

Installation Guide

- DCM4CHEE
- OpenMRS
- Dvtk Modality Emulator
- Oviyam

DCM4CHEE

- For detailed instructions :
<http://www.dcm4che.org/confluence/display/ee2/Installation>
- Download the binary distribution for dcm4chee from sourceforge and extract it : The below link is the binary for MySQL
<http://sourceforge.net/projects/dcm4che/files/dcm4chee/2.17.1/dcm4chee-2.17.1-mysql.zip/download>
- Download the binary distribution package of JBoss Application Server 4.2.3.GA:
<http://www.jboss.org/jbossas/downloads>
- Copy files from JBoss to dcm4chee:
 - Dcm4chee consists of components that run within the JBoss application server platform. This step will copy the JBoss runtime files to the dcm4chee directory.
 - Go to the dcm4chee-2.17.1-xxx/bin directory and execute the install_jboss.bat or install_jboss.sh script, as appropriate for your operating system, with the path of your JBoss AS installation directory as a parameter.
 - For example:
 - ```
C:\apps\dcm4chee-2.17.1-psql\bin>install_jboss.bat
c:\apps\jboss-4.2.3.GA
```
- **Create the dcm4chee database**
- Create and initialize the dcm4chee database.
- The file `create.mysql` can be found at `<installation folder>/dcm4chee-<x.xx.x>-mysql/sql/create.mysql`, where `<x.xx.x>` is the dcm4chee version number.
- The file `create.mysql` contains SQL instructions that populate the database with empty tables. Currently, `create.mysql` contains instructions suitable for older versions of MySQL. Until this bug is fixed, `create.mysql` must be edited before it can be used with MySQL 5.5+. All instances of `type=` must be replaced with `engine=`

```
> mysql -uroot -p<root password>
mysql> create database pacsdb;
```

```
mysql> grant all on pacsd.* to 'pacs'@'localhost' identified by
'pacs';
mysql> \q
> mysql -upacs -ppacs pacsd < create.mysql
```

- Change Port for dcm4chee WebApp (optional)
  - Go to {install folder}\dcm4chee-2.17.1-mysql\server\default\deploy\jboss-web.deployer\server.xml
  - Changer the connector port tag from port=8080 to a custom port.

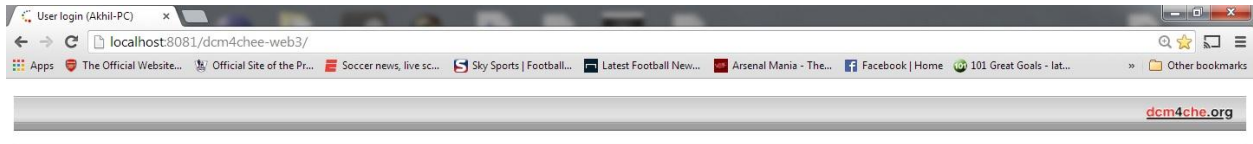
```
<?xml version='1.0' encoding='UTF-8'>
<!-- Server -->
<!-- APR library loader. Documentation at /docs/apr.html -->
<Listener className="org.apache.catalina.core.AprLifecycleListener" SSLEngine="on" />
<!-- Initialize Jasper prior to webapps are loaded. Documentation at /docs/jasper-howto.html -->
<Listener className="org.apache.catalina.core.JasperListener" />

<!-- Use a custom version of StandardService that allows the
connectors to be started independent of the normal lifecycle
start to allow web apps to be deployed before starting the
connectors.
-->
<Service name="jboss.web">

 <!-- A "Connector" represents an endpoint by which requests are received
 and responses are returned. Documentation at :
 Java HTTP Connector: /docs/config/http.html (blocking & non-blocking)
 Java AJP Connector: /docs/config/ajp.html
 APR (HTTP/AJP) Connector: /docs/apr.html
 Define a non-SSL HTTP/1.1 Connector on port 8080
 -->
 <Connector port="8081" address="${jboss.bind.address}"
 maxThreads="250" maxHttpHeaderSize="8192"
 emptySessionPath="true" protocol="HTTP/1.1"
 enableLookups="false" redirectPort="8443" acceptCount="100"
 connectionTimeout="20000" disableUploadTimeout="true" />

 <!-- Define a SSL HTTP/1.1 Connector on port 8443
 This connector uses the JSSE configuration, when using APR, the
 connector should be using the OpenSSL style configuration
 described in the APR documentation -->
 <Connector port="8443" protocol="HTTP/1.1" SSLEngine="true"
 maxThreads="150" scheme="https" secure="true"
 clientAuth="true" sslProtocol="TLS"
 ciphers="SSL_RSA_WITH_NULL_SHA,TLS_RSA_WITH_AES_128_CBC_SHA"
 keystoreFile="${jboss.server.home.dir}/conf/certificates/test_sys_1.p12"
 keystorePass="secret" keystoreType="PKCS12"
 truststoreFile="${jboss.server.home.dir}/conf/certificates/mesa_certs.jks"
 truststorePass="secret" truststoreType="JKS"
 SSLImplementation="org.dcm4chee.audit.tomcat.ATNAImplementation"
 />
</Service>
</Server>
```

- In {install folder}\dcm4chee-2.17.1-mysql\bin  
**Execute run.bat to start the server**  
 (Ctrl-c to shut the server)
- Login to dcm4chee from a browser at <http://localhost:8081/dcm4chee-web3>
- Login credentials User:admin Password:admin



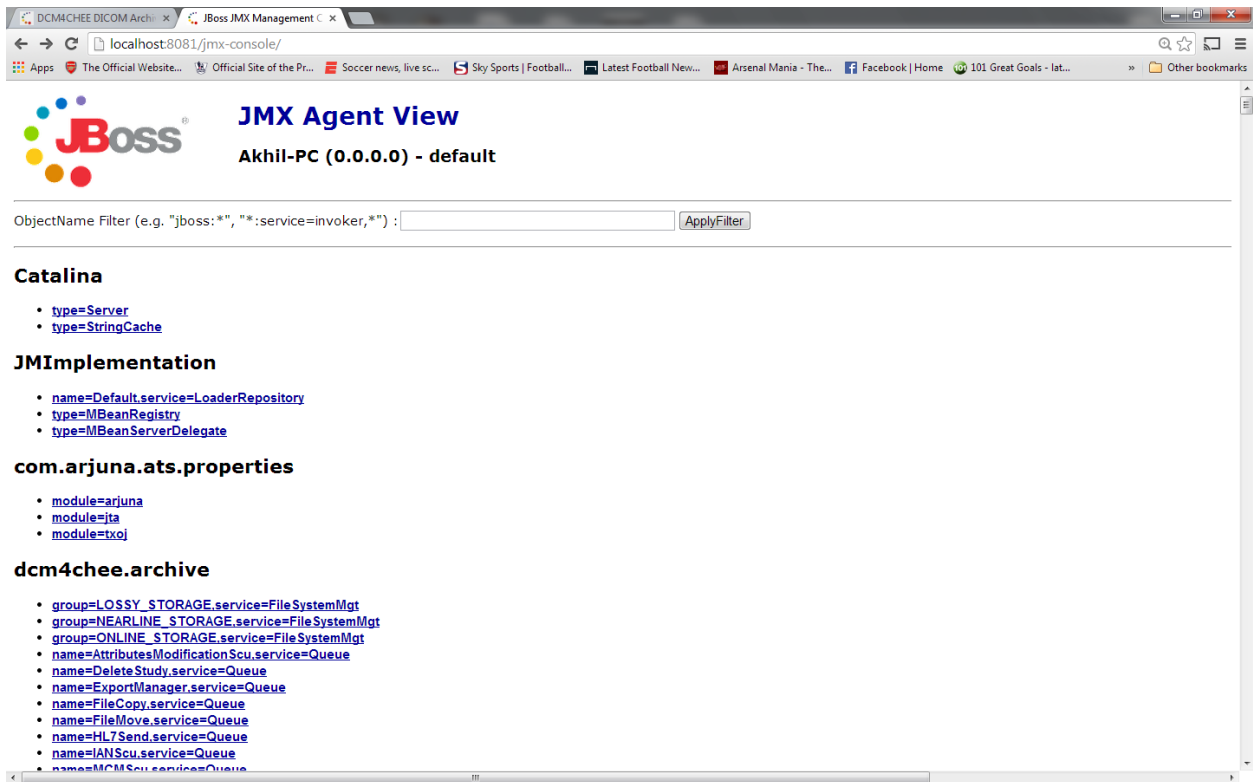
### User login at Akhil-PC

Username:

Password:

- **Setting Up Mpps Forwarding**

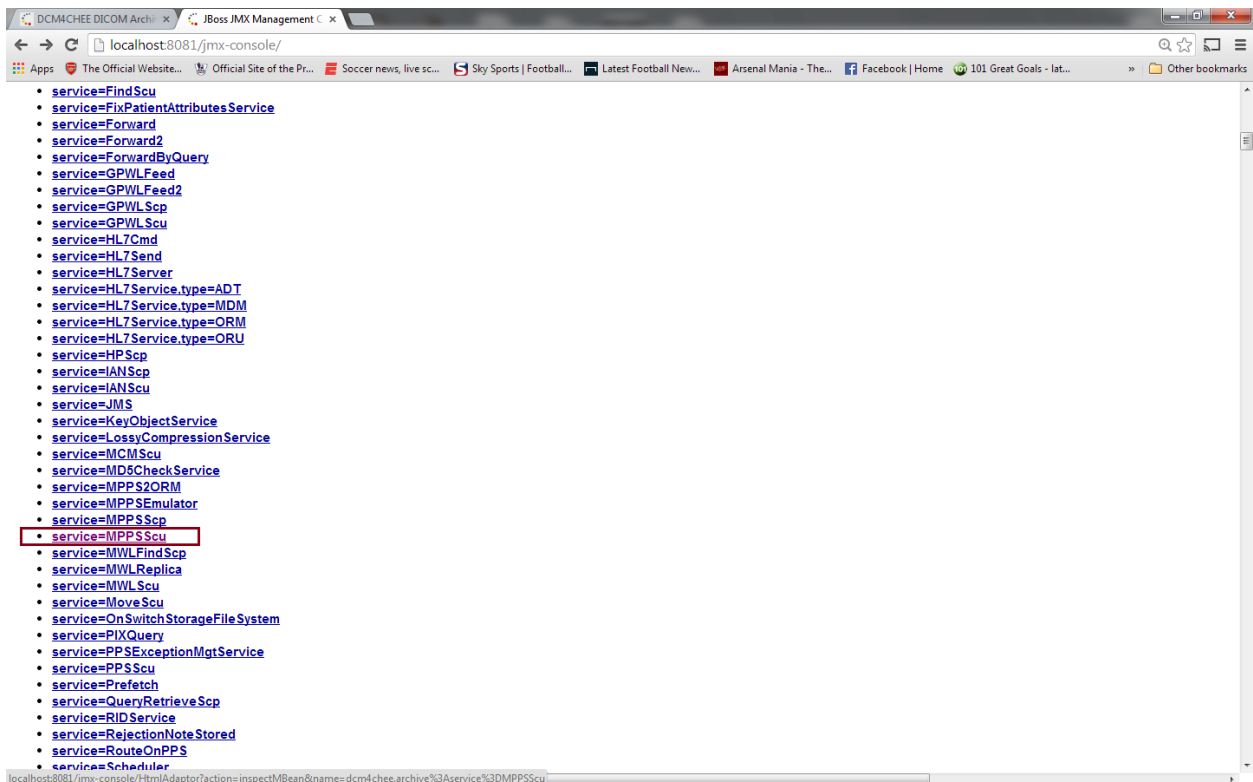
- In a new tab , open <http://localhost:8081/jmx-console/>



The screenshot shows the JBoss JMX Agent View interface in a web browser. The browser's address bar shows 'localhost:8081/jmx-console/'. The page title is 'JBoss JMX Agent View' with the subtitle 'Akhil-PC (0.0.0.0) - default'. Below the title, there is an 'ObjectName Filter' input field with the placeholder text '(e.g. "jboss:\*", "\*:service=invoker,\*")' and an 'ApplyFilter' button. The main content area displays a list of MBeans organized into sections:

- Catalina**
  - type=Server
  - type=StringCache
- JMImplementation**
  - name=Default.service=LoaderRepository
  - type=MBeanRegistry
  - type=MBeanServerDelegate
- com.arjuna.ats.properties**
  - module=arjuna
  - module=jta
  - module=txoj
- dcm4chee.archive**
  - group=LOSSY\_STORAGE.service=FileSystemMgt
  - group=NEARLINE\_STORAGE.service=FileSystemMgt
  - group=ONLINE\_STORAGE.service=FileSystemMgt
  - name=AttributesModificationScu.service=Queue
  - name=DeleteStudy.service=Queue
  - name=ExportManager.service=Queue
  - name=FileCopy.service=Queue
  - name=FileMove.service=Queue
  - name=HL7Send.service=Queue
  - name=IANScu.service=Queue
  - name=MCMScu.service=Queue

- Search or navigate to service=MppsScu and click on it



This screenshot shows the same JBoss JMX Agent View interface, but with the 'service=MppsScu' entry highlighted by a red box. The list of MBeans is expanded, showing a long list of services under the 'dcm4chee.archive' group. The highlighted entry is 'service=MppsScu'. The browser's address bar shows the URL 'localhost:8081/jmx-console/HtmlAdaptor?action=inspectMBean&name=dcm4chee.archive%3AService%3DMPPSScu'.

- Goto the ForwardingRules section and enter the entry.

