESA servers as described in section 1.5.
2. You may use the same SR objects as with test 1001 (or load your repository with different objects).
3. Run the script which sends one query to your External Report Repository. The one argument to the script is the Patient ID of a patient you select with appropriate test data.

```
perl 1002/1002_rptrepos.pl <patient ID>
```

4. Evaluate the response of your system:

```
perl 1002/eval_1002.pl
```

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### **2.3 External Report Repository Test 1003: Other Report Repository Attributes**

### **2.4 External Report Repository Test 1004: Report Specific Queries**

### **2.5 External Report Repository Test 1011: SR Retrieve**

This test will retrieve SR objects according to a Patient ID specified by you. Each object will be evaluated for “compliance with TID 2000”. The phrase “compliance with TID 2000” is stated in quotes because the tests are simplistic and are not meant to imply that your SR object is totally compliant the DICOM Supplement 53 and TID 2000.

1. Start the MESA servers as described in section 1.5.
2. You may use the same SR objects as with test 1001/1002 (or load your repository with different objects).
3. Run the script which sends C-Find and C-Move commands to your External Report Repository. The one argument to the script is the Patient ID of a patient you select with appropriate test data.

```
perl 1011/1011_rptrepos.pl <patient ID>
```

4. Evaluate the response of your system

```
perl 1011/eval_1011.pl <patient ID>
```

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