

# Enabling opportunities



Rogan View Pro-X™

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Dicom Conformance Statement

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# 1. Introduction

## 1.1 Revision History

Revision	Who	Reason for Change	Changes
00	J.F. Santiago Núñez	First issue	
01	W.H. Philipse	Update for View Pro-X 2.0	
02	J.M.A.G. Harzevoort	Update for View Pro-X 2.0.1	Added MEDIA-FSC Application Entity
03	F. van Rijswijk / J.M.A.G. Harzevoort	Update for View Pro-X 3.0	Version Number Contact Details Document Number (Successor to CIB 196.864) Added new functionality for View Pro-X version 3.0. Adjusted some texts in chapter 4.
04	F. van Rijswijk	Review by P. Philipse	- Table 24. Modality Worklist Request Identifier for FIND-SCU. - Table 25. General Purpose Worklist Request Identifier for FIND-SCU
05	F. van Rijswijk	Update for View Pro-X 3.2	Version Number
06	F. van Rijswijk	Update for View Pro-X 4.0	Version Number

## 1.2 Audience

This document is addressed to Service Engineers that may be involved in the installation of this product or the validation of the DICOM interoperability.

## 1.3 References

The structure of this document follows the recommendations on the DICOM Standard revision 2007 PS3.2, Annex D (Informative) Conformance Statement Sample DICOM Image Viewer.

## 1.4 Product

Rogan View Pro-X is a Medical Imaging Application that can be used in a DICOM environment. This document describes Rogan View Pro-X's DICOM conformance. It can be used to determine whether and up to what degree Rogan View Pro-X can cooperate with other DICOM applications. Rogan View Pro-X expects any connecting application to be a DICOM application.

Please note that this product will evolve, and that new additions may be available. For the latest details on connectivity for this product, please contact your reseller for more information.

Rogan View Pro-X is equipped to support the following DICOM Service Classes:

- Storage Provider (STORAGE-SCP)
- Storage User (STORAGE -SCU)
- Move evidence User (MOVE-SCU)
- Query/Retrieve User (FIND-SCU)
- General Purpose Worklist User (GPPS-SCU)
- Print User (PRINT-SCU)

## 2. Implementation Model

### 2.1 Application Data Flow Diagram

Rogan OnLine XS Archiver is an application running on a dedicated server. It will handle storage and retrieval of images, including searching for them. It can also query other archives for data not contained in its own system.

Rogan OnLine XS Archiver will respond to requests for search, requests for move and request for storage. If necessary, it will issue requests for search and requests for move.

### 2.2 Functional Definition of AE

Rogan OnLine XS Archiver waits for another application to connect at the presentation address configured for its Application Entity Title. Rogan OnLine XS Archiver expects any connecting application to be a DICOM application.

Rogan OnLine XS Archiver will accept associations with Presentation Contexts for SOP Classes of the Storage Service Class. It will receive images on these Presentation Contexts and archive them.

Rogan OnLine XS Archiver will accept associations with Presentation Contexts for SOP Classes of the Query/Retrieve Class. It will accept queries on these Presentation Contexts and return information on the stored images, or it will move the images to another application.

If these queries refer to unknown images, Rogan OnLine XS Archiver can query other DICOM AE's where these images may be stored.

### 3. Conformance Statement Overview

Rogan View Pro-X is a DICOM image viewer application that supports:

- o Querying a remote system for a list of DICOM objects that may then be retrieved to the local system.
- o Sending local or remote images across the network to another system.
- o Sending locally loaded images to a DICOM Printer.

All storage SOP Classes defined as of DICOM 2002 can be received, stored and transmitted by the application, but only images, structured reports and key image notes may be loaded and viewed. All single and multiframe images with grayscale and RGB color (but not palette color) may be displayed.

**Table 1. Network Services**

Only hierarchical query and retrieval is supported.