[calling!=RADIOLOGY\_MODULE]RADIOLOGY\_MODULE

And click apply changes at the bottom of the table.

|                   |                             |    |                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------|-----------------------------|----|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MaximumPDULength  | int                         | RW | 16382                                                             | length for receiving PDUs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| TcpNoDelay        | boolean                     | RW | <input checked="" type="radio"/> True <input type="radio"/> False | Send packets as quickly as possible (Disable Nagle algorithm).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| SendBufferSize    | int                         | RW | 0                                                                 | Buffer size used for socket output. 0 = use platform default.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| ReceiveBufferSize | int                         | RW | 0                                                                 | Buffer size used for socket input. 0 = use platform default.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| TLSSConfigName    | javax.management.ObjectName | RW | dcm4chee.archive.service: <a href="#">View MBean</a>              | Used internally. Do NOT modify.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ForwardingRules   | java.lang.String            | RW | [calling!=RADIOLOGY_MODULE]RADIOLOGY_MODULE                       | <p>List of forwarding rules, dependent upon which application - identified by the Calling AE title - sent the MPPS. The comma separated list of AE titles after the (optional) condition defines the forwarding destination (the other MPPS SCP) by its Called AE Title.</p> <p>Syntax:</p> <pre>rules = ( rule { newline rule }   'NONE' ) (* 'NONE' = no forwarding *) rule = '[' 'calling' '[' ']' '=' 'from '[' ']' to from = aet { '[' ']' aet } (* calling AE titles *) to = aet { '[' ']' aet } (* destination AE titles *)</pre> <p>Example:</p> <pre>[calling!=ORDER_FILLER]ORDER_FILLER =&gt; Forwards received MPPS to ORDER_FILLER, except MPPS received from ORDER_FILLER</pre> |
| CallingAETitle    | java.lang.String            | RW | DCM4CHEE                                                          | Calling AE Title used in the Association Request.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Concurrency       | int                         | RW | 1                                                                 | Maximum number of concurrent forwarded MPPS messages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                   |                             |    |                                                                   | <p>Number and intervals of retries for failed MPPS forward requests.</p> <p>Format:</p> <p>Comma separated list of <i>numberxinterval</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

DCM4CHEE DICOM Archi... MBean Inspector

localhost:8081/jmx-console/HtmlAdaptor?action=inspectMBean&name=dcm4chee.archive%3AService%3DMPPSScu

|                    |                             |    |                                                      |                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------|----|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RetryIntervals     | java.lang.String            | RW | 5x10s,5x1m,12x5m,24x1h                               | Number and intervals of retries for failed MPPS forward requests.<br>Format:<br>Comma separated list of <i>numberxinterval</i> pairs.<br>The interval can be specified in seconds (##s), minutes (##m), hours (##h) or days (##d).<br>Example:<br>5x1m,10x10m means retry a total of 5 times, one minute apart for each retry; then retry a total of 10 times, 10 minutes apart for each retry. |
| QueueName          | java.lang.String            | RW | MPPSScu                                              | Used internally. Do NOT modify.                                                                                                                                                                                                                                                                                                                                                                 |
| JMSServiceName     | javax.management.ObjectName | RW | dcm4chee.archive.service: <a href="#">View MBean</a> | Used internally. Do NOT modify.                                                                                                                                                                                                                                                                                                                                                                 |
| MppsScpServiceName | javax.management.ObjectName | RW | dcm4chee.archive.service: <a href="#">View MBean</a> | Used internally. Do not modify.                                                                                                                                                                                                                                                                                                                                                                 |

[Apply Changes](#)

**List of MBean operations:**

**void create()**  
Standard MBean lifecycle method  
[Invoke](#)

**void start()**  
The start lifecycle operation  
[Invoke](#)

**void stop()**

- **Adding Radiology Module AET to dcm4chee**

- Click on the “Application Entities” tab.
- Click on “New AET”
- Enter these details which are currently default in the module and click save.

- Title : RADIOLOGY\_MODULE
- Host : localhost
- Port : 11114

DCM4CHEE DICOM Archi x

localhost:8081/dcm4chee-web3/?wicketinterface=:0:::

Apps The Official Website... Official Site of the Pr... Soccer news, live sc... Sky Sports | Football... Latest Football New... Arsenal Mania - The... Facebook | Home 101 Great Goals - lat... Other bookmarks

Folder Trash Application Entities Modality Worklist Teaching-Files Dashboard Roles Users Password

AEs AE Groups Logout (admin) Choose One dcm4chee.org

New AET Filter by:

| Title            | Type | Host      | Port  | Description                              | TLS                      | MPPS                     | Station name | Institution | Department |
|------------------|------|-----------|-------|------------------------------------------|--------------------------|--------------------------|--------------|-------------|------------|
| CDRECORD         |      | localhost | 10104 | Media Creation Server (part of dcm4chee) | <input type="checkbox"/> | <input type="checkbox"/> |              |             |            |
| DCM4CHEE         |      | localhost | 11112 | This dcm4chee archive instance           | <input type="checkbox"/> | <input type="checkbox"/> |              |             |            |
| RADIOLOGY_MODULE | -    | localhost | 11114 |                                          | <input type="checkbox"/> | <input type="checkbox"/> |              | OpenMRS     |            |

DCM4CHEE DICOM Archi x

localhost:8081/dcm4chee-web3/?wicketinterface=:0:::

Apps The Official Website... Official Site of the Pr... Soccer news, live sc... Sky Sports | Football... Latest Football New... Arsenal Mania - The... Facebook | Home 101 Great Goals - lat... Other bookmarks

Folder Trash AEs AE Groups

New AET Filter

Edit AET

Title: RADIOLOGY\_MODULE

Type: -

Hostname: localhost

Port: 11114

Ciphersuite #1: -

Ciphersuite #2: -

Ciphersuite #3: -

Description:

Issuer of Patient ID:

Issuer of Accession Number:

Filesystem Group ID:

Wado URL:

User Id: admin

Password: \*\*\*\*\*

Station Name:

Institution: OpenMRS

Department:

Installed: ☐

Emulate MPPS: ☐

Delay time for MPPS emulation:

Save Cancel Echo

## Notes about DCM4CHEE

- The default screens in the image archive and Worklist tabs are always empty.
- You will need to run a search to pull up relevant results.
- A search with no parameters will pull all the entries in the database.
- Resetting the search parameter and running the search will retrieve all entries.

DCM4CHEE DICOM Archi x

localhost:8081/dcm4chee-web3/

Apps The Official Website... Official Site of the Pr... Soccer news, live sc... Sky Sports | Football... Latest Football New... Arsenal Mania - The... Facebook | Home 101 Great Goals - lat... Other bookmarks

Folder Trash Application Entities Modality Worklist Teaching-Files Dashboard Roles Users Password

Logout (admin) Choose One dcm4chee.org

**Search**

Patient Name Patient ID Issuer Study Date from to Accession No

Phonetic

Modality Source AET

Exact search

Latest studies first

Search for Study Expand To auto Reset Search

Pagsize 10 Delete Move Export

Show column titles

| Patient Name    | Patient ID/Issuer | Birth Date   | Sex      | Comments    |       |              |
|-----------------|-------------------|--------------|----------|-------------|-------|--------------|
| Study Date/Time | Study ID          | Accession No | Modality | Description | #S/#I | Availability |



DCM4CHEE DICOM Archi x

localhost:8081/dcm4chee-web3/

Apps The Official Website... Official Site of the Pr... Soccer news, live sc... Sky Sports | Football... Latest Football New... Arsenal Mania - The... Facebook | Home 101 Great Goals - lat... Other bookmarks

Folder Trash Application Entities Modality Worklist Teaching-Files Dashboard Roles Users Password

Logout (admin) Choose One dcm4chee.org

**Search**

Patient Name Patient ID Issuer Study Date to Accession No

Phonetic

Modality Source AET

Exact search

Latest studies first

Search for Study Expand To auto Reset Search

Pagesize 10 Study 1 to 5 of 5

Delete Move Export

Show column titles

| Patient Name              | Patient ID/Issuer  | Birth Date       | Sex      | Comments                                                  |       |              |  |
|---------------------------|--------------------|------------------|----------|-----------------------------------------------------------|-------|--------------|--|
| Study Date/Time           | Study ID           | Accession No     | Modality | Description                                               | #S/#I | Availability |  |
| Akhil^Ravindran           | 200-6              | 10/7/1987        | M        | Demonstration Patient for enhanced XA testing activities! |       |              |  |
| 9/27/2013 22:35           | UNKNOWN            |                  | CR       | Echocardiogram                                            | 1/1   | ONLINE       |  |
| 9/27/2013 22:45           | UNKNOWN            |                  | XA       | Echocardiogram                                            | 1/1   | ONLINE       |  |
| enhanced XA^Test^^Siemens | SMSenhXAtest200906 | 11/4/1958        | M        | Demonstration Patient for enhanced XA testing activities! |       |              |  |
| 6/2/2009 15:59            | 090602enhXAdemo1   | 20090602SMSenhXA | XA       | derived enhXA3D from enhXA rotational Acq1/1              |       | ONLINE       |  |
| MR/BRAIN/GRASE/1024       | 7                  | 1/1/1901         | M        |                                                           |       |              |  |
| 3/30/1995 15:08           | 191                |                  | MR       | BRAIN                                                     | 1/1   | ONLINE       |  |
| Rubo DEMO                 | 123-45-6789        | 10/16/1923       | F        |                                                           |       |              |  |
| 3/23/1994 11:51           | 027893462          |                  | US       | Echocardiogram                                            | 1/1   | ONLINE       |  |

DCM4CHEE DICOM Archi x

localhost:8081/dcm4chee-web3/

Apps The Official Website... Official Site of the Pr... Soccer news, live sc... Sky Sports | Football... Latest Football New... Arsenal Mania - The... Facebook | Home 101 Great Goals - lat... Other bookmarks

Folder Trash Application Entities Modality Worklist Teaching-Files Dashboard Roles Users Password

Logout (admin) Choose One dcm4chee.org

**Search**

Patient name Patient ID Issuer Start Date to Accession No

Phonetic

Modality Station AET Station Name Status

Latest items first

Reset Search

Pagesize 10

| Patient Name | Birthdate | SPS Description | Modality | SPS Status | Start date | Station AET | Station Name | Accession number |
|--------------|-----------|-----------------|----------|------------|------------|-------------|--------------|------------------|
|--------------|-----------|-----------------|----------|------------|------------|-------------|--------------|------------------|

DCM4CHEE DICOM Archi...

localhost:8081/dcm4chee-web3/

AppsThe Official Website...Official Site of the Pr...Soccer news, live sc...Sky Sports | Football...Latest Football New...Arsenal Mania - The...Facebook | Home101 Great Goals - lat...Other bookmarks

FolderTrashApplication EntitiesModality WorklistTeaching-FilesDashboardRolesUsersPassword