<b>SOP Classes</b>	<b>User of Service (SCU)</b>	<b>Provider of Service (SCP)</b>
<b>Transfer</b>		
Computed Radiography Image Storage	Stored and Viewed	Yes
Digital X-Ray Image Storage - For Presentation	Stored and Viewed	Yes
Digital X-Ray Image Storage - For Processing	Stored and Viewed	Yes
Digital Mammography X-Ray Image Storage For Presentation	Stored and Viewed	Yes
Digital Mammography X-Ray Image Storage For Processing	Stored and Viewed	Yes
Digital Intra Oral X-Ray Image Storage - For Presentation	Stored and Viewed	Yes
Digital Intra Oral X-Ray Image Storage - For Processing	Stored and Viewed	Yes
CT Image Storage	Stored and Viewed	Yes
Retired Ultrasound Multi Frame Image Storage	Stored and Viewed	Yes
Ultrasound Multi Frame Image Storage	Stored and Viewed	Yes
MR Image Storage	Stored and Viewed	Yes
Retired Nuclear Medicine Image Storage	Stored and Viewed	Yes
Retired Ultrasound Image Storage	Stored and Viewed	Yes
Ultrasound Image Storage	Stored and Viewed	Yes
Secondary Capture Image Storage	Stored and Viewed	Yes
X-Ray Angiographic Image Storage	Stored and Viewed	Yes
X-Ray Radiofluoroscopic Image Storage	Stored and Viewed	Yes
Retired X-Ray Angiographic Bi-Plane Image Storage	Stored and Viewed	Yes



<b>SOP Classes</b>	<b>User of Service (SCU)</b>	<b>Provider of Service (SCP)</b>
<b>Transfer</b>		
Nuclear Medicine Image Storage	Stored and Viewed	Yes
Retired VL Image Storage	Stored and Viewed	Yes
VL Endoscopic Image Storage	Stored and Viewed	Yes
VL Microscopic Image Storage	Stored and Viewed	Yes
VL Slide Coordinates Microscopic Image Storage	Stored Only	Yes
VL Photographic Image Storage	Stored Only	Yes
RETIRED VL Multi Frame Image Storage	Stored Only	Yes
Basic Text SR	Stored and Viewed	Yes
Enhanced SR	Stored Only	Yes
Comprehensive SR	Stored Only	Yes
Mammography CAD SR	Stored Only	Yes
Chest CAD SR	Stored Only	Yes
PET Image Storage	Stored and Viewed	Yes
PET Curve Storage	Stored Only	Yes
Key Object Selection Document	Stored and Viewed	Yes
RT Image Storage	Stored and Viewed	Yes
RT Dose Storage	Stored Only	Yes
RT Structure Set Storage	Stored Only	Yes
RT Beams Treatment Record Storage	Stored Only	Yes
RT Plan Storage	Stored Only	Yes
RT Brachy Treatment Record Storage	Stored Only	Yes
RT Treatment Summary Record Storage	Stored Only	Yes
<b>Query/Retrieve</b>	<b>SCU</b>	<b>SCP</b>
Patient Root Information Model - MOVE	Yes - Hierarchical Only	No
Study Root Information Model - FIND	Yes - Hierarchical Only	No
<b>Print</b>	<b>SCU</b>	<b>SCP</b>
Basic Greyscale Print Management Meta	Yes	No
Basic Color Print Management Meta	Yes	No

**Note:** Rogan View Pro-X contains an internal DICOM archive only for the purpose to provide a local archive to the user of the workstation.  
External workstations cannot query/retrieve information from this local archive.