Logout (admin)Choose One▼dcm4chee.org

Search

Patient name

Patient Name

Phonetic ID

Issuer

Start Date

from

to

Accession No

Modality

Station AET

Station Name

Status

Latest items first

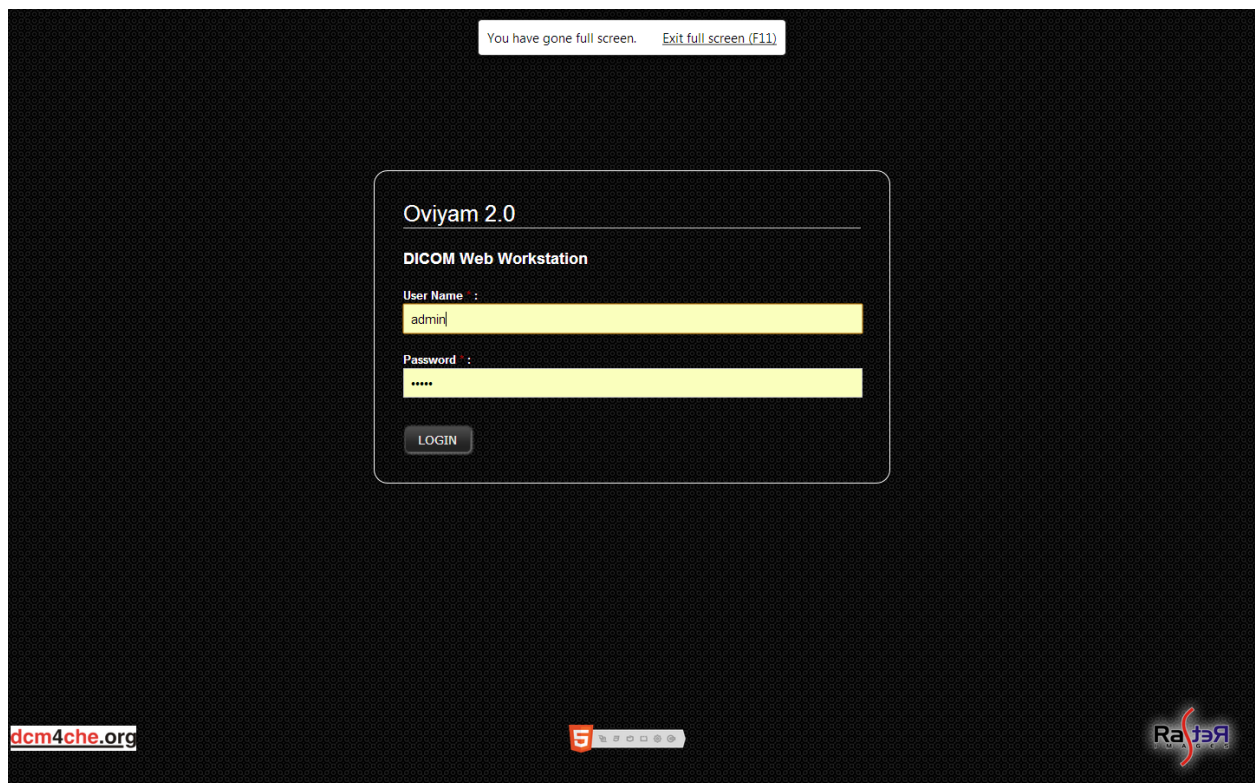
ResetSearch

Pagesize10▼Entry 1 to 3 of 3

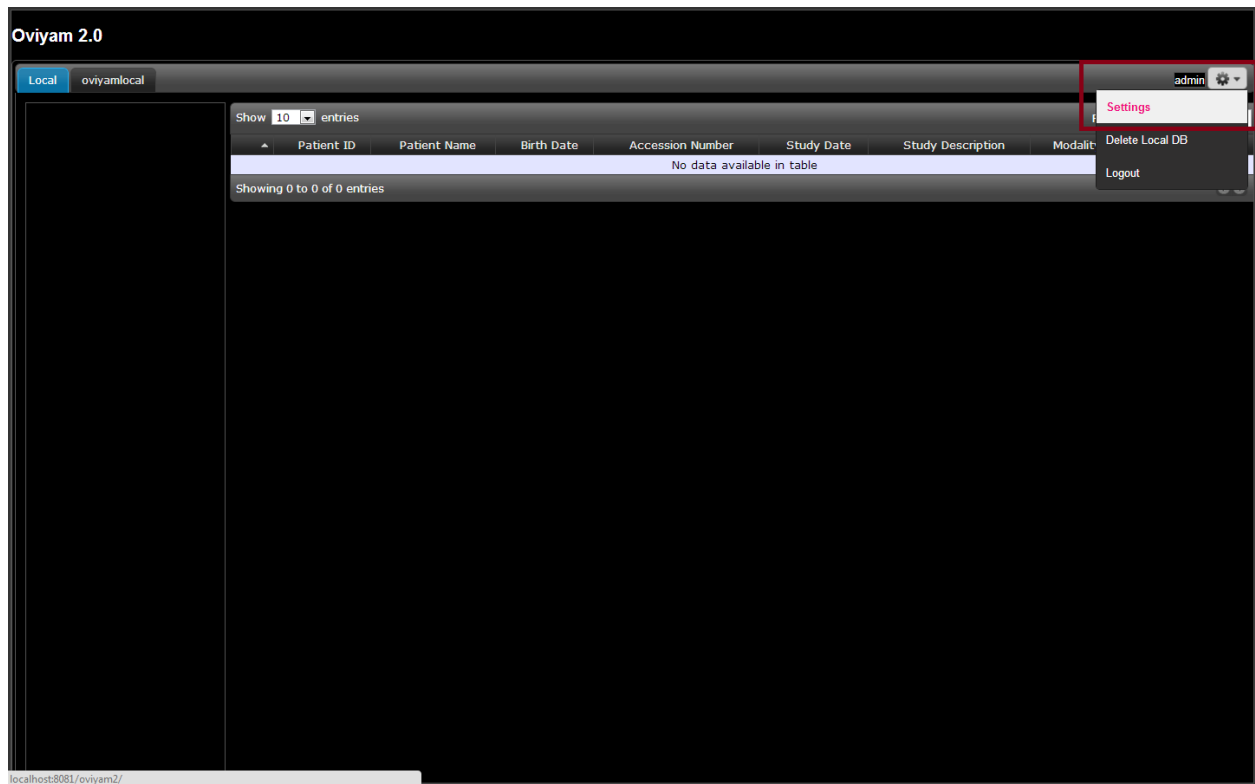
| Patient Name        | Birthdate | SPS Description | Modality | SPS Status   | Start date      | Station AET | Station Name | Accession number |
|---------------------|-----------|-----------------|----------|--------------|-----------------|-------------|--------------|------------------|
| Akhil^Ravindran     | 10/7/1987 | test ct         | CR       | COMPLETED    | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |
| Akhil^Ravindran     | 10/7/1987 | test xa         | XA       | COMPLETED    | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |
| Mr.^John^D^^Patient | 1/1/1975  | asdfg           | MR       | DISCONTINUED | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |

## Oviyam

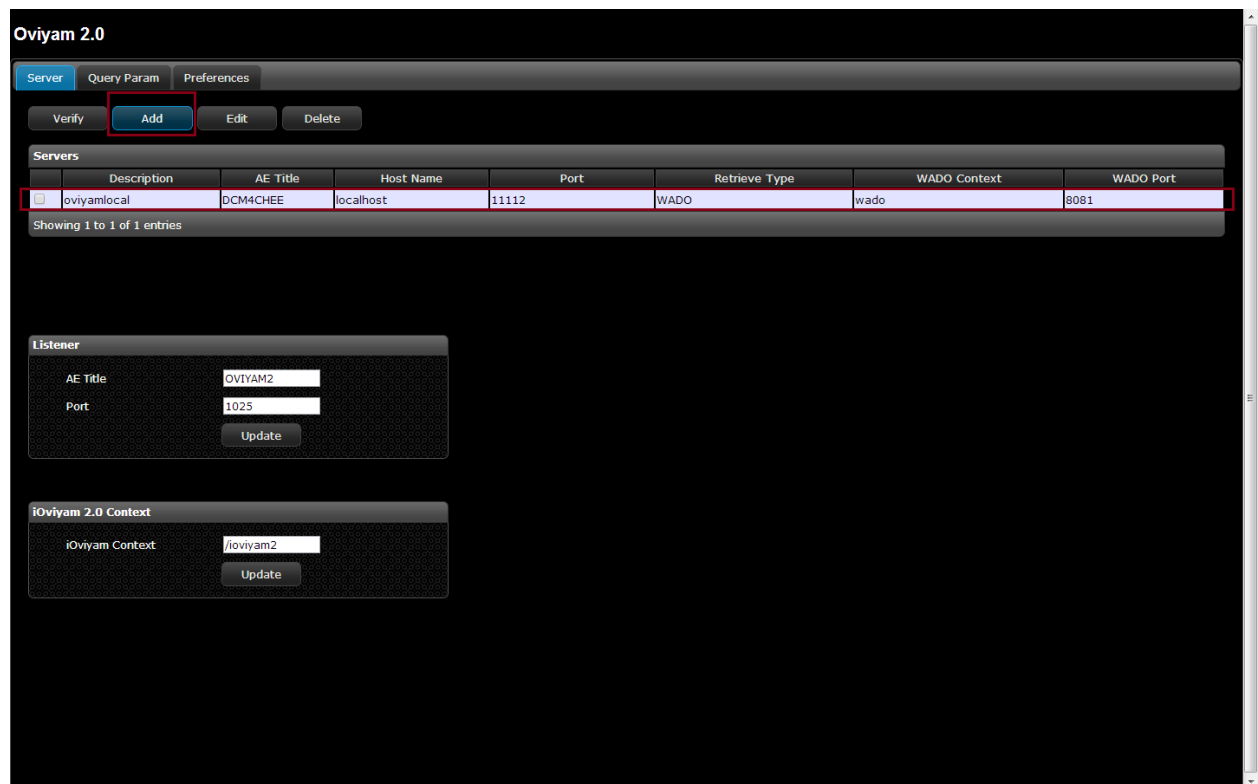
- Download the package from <http://sourceforge.net/projects/dcm4che/files/Oviyam/2.0/Oviyam-2.0-bin.zip/download>
- Extract the package and copy the war file in to `{install folder}\dcm4chee-2.17.1-mysql\server\default\deploy\`
- Restart or start the server.
- Oviyam can be viewed directly through the link <http://localhost:8081/oviyam2/>
- The login credentials are the same as dcm4chee  
User : admin Password: admin



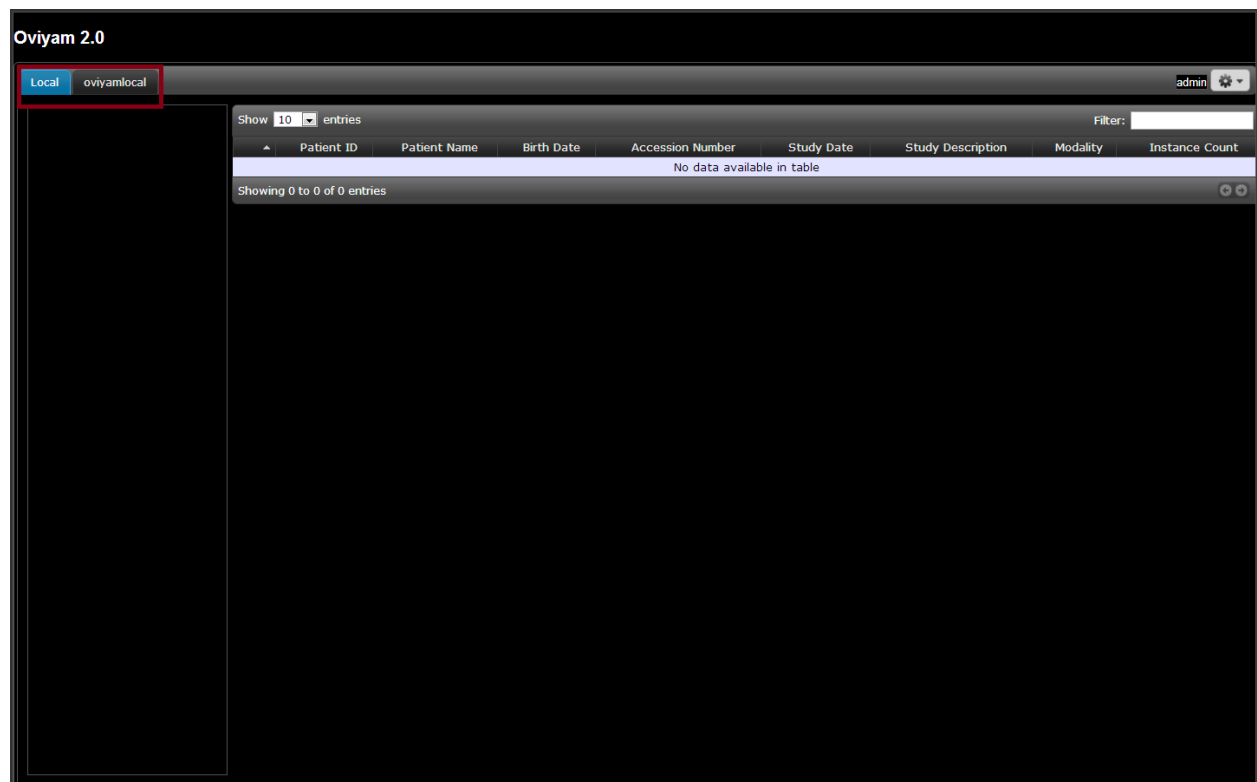
- Go to the Admin→ Settings



- Add the dcm4chee server configuration.
  - Description : oviyamlocal
  - AETitle: DCM4CHEE
  - Host: localhost
  - Port: 11112
  - Retrieve Type :WADO
  - WADO Context: wado
  - WADO Port: 8081(same as the dcm4chee-web3 port)
- Click the save button on the right and click Verify to check if all the settings are correct, if they are correct a green popup will display showing the verification was successful.



- The Home screen for oviyam should display the new server.



- Click on the “oviyamlocal” tab and run an empty search(if there are any images).

Oviyam 2.0 Today CT

Local **oviyamlocal** admin

Search

Patient ID  Patient Name  Accession Number  Birth Date  Study Description

Study Date (From)  Study Date (to)  Referring Physician  Modality  ALL Search Reset

|   | Patient ID         | Patient Name              | Date of Birth | Accession #      | Study Date          | Study Description                         | Modality | Instance Count |
|---|--------------------|---------------------------|---------------|------------------|---------------------|-------------------------------------------|----------|----------------|
| ✓ | 200-6              | Akhil^Ravindran           | 19871007      |                  | 27/09/2013 22:45:47 | Echocardiogram                            | XA       | 1              |
| ✓ | 200-6              | Akhil^Ravindran           | 19871007      |                  | 27/09/2013 22:35:27 | Echocardiogram                            | CR       | 1              |
| ✓ | SMSenhXAtest200906 | enhanced XA^Test^^Siemens | 19581104      | 20090602SMSenhXA | 02/06/2009 15:59:48 | derived enhXA3D from enhXA rotational Acq | XA       | 1              |
| ✓ | 7                  | MR/BRAIN/GRASE/1024       | 19010101      |                  | 30/03/1995 15:08:29 | BRAIN                                     | MR       | 1              |
| ✓ | 123-45-6789        | Rubo DEMO                 | 19231016      |                  | 23/03/1994 11:51:04 | Echocardiogram                            | US       | 1              |

Showing 1 to 5 of 5 entries

# OpenMRS Radiology Module

- Install the Radiology Module OMOD
- In the Administration Page,
  - There will be a new section called Radiology Module.
  - Click on the “Configuration and Initialization” link.
  - Click on the “Create Radiology Order Type and Roles required by the module” link.
  - Click on the “Create Dummy Users” link.

The screenshot shows the OpenMRS Administration interface. At the top, there is a navigation bar with the OpenMRS logo, a 'Home' link, a status message 'You have gone full screen. Exit full screen (F11)', and a 'Administration' link. The main content area is titled 'Administration' and contains several sections of links. The 'Radiology Module' section is highlighted with a red box and contains the following links: 'Configuration and Initialization' and 'Manage Radiology Orders'. Other sections include 'Users', 'Patients', 'Person', 'Visits', 'Encounters', 'Providers', 'Locations', 'Observations', 'Orders', 'Concepts', 'Forms', 'HL7 Messages', 'Maintenance', 'Modules', 'Logic Module', 'HTML Form Entry', 'REST Web Services', and 'Basic Module'.