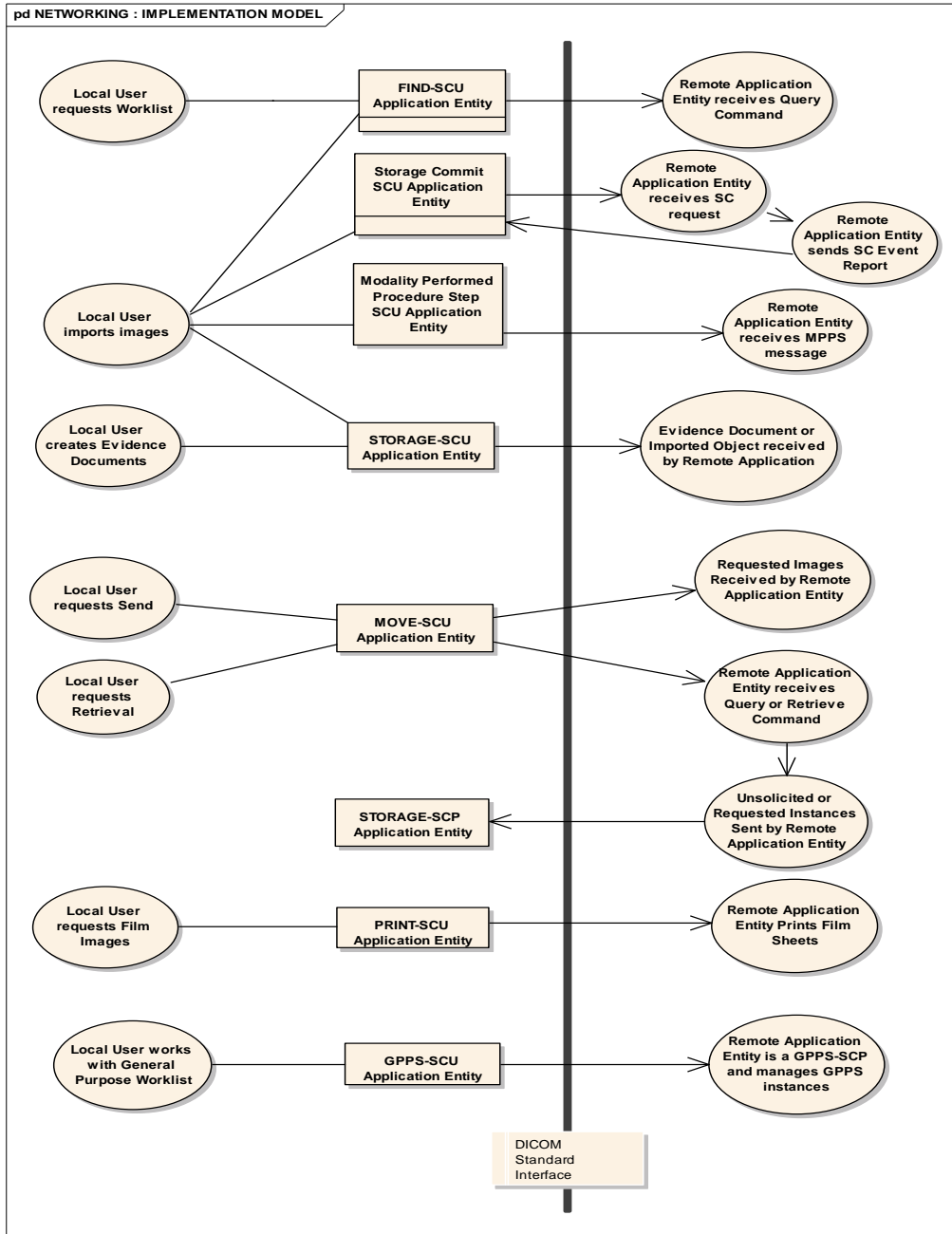
Table 2. Media Services

<b>Media Storage Application Profile</b>	<b>Write Files (FSC or FSU)</b>	<b>Read Files (FSR)</b>
<b>Compact Disk – Recordable</b>		
General Purpose CD-R	Yes	Yes
<b>DVD</b>		
General Purpose DVD-R	No	Yes

# 4. Networking

## 4.1 Implementation Model

### 4.1.1 Application Data Flow Diagram



Rogan View Pro-X is a Medical Imaging Workstation. It can be described as a combination of the following components:

- *Image Display*. A graphical user interface application that offers an operator to search, retrieve and display SOP instances from DICOM Archives. These DICOM archives can be contained in its own system (local archive) or external. An operator can request to move SOP instances from one Application Entity to another Application Entity.
- *Local Archive*. A service application responsible to maintain a local DICOM database. It will accept evidence object storage from any external DICOM Application Entities. However this local archive only allows DICOM evidence object retrieval for the local Image Display.
- *Print Client*. An application responsible of interacting with a DICOM or Windows printer to print DICOM evidence objects. From the Image Display an operator can issue commands to this component, which will print SOP instances that have been previously selected by the operator.
- *Evidence creator*.
  - An application that can create new SOP instances in the form of Structured Reports (but only reports used for Mammography) or Key Image Notes.
  - An application that can modify displayed SOP instances in order to correct specific attributes like patient demographics, etc.