OpenMRS

Currently logged in as Super User | [Log out](#) | [My Profile](#) | [Help](#)

Home You have gone full screen. Exit full screen (F11) Administration

### Administration

**Users**

- [Manage Users](#)
- [Manage Roles](#)
- [Manage Privileges](#)
- [Manage Alerts](#)

**Patients**

- [Manage Patients](#)
- [Manage Tribes](#)
- [Find Patients to Merge](#)
- [Manage Identifier Types](#)

**Person**

- [Manage Persons](#)
- [Manage Relationship Types](#)
- [Manage Person Attribute Types](#)

**Visits**

- [Manage Visit Types](#)
- [Manage Visit Attribute Types](#)
- [Configure Visits](#)

**Encounters**

- [Manage Encounters](#)
- [Manage Encounter Types](#)
- [Manage Encounter Roles](#)

**Providers**

- [Manage Providers](#)
- [Manage Provider Attribute Types](#)

**Locations**

- [Manage Locations](#)
- [Manage Location Tags](#)
- [View Location Hierarchy](#)
- [Manage Location Attribute Types](#)
- [Manage Layout](#)

**Observations**

- [Manage Observations](#)

**Orders**

- [Manage Orders](#)

**Concepts**

- [View Concept Dictionary](#)
- [Manage Concept Drugs](#)
- [Manage Proposed Concepts](#)
- [Update Concept Index](#)
- [Manage Concept Classes](#)
- [Manage Concept Datatypes](#)
- [Manage Concept Sources](#)
- [Manage Concept Stop Word](#)
- [Manage Reference Terms](#)

**Forms**

- [Manage Forms](#)
- [Manage Fields](#)
- [Manage Field Types](#)
- [Merge Duplicate Fields](#)

**HL7 Messages**

- [Manage HL7 Sources](#)
- [Manage Queued Messages](#)
- [Manage Held Messages](#)
- [Manage HL7 Errors](#)
- [Manage HL7 Archives](#)
- [Migrate HL7 Archives](#)

**Maintenance**

- [Set Implementation Id](#)
- [System Information](#)
- [Audit Patient Identifiers](#)
- [View Quick Reports](#)
- [Settings](#)
- [Advanced Settings](#)
- [View Server Log](#)
- [View Database Changes](#)
- [Manage Locales And Themes](#)
- [View Logged In Users](#)

**Modules**

- [Manage Modules](#)
- [Module Properties](#)

**Logic Module**

- [Token Registration](#)
- [Rule Definitions](#)
- [Test Logic Expressions](#)
- [Initial Set-Up](#)

**HTML Form Entry**

- [Manage HTML Forms](#)
- [Preview HTML Form from File](#)

**REST Web Services**

- [Settings](#)
- [Test](#)
- [Help](#)

**Basic Module**

- [basicmodule.replace.this.link.name](#)

**Radiology Module**

- [Configuration and Initialization](#)
- [Manage Radiology Orders](#)

[Admin](#) | [Manage Radiology Orders](#)

## Configuration and initialization

[Create radiology order type and roles required by the module](#)  
[Create dummy users \(Optional\)](#)

Saving :

MWL entries in: C:\OpenMRS1.9.x\openmrs-core\webapp\mwl

MPPS entries in: C:\OpenMRS1.9.x\openmrs-core\webapp\mppps

DICOM image objects in: C:\OpenMRS1.9.x\openmrs-core\webapp\storage

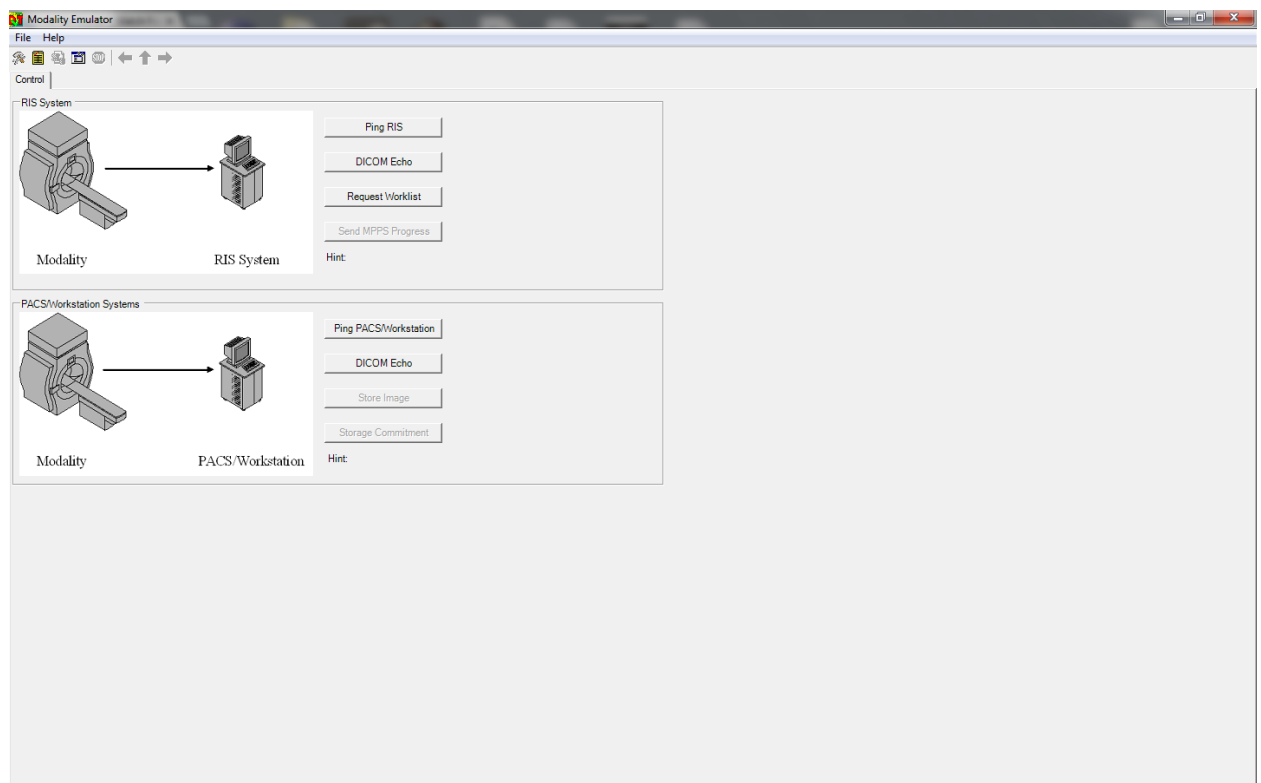
### Xebra WADO Server initialization

1. [Create SCP](#)
2. [Create AE](#)



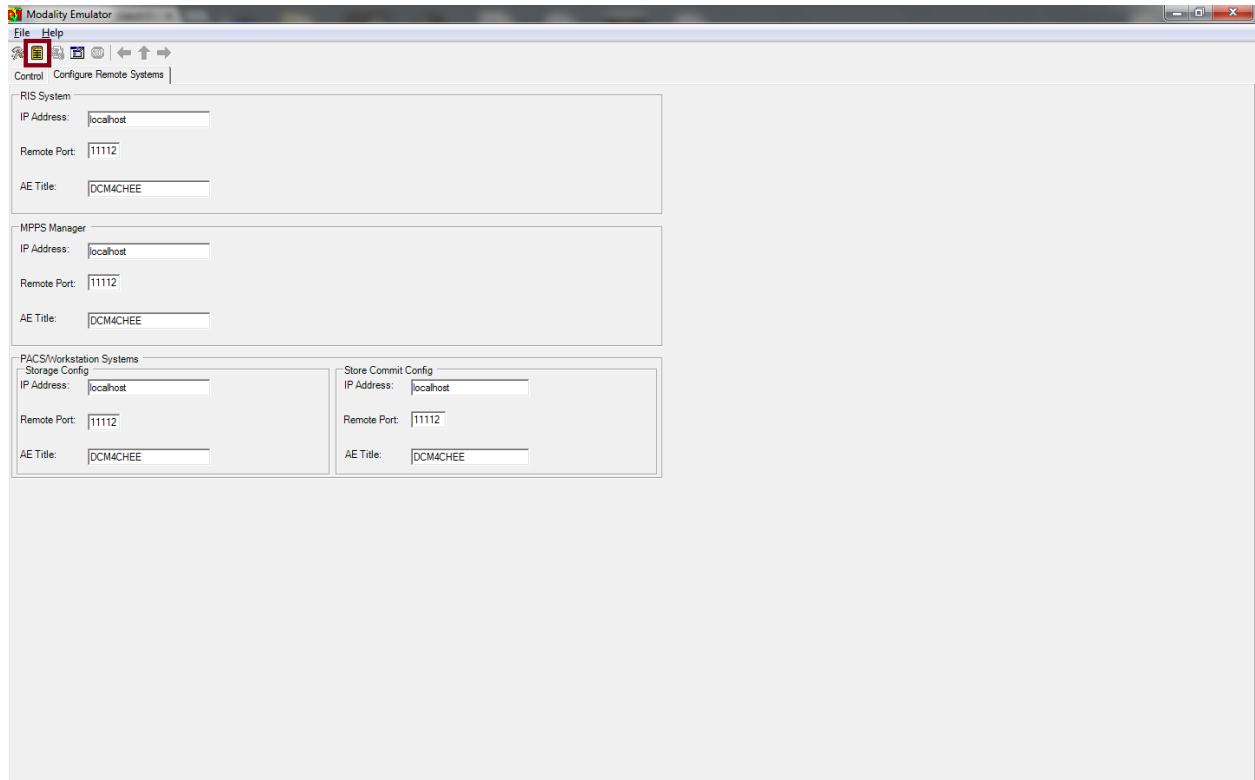
# Dvtk Modality Emulator

- Install the Modality Emulator from this link.  
<http://dicom.dvtk.org/modules/wiwimod/index.php?page=Download+Modality+Emulator&menu=downloads>
- **IMPORTANT:** Install the DICOM definition files from this link before you run the emulator.  
<http://dicom.dvtk.org/modules/wiwimod/index.php?page=Download+DICOM+Definition+Files>
- Run the emulator(there should be an icon for modality emulator in the start menu).
- **IMPORTANT :** In the emulator, a file or setting is selected if the value is highlighted.

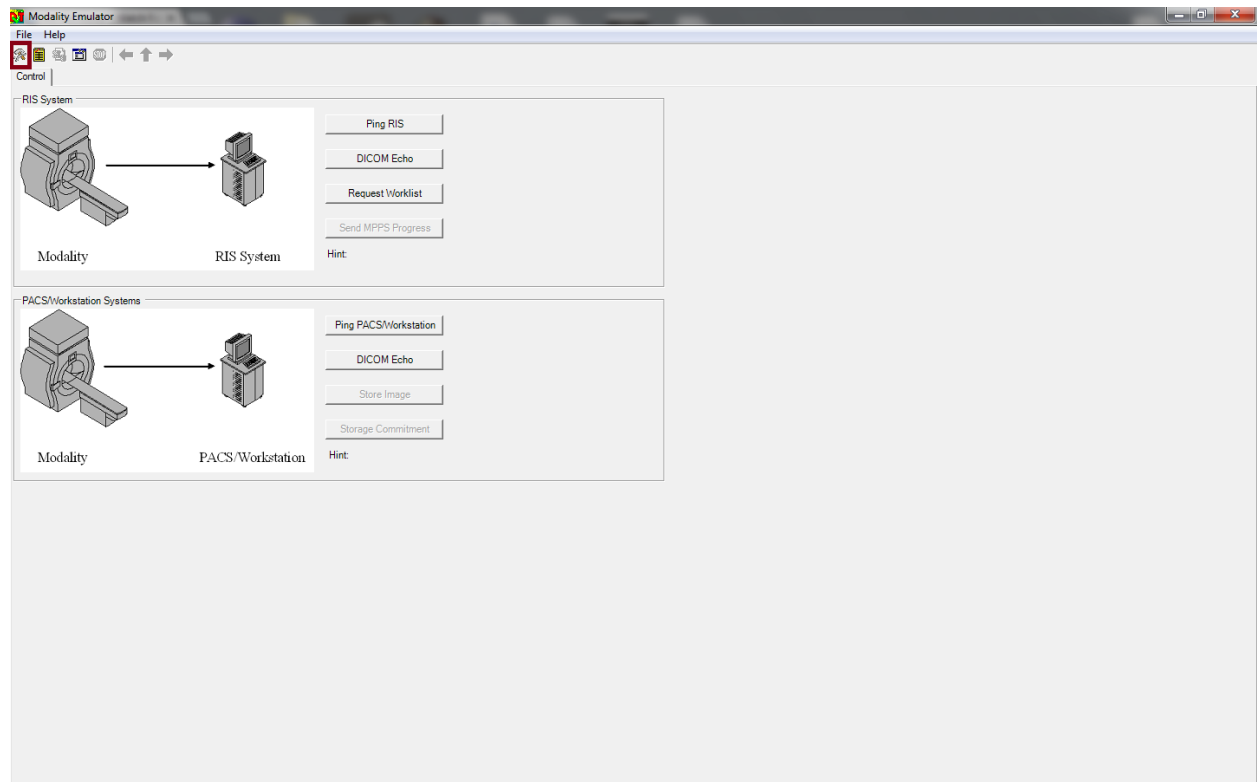


## Configure the Emulator

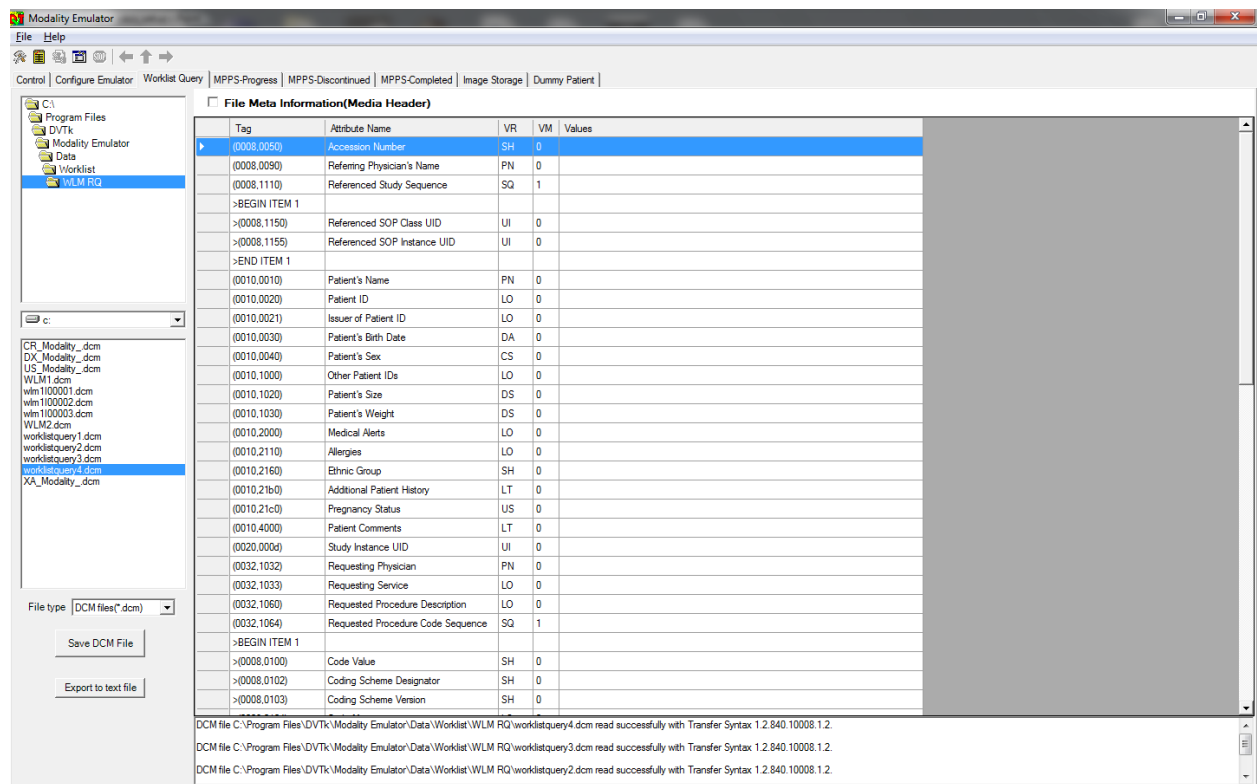
- Click on the “Configure Remote Systems Button.”
  - The IP Address, Remote Port and AE Title are the same for all the different systems.
  - IP Address : localhost
  - Remote Port : 11112
  - AE Title : DCM4CHEE



- Click on the Configure Emulator button, a number of tabs will be visible.



- Click on the Worklist query Tab.
  - In the bottom left dialog box, choose the file **“worklistquery2.dcm”**.
  - In the right side where all the attributes are displayed, scroll down to the Code Meaning “Scheduled Procedure Step Start Date” and delete the value. (The worklistquery2.dcm is an empty query with only that field having a value).
  - Save the completely empty query to another file called **“worklistquery4.dcm”** and select it.



- In the Image Storage tab, select the images on the left panel using the directory structure for the imaged you wish to send.

Modality Emulator

File Help

Control | Configure Emulator | Worklist Query | MPPS-Progress | MPPS-Discontinued | MPPS-Completed | Image Storage | Dummy Patient

C:\

- Dicom Samples
  - 1.3.46.670589.6.1.0.98511171.2
  - 1.3.51.0.7.633918642.63392001
  - 39419238
  - 77854033
  - 96890234
  - DISCIMG
  - Images 2

c:\

- 0012 DCM
- 0026 DCM
- MRBRAIN DCM**

File type: DCM files(\*.dcm)

Save DCM File

Export to text file

**File Meta Information(Media Header)**

| Tag         | Attribute Name             | VR | VM | Values                                |
|-------------|----------------------------|----|----|---------------------------------------|
| (0008,0005) | Specific Character Set     | CS | 1  | ISO_IR 100                            |
| (0008,0008) | Image Type                 | CS | 5  | ORIGINAL\PRIMARY\OTHER\VR             |
| (0008,0012) | Instance Creation Date     | DA | 1  | 19960823                              |
| (0008,0013) | Instance Creation Time     | TM | 1  | 093801                                |
| (0008,0014) | Instance Creator UID       | UI | 1  | 1.3.46.670589.11.0.5                  |
| (0008,0016) | SOP Class UID              | UI | 1  | 1.2.840.10008.5.1.4.1.1.4             |
| (0008,0018) | SOP Instance UID           | UI | 1  | 1.3.46.670589.11.0.4.1996082307380006 |
| (0008,0020) | Study Date                 | DA | 1  | 19960330                              |
| (0008,0021) | Series Date                | DA | 1  | 19960330                              |
| (0008,0030) | Study Time                 | TM | 1  | 150829.0000                           |
| (0008,0031) | Series Time                | TM | 1  | 155614.6300                           |
| (0008,0050) | Accession Number           | SH | 0  |                                       |
| (0008,0060) | Modality                   | CS | 1  | MR                                    |
| (0008,0070) | Manufacturer               | LO | 1  | Philips                               |
| (0008,0080) | Institution Name           | LO | 1  | OTM4 R4.5                             |
| (0008,0090) | Referring Physician's Name | PN | 0  |                                       |
| (0008,1030) | Study Description          | LO | 1  | BRAIN                                 |
| (0008,103e) | Series Description         | LO | 1  | Brain STIR GR 512 TRA GraSE 4415 64   |
| (0008,1090) | Manufacturer's Model Name  | LO | 1  | T5                                    |
| (0010,0010) | Patient's Name             | PN | 1  | MR/BRAIN/GRASE/1024                   |
| (0010,0020) | Patient ID                 | LO | 1  | 7                                     |
| (0010,0030) | Patient's Birth Date       | DA | 1  | 19010101                              |
| (0010,0040) | Patient's Sex              | CS | 1  | M                                     |
| (0010,1030) | Patient's Weight           | DS | 1  | 90                                    |
| (0018,0020) | Undefined                  | CS | 1  | IR                                    |
| (0018,0021) | Undefined                  | CS | 1  | OTHER                                 |
| (0018,0022) | Undefined                  | CS | 0  |                                       |
| (0018,0023) | Undefined                  | CS | 1  | 2D                                    |
| (0018,0050) | Undefined                  | DS | 1  | 6.000000                              |
| (0018,0080) | Undefined                  | DS | 1  | 4414.826172                           |

DCM file C:\Dicom Samples\MRBRAIN DCM read successfully with Transfer Syntax 1.2.840.10008.1.2.1.

- Make sure the MPPS In Progress, MPPS Discontinued and MPPS Complete Tabs are set correctly with the right MPPS file selected.

MPPS In Progress

Modality Emulator

File Help

Control | Configure Emulator | Worklist Query | **MPPS-Progress** | MPPS-Discontinued | MPPS-Completed | Image Storage | Dummy Patient

C:\Program Files\DVTK\Modality Emulator\data\mpps

mpps-completed1.dcm  
mpps-discontinued1.dcm  
**mpps-progress1.dcm**  
mpps-progress2.dcm

File type: DCM files(.dcm)

Save DCM File

Export to text file

**File Meta Information(Media Header)**

| Tag           | Attribute Name                         | VR | VM | Values                 |
|---------------|----------------------------------------|----|----|------------------------|
| (0008,0003)   | Undefined                              | UL | 1  | 44                     |
| (0008,0005)   | Specific Character Set                 | CS | 1  | ISO_IR 100             |
| (0008,0060)   | Modality                               | CS | 1  | DX                     |
| (0008,1032)   | Procedure Code Sequence                | SQ | 1  |                        |
| (0008,1120)   | Referenced Patient Sequence            | SQ | 1  |                        |
| (0010,0000)   | Undefined                              | UL | 1  | 98                     |
| (0010,0010)   | Patient's Name                         | PN | 1  | DICOM2 Validation^NR 1 |
| (0010,0020)   | Patient ID                             | LO | 1  | PA2                    |
| (0010,0021)   | Issuer of Patient ID                   | LO | 1  | Issuer of Patient ID1  |
| (0010,0030)   | Patient's Birth Date                   | DA | 1  | 19710101               |
| (0010,0040)   | Patient's Sex                          | CS | 1  | M                      |
| (0018,0000)   | Undefined                              | UL | 1  | 8                      |
| (0018,115e)   | Image and Fluoroscopy Area Dose Pro... | DS | 0  |                        |
| (0020,0000)   | Undefined                              | UL | 1  | 22                     |
| (0020,0010)   | Study ID                               | SH | 1  | Procedure ID1          |
| (0040,0000)   | Undefined                              | UL | 1  | 187                    |
| (0040,0241)   | Performed Station AE Title             | AE | 1  | DVT                    |
| (0040,0242)   | Performed Station Name                 | SH | 0  |                        |
| (0040,0243)   | Performed Location                     | SH | 0  |                        |
| (0040,0244)   | Performed Procedure Step Start Date    | DA | 1  | 20060719               |
| (0040,0245)   | Performed Procedure Step Start Time    | TM | 1  | 134937                 |
| (0040,0250)   | Performed Procedure Step End Date      | DA | 0  |                        |
| (0040,0251)   | Performed Procedure Step End Time      | TM | 0  |                        |
| (0040,0252)   | Performed Procedure Step Status        | CS | 1  | IN PROGRESS            |
| (0040,0253)   | Performed Procedure Step ID            | SH | 1  | 1605.0                 |
| (0040,0254)   | Performed Procedure Step Description   | LO | 0  |                        |
| (0040,0255)   | Performed Procedure Type Description   | LO | 0  |                        |
| (0040,0260)   | Performed Protocol Code Sequence       | SQ | 1  |                        |
| (0040,0270)   | Scheduled Step Attributes Sequence     | SQ | 1  |                        |
| >BEGIN ITEM 1 |                                        |    |    |                        |

DCM file C:\Program Files\DVTK\Modality Emulator\data\mpps\mpps-progress2.dcm read successfully with Transfer Syntax 1.2.840.10008.1.2.

## MPPS Completed

Modality Emulator

File Help

Control | Configure Emulator | Worklist Query | MPPS-Progress | MPPS-Discontinued | **MPPS-Completed** | Image Storage | Dummy Patient

C:\Program Files\DVTK\Modality Emulator\data\mpps

mpps-completed1.dcm  
mpps-discontinued1.dcm  
mpps-progress1.dcm  
mpps-progress2.dcm

File type: DCM files(.dcm)

Save DCM File

Export to text file

**File Meta Information(Media Header)**

| Tag                                     | Attribute Name                         | VR | VM | Values    |
|-----------------------------------------|----------------------------------------|----|----|-----------|
| (0008,0003)                             | Undefined                              | UL | 1  | 8         |
| (0008,1032)                             | Procedure Code Sequence                | SQ | 1  |           |
| (0018,0000)                             | Undefined                              | UL | 1  | 14        |
| (0018,115e)                             | Image and Fluoroscopy Area Dose Pro... | DS | 1  | 0.5703    |
| (0040,0000)                             | Undefined                              | UL | 1  | 276       |
| (0040,0250)                             | Performed Procedure Step End Date      | DA | 1  | 20060719  |
| (0040,0251)                             | Performed Procedure Step End Time      | TM | 1  | 135446    |
| (0040,0252)                             | Performed Procedure Step Status        | CS | 1  | COMPLETED |
| (0040,0254)                             | Performed Procedure Step Description   | LO | 0  |           |
| (0040,0255)                             | Performed Procedure Type Description   | LO | 0  |           |
| (0040,0260)                             | Performed Protocol Code Sequence       | SQ | 1  |           |
| (0040,0281)                             | Performed Procedure Step Discontin...  | SQ | 1  |           |
| (0040,0301)                             | Total Number of Exposures              | US | 1  | 2         |
| (0040,030e)                             | Exposure Dose Sequence                 | SQ | 1  |           |
| >BEGIN ITEM 1                           |                                        |    |    |           |
| >(0018,0000) Undefined                  |                                        |    |    |           |
| >(0018,0060) KVP                        |                                        |    |    |           |
| >(0018,1150) Exposure Time              |                                        |    |    |           |
| >(0018,115a) Radiation Mode             |                                        |    |    |           |
| >(0018,8151) X-Ray Tube Current in uA   |                                        |    |    |           |
| >END ITEM 1                             |                                        |    |    |           |
| >BEGIN ITEM 2                           |                                        |    |    |           |
| >(0018,0000) Undefined                  |                                        |    |    |           |
| >(0018,0060) KVP                        |                                        |    |    |           |
| >(0018,1150) Exposure Time              |                                        |    |    |           |
| >(0018,115a) Radiation Mode             |                                        |    |    |           |
| >(0018,8151) X-Ray Tube Current in uA   |                                        |    |    |           |
| >END ITEM 2                             |                                        |    |    |           |
| >(0040,0310) Comments on Radiation Dose |                                        |    |    |           |
| >(0040,0321) Film Consumption Sequence  |                                        |    |    |           |

DCM file C:\Program Files\DVTK\Modality Emulator\data\mpps\mpps-completed1.dcm read successfully with Transfer Syntax 1.2.840.10008.1.2.

MPPS DISCONTINUED

Modality Emulator

File Help

Control Configure Emulator Worklist Query MPPS-Progress MPPS-Discontinued MPPS-Completed Image Storage Dummy Patient

C:\Program Files\DVTK\Modality Emulator\data\mpps

c:\mpps-completed1.dcm  
mpps-discontinued1.dcm  
mpps-inprogress1.dcm  
mpps-inprogress2.dcm

File type DCM files(.dcm)  
Save DCM File  
Export to text file

File Meta Information(Media Header)

| Tag                                   | Attribute Name                         | VR | VM | Values                                                                          |
|---------------------------------------|----------------------------------------|----|----|---------------------------------------------------------------------------------|
| (0008,0000)                           | Undefined                              | UL | 1  | 8                                                                               |
| (0008,1032)                           | Procedure Code Sequence                | SQ | 1  |                                                                                 |
| (0018,0000)                           | Undefined                              | UL | 1  | 14                                                                              |
| (0018,115e)                           | Image and Fluoroscopy Area Dose Pro... | DS | 1  | 0.5703                                                                          |
| (0040,0000)                           | Undefined                              | UL | 1  | 278                                                                             |
| (0040,0250)                           | Performed Procedure Step End Date      | DA | 1  | 20060719                                                                        |
| (0040,0251)                           | Performed Procedure Step End Time      | TM | 1  | 135446                                                                          |
| (0040,0252)                           | Performed Procedure Step Status        | CS | 1  | DISCONTINUED                                                                    |
| (0040,0254)                           | Performed Procedure Step Description   | LO | 0  |                                                                                 |
| (0040,0255)                           | Performed Procedure Type Description   | LO | 0  |                                                                                 |
| (0040,0260)                           | Performed Protocol Code Sequence       | SQ | 1  |                                                                                 |
| (0040,0281)                           | Performed Procedure Step Discontinu... | SQ | 1  |                                                                                 |
| (0040,0301)                           | Total Number of Exposures              | US | 1  | 2                                                                               |
| (0040,030e)                           | Exposure Dose Sequence                 | SQ | 1  |                                                                                 |
| >BEGIN ITEM 1                         |                                        |    |    |                                                                                 |
| >(0018,0000) Undefined                |                                        |    |    |                                                                                 |
| >(0018,0060) KVP                      |                                        |    |    |                                                                                 |
| >(0018,1150) Exposure Time            |                                        |    |    |                                                                                 |
| >(0018,115a) Radiation Mode           |                                        |    |    |                                                                                 |
| >(0018,8151) X-Ray Tube Current in uA |                                        |    |    |                                                                                 |
| >END ITEM 1                           |                                        |    |    |                                                                                 |
| >BEGIN ITEM 2                         |                                        |    |    |                                                                                 |
| >(0018,0000) Undefined                |                                        |    |    |                                                                                 |
| >(0018,0060) KVP                      |                                        |    |    |                                                                                 |
| >(0018,1150) Exposure Time            |                                        |    |    |                                                                                 |
| >(0018,115a) Radiation Mode           |                                        |    |    |                                                                                 |
| >(0018,8151) X-Ray Tube Current in uA |                                        |    |    |                                                                                 |
| >END ITEM 2                           |                                        |    |    |                                                                                 |
| (0040,0310)                           | Comments on Radiation Dose             | ST | 1  | 1, Hand pa, 48kV, 5.946mA, 22.95ms, SID 1100, EI 80, 0mmA, 0.3575dGycm2, 2, ... |
| (0040,0321)                           | Film Consumption Sequence              | SQ | 1  |                                                                                 |

DCM file C:\Program Files\DVTK\Modality Emulator\data\mpps\mpps-discontinued1.dcm read successfully with Transfer Syntax 1.2.840.10008.1.2.

THAT'S THE INSTALLATION!!

## User Guide

- Run DCM4CHEE, OpenMRS and the DVTK Modality Emulator.
- **NOTE:** The modality emulator runs only on Windows.
- **NOTE:** If the module has trouble starting up due to port errors or java socket problems.
  - **Start Tomcat or Jetty with the following parameters.**  
`-Djava.net.preferIPv4Stack=true`
- Goto OpenMRS→Administration→Manage Users.
  - Create a new user with the role reading physician.
- Goto OpenMRS→ Administration→ Manage Radiology Orders→Add Order

**OpenMRS** Currently logged in as Super User | [Log out](#) | [My Profile](#) | [Help](#)

[Home](#) | [Find/Create Patient](#) | [Dictionary](#) | [Administration](#)

[Admin](#) | [Manage Radiology Orders](#)

### Manage Radiology Orders

[Add Radiology Order](#)

**Worklist** Clear Results

Patient:  Start Date:  End Date:

Show **20** entries Search:  Show/Hide Columns

| Edit | Patient Id | Patient Full Name  | Priority | Referring Physician | Scheduler  | Performing Physician | Reading Physician | Appointment Date      | Modality | Status                | Instructions                            |
|------|------------|--------------------|----------|---------------------|------------|----------------------|-------------------|-----------------------|----------|-----------------------|-----------------------------------------|
| 1    | 100-8      | Mr. John D Patient | Unknown  | Super User          |            |                      |                   | 2013-09-26 00:00:00.0 | CR       | Unknown Unknown       | <a href="#">test xa</a>                 |
| 2    | 100-8      | Mr. John D Patient | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED Unknown     | <a href="#">test xa</a>                 |
| 3    | 100-8      | Mr. John D Patient | ROUTINE  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | MR       | SCHEDULED IN PROGRESS | <a href="#">test 2</a>                  |
| 4    | 100-8      | Mr. John D Patient | ROUTINE  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | CT       | SCHEDULED IN PROGRESS | <a href="#">qwerty</a>                  |
| 5    | 200-6      | Akhil Ravindran    | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED Unknown     | <a href="#">testing again and again</a> |
| 6    | 100-8      | Mr. John D Patient | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED COMPLETED   | <a href="#">testing after db clear</a>  |
| 7    | 100-8      | Mr. John D Patient | HIGH     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | MR       | SCHEDULED COMPLETED   | <a href="#">asdfg</a>                   |
| 8    | 200-6      | Akhil Ravindran    | Unknown  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | CR       | SCHEDULED COMPLETED   | <a href="#">test ct</a>                 |
| 9    | 200-6      | Akhil Ravindran    | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | XA       | SCHEDULED COMPLETED   | <a href="#">test xa</a>                 |

Viewing 1 - 9 of 9 first Previous 1 Next last

English (United Kingdom) | [English \(United States\)](#) | Last Build: Oct 17 2013 01:29 AM | Version: 1.9.1 Build 28992 | Powered by OpenMRS

- Add order details and save order.



[Admin](#) | **Manage Radiology Orders****Order**

|                                           |                                                                                        |
|-------------------------------------------|----------------------------------------------------------------------------------------|
| Patient                                   | <input type="text" value="Enter patient name or id"/> <a href="#">More Information</a> |
| Related Concept                           | <input type="text" value="Enter concept name or id"/>                                  |
| Priority                                  | <input type="text" value="Select"/>                                                    |
| Scheduled status                          | <input type="text" value="Select"/>                                                    |
| Performed status                          | <input type="text" value="Select"/>                                                    |
| Modality                                  | <input type="text" value="CR"/>                                                        |
| Instructions                              | <input type="text" value=""/>                                                          |
| Related Encounter                         | <input type="text" value="Enter encounter id, patient name or id"/>                    |
| Orderer                                   | <input type="text" value="Enter user name"/>                                           |
| Start date                                | <input type="text" value=""/> (dd/mm/yyyy)                                             |
| Auto-expire date                          | <input type="text" value=""/> (dd/mm/yyyy)                                             |
| Scheduler                                 | <input type="text" value="Enter user name"/>                                           |
| Performing Physician                      | <input type="text" value="Enter user name"/>                                           |
| Reading Physician                         | <input type="text" value="Enter user name"/>                                           |
| <input type="button" value="Save Order"/> |                                                                                        |

[Admin](#) | **Manage Radiology Orders****Order**

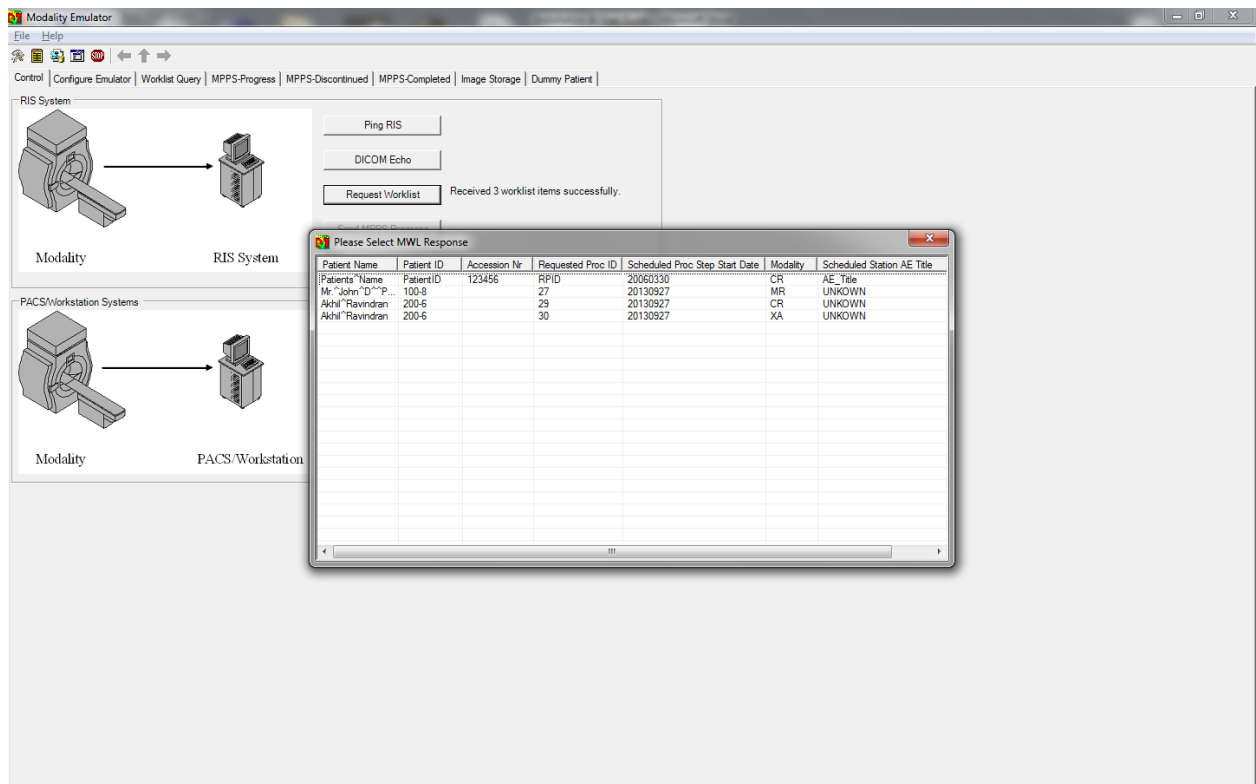
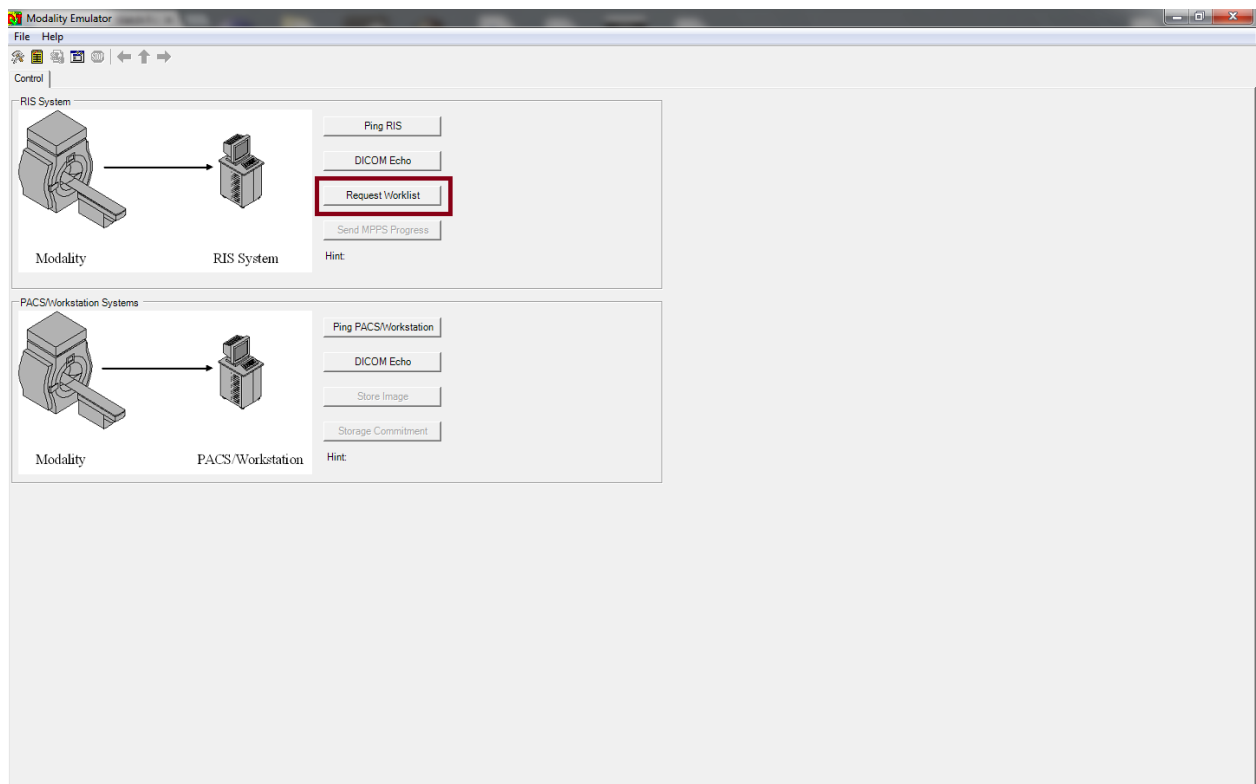
|                                           |                                                                              |  |
|-------------------------------------------|------------------------------------------------------------------------------|--|
| Patient                                   | <input type="text" value="John D Patient"/> <a href="#">More Information</a> |  |
| Related Concept                           | <input type="text" value="ANEMIA, BLOOD LOSS"/>                              |  |
| Priority                                  | <input type="text" value="STAT"/>                                            |  |
| Scheduled status                          | <input type="text" value="SCHEDULED"/>                                       |  |
| Performed status                          | <input type="text" value="COMPLETED"/>                                       |  |
| Modality                                  | <input type="text" value="XA"/>                                              |  |
| Instructions                              | <input type="text" value="testing after db clear"/>                          |  |
| Related Encounter                         | <input type="text" value="Enter encounter id, patient name or id"/>          |  |
| Orderer                                   | <input type="text" value="Super User"/>                                      |  |
| Start date                                | <input type="text" value="26/09/2013"/> (dd/mm/yyyy)                         |  |
| Auto-expire date                          | <input type="text" value="26/09/2013"/> (dd/mm/yyyy)                         |  |
| Scheduler                                 | <input type="text" value="Super User"/>                                      |  |
| Performing Physician                      | <input type="text" value="Super User"/>                                      |  |
| Reading Physician                         | <input type="text" value="Akhil Ravindran"/>                                 |  |
| Created By                                | <input type="text" value="Super User - 26 September 2013 14:42:38 PDT"/>     |  |
| <input type="button" value="Save Order"/> |                                                                              |  |

- Check the dcm4chee console for modality worklists.

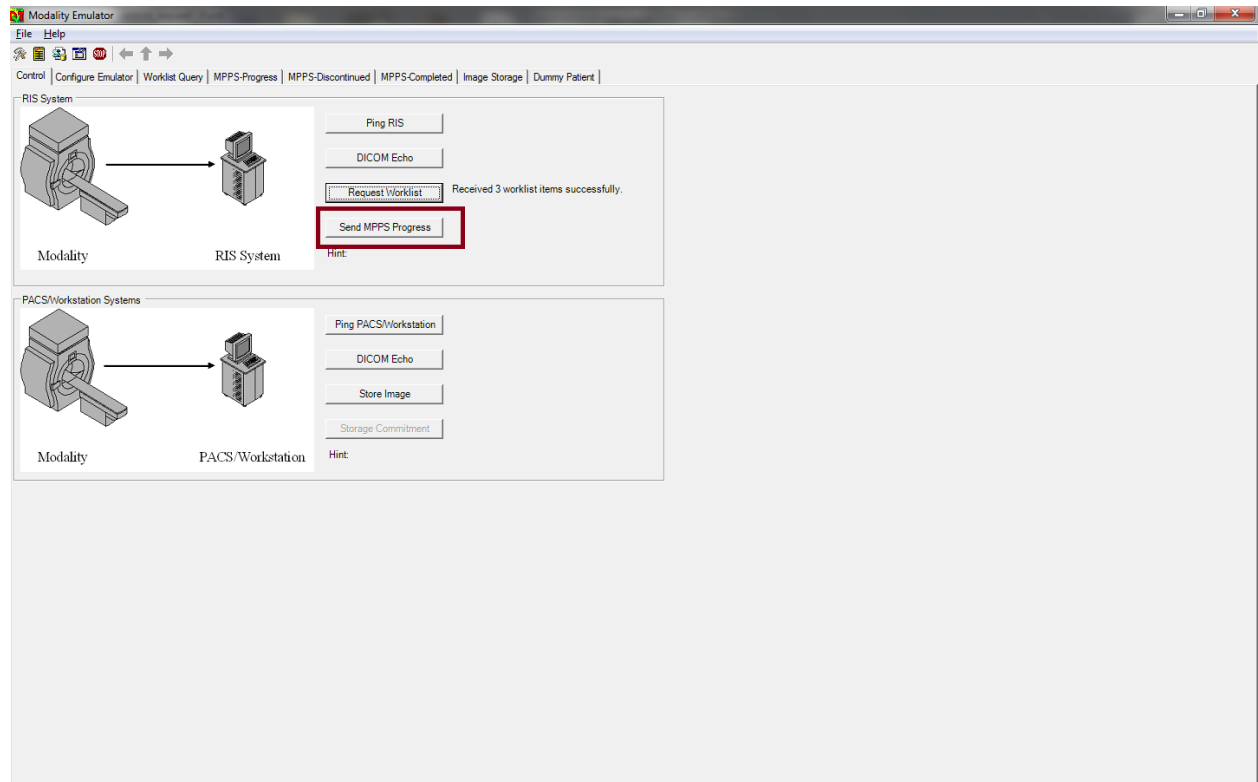
The screenshot shows the dcm4chee DICOM Archiver web interface. The 'Modality Worklist' tab is selected in the navigation bar. The search form includes fields for Patient Name, Patient ID, Issuer, Start Date, Station AET, Station Name, and Status. The 'Reset' and 'Search' buttons are highlighted with a red box. Below the search form, there is a table of worklist entries.

| Patient Name        | Birthdate | SPS Description | Modality | SPS Status   | Start date      | Station AET | Station Name | Accession number |
|---------------------|-----------|-----------------|----------|--------------|-----------------|-------------|--------------|------------------|
| Akhil^Ravindran     | 10/7/1987 | test ct         | CR       | COMPLETED    | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |
| Akhil^Ravindran     | 10/7/1987 | test xa         | XA       | COMPLETED    | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |
| Mr.^John^D^^Patient | 1/1/1975  | asdfg           | MR       | DISCONTINUED | 9/27/2013 00:00 | UNKOWN      | UNKOWN       |                  |

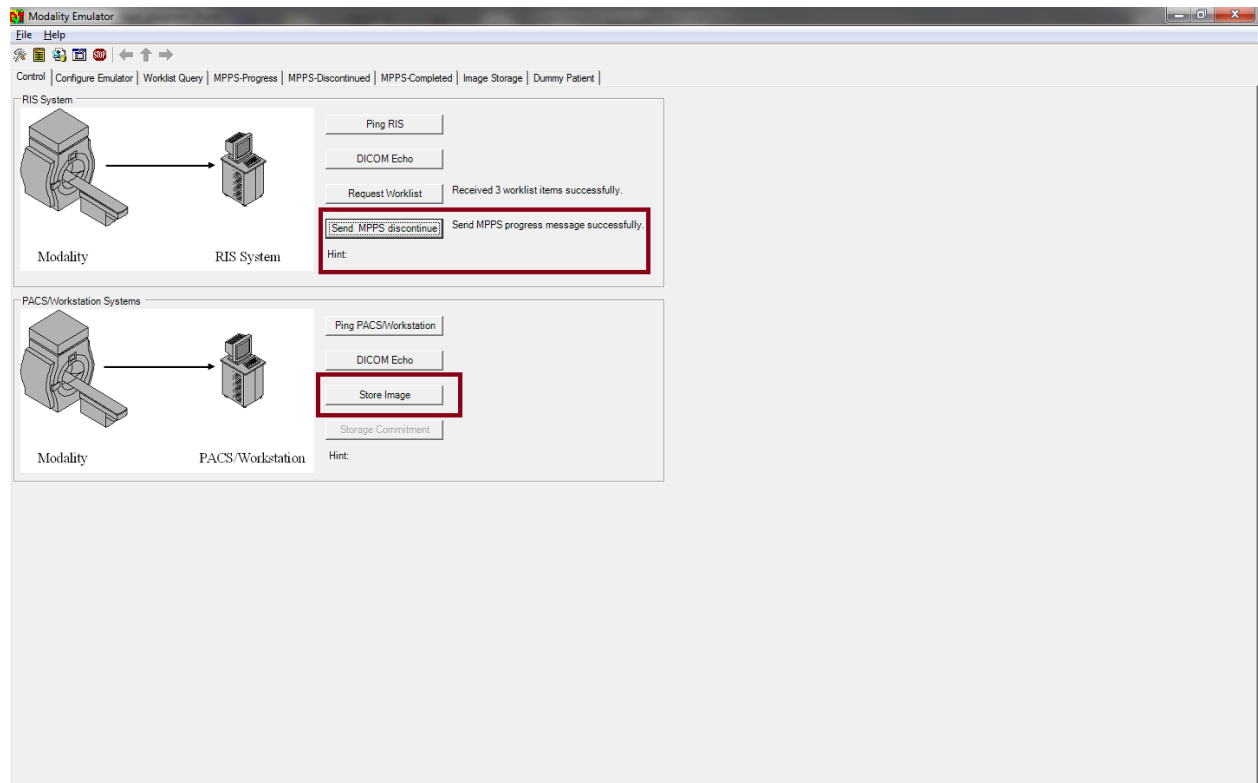
- In the Modality Emulator, Request Worklist and Choose the order that was just made in Opemrs.



- Send MPPS In progress to indicate the procedure has started.



- Once the In progress status has been sent, emulator gives you options to discontinue the order or store image.



- Click on the image storage tab to choose the image you want to send and return to the control and click "Store Image".

Modality Emulator

File Help

Control | Configure Emulator | Worklist Query | MPPS-Progress | MPPS-Discontinued | MPPS-Completed | Image Storage | Dummy Patient

C:\

- Dicom Samples
  - 1.3.46.670589.6.1.0.98511171.2
  - 1.3.51.0.7.633918642.63392001
  - 39419238
  - 77654033
  - 96890234
  - DISCIMG
  - images 2

c:\

0012 DCM

0000 DCM

MRBRAIN DCM

File type: DCM files(\*.dcm)

Save DCM File

Export to text file

**File Meta Information(Media Header)**

| Tag         | Attribute Name             | VR | VM | Values                                |
|-------------|----------------------------|----|----|---------------------------------------|
| (0008,0005) | Specific Character Set     | CS | 1  | ISO_IR 100                            |
| (0008,0008) | Image Type                 | CS | 5  | ORIGINAL\PRIMARY\OTHER\VR             |
| (0008,0012) | Instance Creation Date     | DA | 1  | 19960823                              |
| (0008,0013) | Instance Creation Time     | TM | 1  | 093801                                |
| (0008,0014) | Instance Creator UID       | UI | 1  | 1.3.46.670589.11.0.5                  |
| (0008,0016) | SOP Class UID              | UI | 1  | 1.2.840.10008.5.1.4.1.1.4             |
| (0008,0018) | SOP Instance UID           | UI | 1  | 1.3.46.670589.11.0.4.1996082307380006 |
| (0008,0020) | Study Date                 | DA | 1  | 19960330                              |
| (0008,0021) | Series Date                | DA | 1  | 19960330                              |
| (0008,0030) | Study Time                 | TM | 1  | 150829.0000                           |
| (0008,0031) | Series Time                | TM | 1  | 155614.6300                           |
| (0008,0050) | Accession Number           | SH | 0  |                                       |
| (0008,0060) | Modality                   | CS | 1  | MR                                    |
| (0008,0070) | Manufacturer               | LO | 1  | Philips                               |
| (0008,0080) | Institution Name           | LO | 1  | OTM4 R4.5                             |
| (0008,0090) | Referring Physician's Name | PN | 0  |                                       |
| (0008,1030) | Study Description          | LO | 1  | BRAIN                                 |
| (0008,103e) | Series Description         | LO | 1  | Brain STIR GR 512 TRA GraSE 4415 64   |
| (0008,1090) | Manufacturer's Model Name  | LO | 1  | T5                                    |
| (0010,0010) | Patient's Name             | PN | 1  | MR/BRAIN/GRASE/1024                   |
| (0010,0020) | Patient ID                 | LO | 1  | 7                                     |
| (0010,0030) | Patient's Birth Date       | DA | 1  | 19010101                              |
| (0010,0040) | Patient's Sex              | CS | 1  | M                                     |
| (0010,1030) | Patient's Weight           | DS | 1  | 90                                    |
| (0018,0020) | Undefined                  | CS | 1  | IR                                    |
| (0018,0021) | Undefined                  | CS | 1  | OTHER                                 |
| (0018,0022) | Undefined                  | CS | 0  |                                       |
| (0018,0023) | Undefined                  | CS | 1  | 2D                                    |
| (0018,0050) | Undefined                  | DS | 1  | 6.000000                              |
| (0018,0080) | Undefined                  | DS | 1  | 4414.826172                           |

DCM file C:\Dicom Samples\MRBRAIN DCM read successfully with Transfer Syntax 1.2.840.10008.1.2.1.

Modality Emulator

File Help

Control | Configure Emulator | Worklist Query | MPPS-Progress | MPPS-Discontinued | MPPS-Completed | Image Storage | Dummy Patient

**RIS System**

Modality → RIS System

Ping RIS

DICOM Echo

Request Worklist Received 3 worklist items successfully.

Send MPPS discontinues Send MPPS progress message successfully.

Hint:

**PACS/Workstation Systems**

Modality → PACS/Workstation

Ping PACS/Workstation

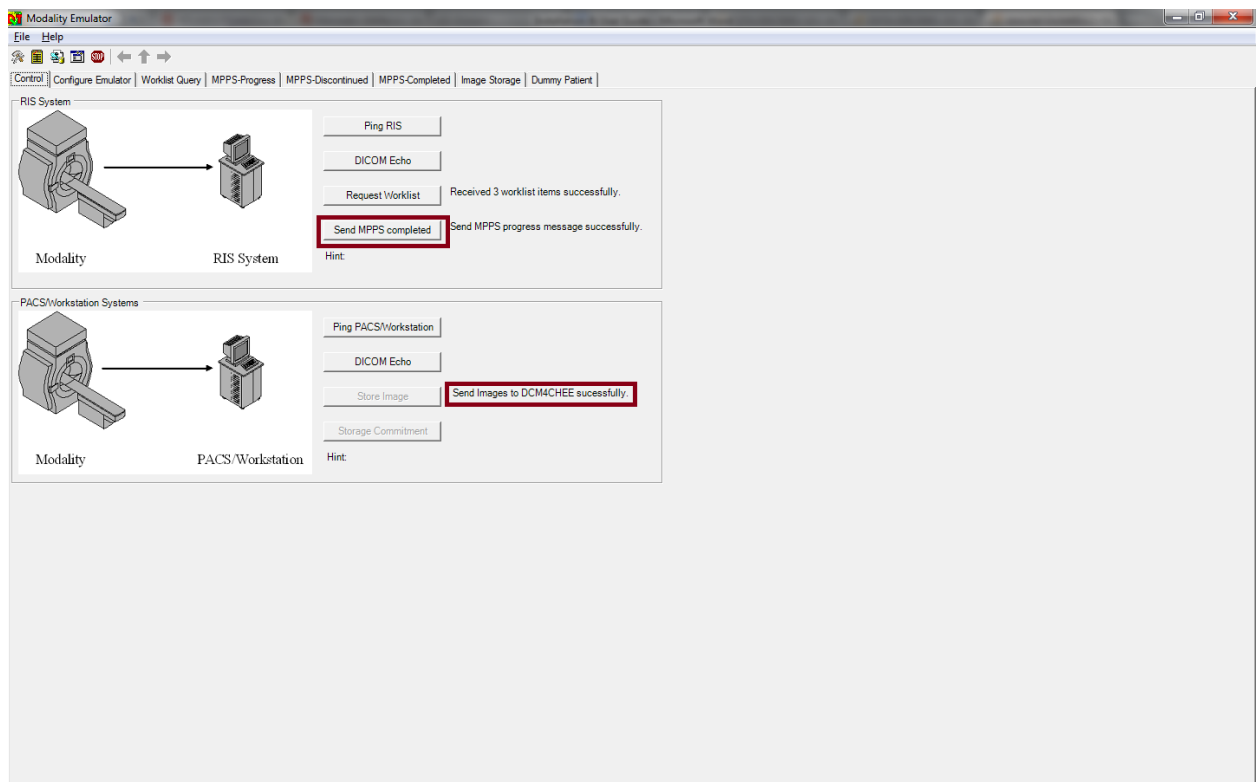
DICOM Echo

Store Image

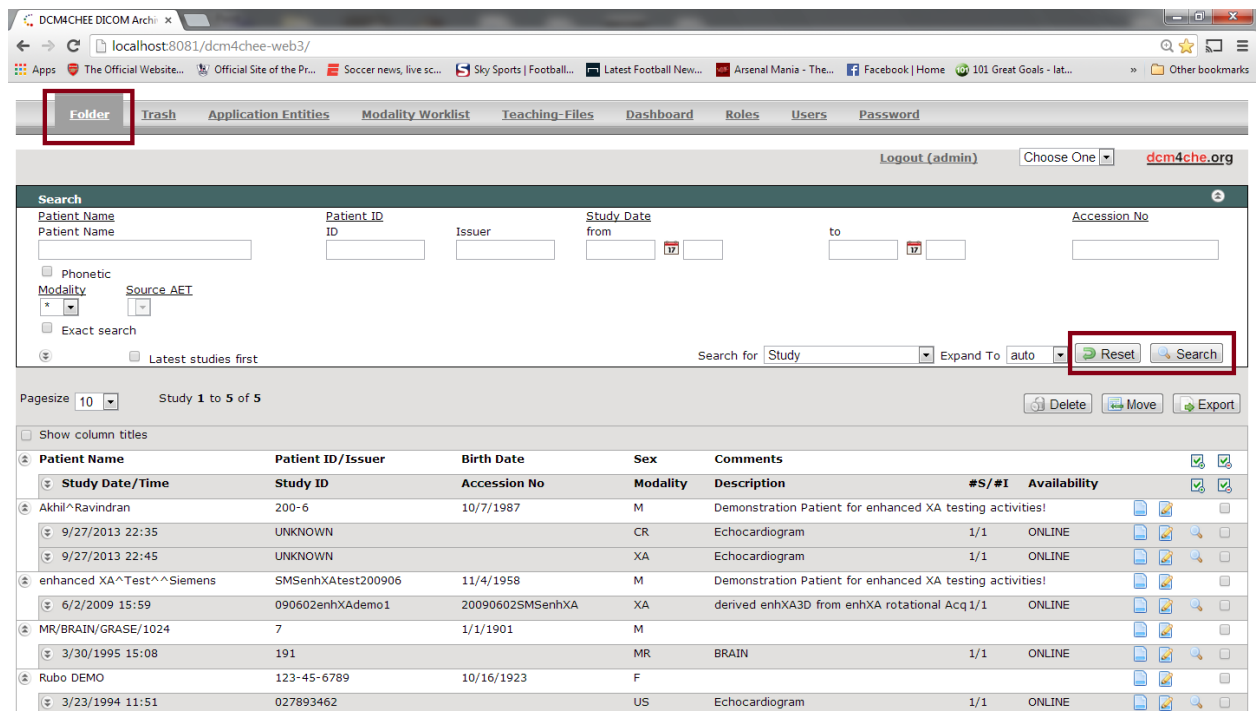
Storage Commitment

Hint:

- After the image has been sent successfully, the image will show up in the archive.



- Send MPPS Complete button.



- Last Step Is to signify the Procedure is done in DCM4CHEE, click the emulate MPPS icon in the archive to complete the order.

Folder Trash Application Entities Modality Worklist Teaching-Files Dashboard Roles Users Password

Logout (admin) Choose One dcm4chee.org

**Search**

Patient Name Patient ID Issuer Study Date from to Accession No

Phonetic Modality Source AET

Exact search

Latest studies first

Search for Study Expand To auto Reset Search

Pagesize 10 Study 1 to 6 of 6

Delete Move Export

Show column titles

| Patient Name              | Patient ID/Issuer  | Birth Date       | Sex | Comments                                                  | #S/#I | Availability |
|---------------------------|--------------------|------------------|-----|-----------------------------------------------------------|-------|--------------|
| Akhil^Ravindran           | 200-6              | 10/7/1987        | M   | Demonstration Patient for enhanced XA testing activities! | 9/9   | ONLINE       |
| 9/27/2013 22:35           | UNKNOWN            |                  | CR  | Echocardiogram                                            | 1/1   | ONLINE       |
| 9/27/2013 22:45           | UNKNOWN            |                  | XA  | Echocardiogram                                            | 8/8   | ONLINE       |
| enhanced XA^Test^^Siemens | SMSenhXAtest200906 | 11/4/1958        | M   | Demonstration Patient for enhanced XA testing activities! | 1/1   | ONLINE       |
| 6/2/2009 15:59            | 090602enhXAdemo1   | 20090602SMSenhXA | XA  | derived enhXA3D from enhXA rotational Acq 1/1             | 1/1   | ONLINE       |
| Mr.^John^D^^Patient       | 100-8              | 1/1/1975         | M   | Demonstration Patient for enhanced XA testing activities! | 1/1   | ONLINE       |
| 10/17/2013 01:27          | UNKNOWN            |                  | MR  | Echocardiogram                                            | 1/1   | ONLINE       |
| MR/BRAIN/GRASE/1024       | 7                  | 1/1/1901         | M   | BRAIN                                                     | 1/1   | ONLINE       |
| 3/30/1995 15:08           | 191                |                  | MR  | BRAIN                                                     | 1/1   | ONLINE       |
| Rubo DEMO                 | 123-45-6789        | 10/16/1923       | F   |                                                           | 1/1   | ONLINE       |
| 3/23/1994 11:51           | 027893462          |                  | US  | Echocardiogram                                            | 1/1   | ONLINE       |

Phonetic Modality Source AET

Exact search

Latest studies first

Search for Study Expand To auto Reset Search

Pagesize 10 Study 1 to 6 of 6

Delete Move Export

Show column titles

| Patient Name              | Patient ID/Issuer  | Birth Date       | Sex | Comments                                                  | #S/#I | Availability |
|---------------------------|--------------------|------------------|-----|-----------------------------------------------------------|-------|--------------|
| Akhil^Ravindran           | 200-6              | 10/7/1987        | M   | Demonstration Patient for enhanced XA testing activities! | 9/9   | ONLINE       |
| 9/27/2013 22:35           | UNKNOWN            |                  | CR  | Echocardiogram                                            | 1/1   | ONLINE       |
| 9/27/2013 22:45           | UNKNOWN            |                  | XA  | Echocardiogram                                            | 8/8   | ONLINE       |
| enhanced XA^Test^^Siemens | SMSenhXAtest200906 | 11/4/1958        | M   | Demonstration Patient for enhanced XA testing activities! | 1/1   | ONLINE       |
| 6/2/2009 15:59            | 090602enhXAdemo1   | 20090602SMSenhXA | XA  | derived enhXA3D from enhXA rotational Acq 1/1             | 1/1   | ONLINE       |
| Mr.^John^D^^Patient       | 100-8              | 1/1/1975         | M   | Demonstration Patient for enhanced XA testing activities! | 1/1   | ONLINE       |
| 10/17/2013 01:27          | UNKNOWN            |                  | MR  | Echocardiogram                                            | 1/1   | ONLINE       |
| 10/17/2013 01:26          | 1                  | MODALITY         | MR  | SeriesDescription                                         | 1     | ONLINE       |
| 10/17/2013 01:26          | 1                  | MODALITY         | MR  | SeriesDescription                                         | 1     | ONLINE       |
| 10/17/2013 01:26          | 1                  | MODALITY         | MR  | SeriesDescription                                         | 1     | ONLINE       |
| 10/17/2013 01:27          | 1                  | MODALITY         | MR  | Brain STIR GR 512 TRA GraSE 4415.64                       | 1     | ONLINE       |
| 10/17/2013 01:26          | 1                  | MODALITY         | MR  | SeriesDescription                                         | 1     | ONLINE       |
| 10/17/2013 01:26          | 2                  | MODALITY         | MR  | Post-Stress                                               | 1     | ONLINE       |
| 10/17/2013 01:27          | 3                  | MODALITY         | MR  | RotationalAngioNative                                     | 1     | ONLINE       |
| 10/17/2013 01:25          | 1605.0             | 27               | MR  | Directional Coronary Atherectomy                          | 1     | COMPLETED    |
| 10/17/2013 01:26          | 5                  | MODALITY         | MR  | Directional Coronary Atherectomy                          | 1     | ONLINE       |
| 10/17/2013 01:26          |                    |                  | MR  |                                                           | 1/1   |              |



- The order and its status will be updated in OpenMRS and will be available for viewing by the reading physician.

**OpenMRS**

Currently logged in as Akhil Ravindran [Log out](#) [My Profile](#) [Help](#)

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[Admin](#) | [Manage Radiology Orders](#)

### Manage Radiology Orders

[Add Radiology Order](#)

**Worklist** [Clear Results](#)

Patient:  Start Date:  End Date:

Show  entries Search:  Show/Hide Columns

| Obs. Id | Patient Id | Patient Full Name  | Priority | Referring Physician | Scheduler  | Performing Physician | Reading Physician | Appointment Date      | Modality | Status                | Instructions |                                         |
|---------|------------|--------------------|----------|---------------------|------------|----------------------|-------------------|-----------------------|----------|-----------------------|--------------|-----------------------------------------|
| 1       | 100-8      | Mr. John D Patient | Unknown  | Super User          |            |                      |                   | 2013-09-26 00:00:00.0 | CR       | Unknown               | Unknown      | <a href="#">test_xa</a>                 |
| 2       | 100-8      | Mr. John D Patient | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED             | Unknown      | <a href="#">test_xa</a>                 |
| 3       | 100-8      | Mr. John D Patient | ROUTINE  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | MR       | SCHEDULED IN PROGRESS |              | <a href="#">test_2</a>                  |
| 4       | 100-8      | Mr. John D Patient | ROUTINE  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | CT       | SCHEDULED IN PROGRESS |              | <a href="#">qwerty</a>                  |
| 5       | 200-6      | Akhil Ravindran    | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED             | Unknown      | <a href="#">testing again and again</a> |
| 6       | 100-8      | Mr. John D Patient | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-26 00:00:00.0 | XA       | SCHEDULED COMPLETED   |              | <a href="#">testing after db clear</a>  |
| 7       | 100-8      | Mr. John D Patient | HIGH     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | MR       | SCHEDULED COMPLETED   |              | <a href="#">asdfg</a>                   |
| 8       | 200-6      | Akhil Ravindran    | Unknown  | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | CR       | SCHEDULED IN PROGRESS |              | <a href="#">test_ct</a>                 |
| 9       | 200-6      | Akhil Ravindran    | STAT     | Super User          | Super User | Super User           | Akhil Ravindran   | 2013-09-27 00:00:00.0 | XA       | SCHEDULED COMPLETED   |              | <a href="#">test_xa</a>                 |

Viewing 1 - 9 of 9 [first](#) [Previous](#) [1](#) [Next](#) [last](#)

English (United Kingdom) | [English \(United States\)](#) Last Build: Oct 17 2013 01:29 AM Version: 1.9.1 Build 28992 Powered by OpenMRS

- As a reading physician, the observation UI will open wherein the image can be viewed and Observations can be recorded.

[Admin](#) | [Manage Radiology Orders](#)

## Observation

|                                                                                       |                                                                              |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Person                                                                                | <input type="text" value="John D Patient"/> <a href="#">More Information</a> |
| Encounter                                                                             | <input type="text" value="Select"/>                                          |
| Order                                                                                 | <input type="text" value="22"/>                                              |
| Location                                                                              | <input type="text" value=""/>                                                |
| Observation Date                                                                      | <input type="text" value=""/> (Format: dd/mm/yyyy)                           |
| Question Concept                                                                      | <input type="text" value="Select"/>                                          |
| Comment                                                                               | <input type="text" value=""/>                                                |
| Study results                                                                         | <a href="#">View Study in Oviyam</a>                                         |
| <input type="button" value="Save Observation"/> <input type="button" value="Cancel"/> |                                                                              |

- Click on the view image link.