## **4.1.2 Functional Definition of AE**

### **4.1.2.1 STORAGE-SCP**

STORAGE-SCP waits in the background for connections, will accept associations with Presentation Contexts for SOP Classes of the Storage Service Class, and will store the received instances to the local database where they may subsequently be listed and viewed through the user interface.

These circumstances are concurrent by using different AE and TCP/IP ports. See below 4.2 AE S.

### **4.1.2.2 STORAGE-SCU**

STORAGE-SCU is activated through the user interface when a user selects instances from the local database or a DICOMDIR, or the currently displayed instance, and requests that they be sent to a remote AE (selected from a pre-configured list).

### **4.1.2.3 MOVE-SCU**

MOVE-SCU is activated through the user interface when a user selects a study, series or instance for retrieval. A connection to the remote AE is established to initiate and monitor the retrieval and the STORAGE-SCP AE receives the retrieved instances.

### **4.1.2.4 FIND-SCU**

FIND-SCU is activated through the user interface when a user selects a remote AE to query (from a pre-configured list), then initiates a query. Queries are performed recursively from the study through the series and instance levels until all matching instances have been listed.

### **4.1.2.5 GPPS-SCU**

GPPS-SCU is activated when the user works with a General Purpose Worklist.

### **4.1.2.6 PRINT-SCU**

PRINT-SCU is activated through the user interface when a user selects one or multiple displayed images and then initiates a print request to a DICOM Printer. A connection to a remote DICOM Printer is established to create a film session and film boxes and submit the images to be printed.

### **4.1.3 Sequencing of Real-world Activities**

All SCP activities are performed asynchronously in the background and not dependent on any sequencing.

All SCU activities are sequentially initiated in the user interface, and another activity will cancel a prior activity.

## 4.2 AE Specifications

### 4.2.1 STORAGE-SCP

#### 4.2.1.1 SOP Classes

STORAGE-SCP provides Standard Conformance to the following SOP Classes:

**Table 3. SOP Classes supported by STORAGE-SCP**

SOP Class Name:	SOP Class UID	SCU	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Mammography X-Ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	No	Yes
Digital Intra Oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	No	Yes
Digital Intra Oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	No	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	Yes
Retired Ultrasound Multi Frame Image Storage	1.2.840.10008.5.1.4.1.1.3	No	Yes
Ultrasound Multi Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No	Yes
Retired Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	No	Yes
Retired Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	Yes
X-Ray Angiographic Bi-Plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	No	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	No	Yes
RETIRED_VLImageStorage	1.2.840.10008.5.1.4.1.1.77.1	No	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	No	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	No	Yes
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	No	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	No	Yes
RETIRED VL Multi Frame Image Storage	1.2.840.10008.5.1.4.1.1.77.2	No	Yes

SOP Class Name:	SOP Class UID	SCU	SCP
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	No	Yes
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	No	Yes
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	No	Yes
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	No	Yes
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	No	Yes
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	Yes
PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	No	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	No	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	No	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	No	Yes
RT Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	No	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	No	Yes
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	No	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	No	Yes

#### 4.2.1.2 Association Policies

##### 4.2.1.2.1 General

STORAGE-SCP accepts but never initiates associations.

**Table 4. Maximum PDU size received as a SCP for STORAGE-SCP**

Maximum PDU size received	65520 bytes
---------------------------	-------------

##### 4.2.1.2.2 Number of Associations

**Table 5. Number of Simultaneous Associations as a SCP for STORAGE-SCP**

Local Archive Scenario. See section 4.2.1.4.1.1.1	The maximum number of simultaneous associations is a configured value that can be changed by the user. The default value is 10
Image Display Scenario. See section 4.2.1.4.1.1.2	5

##### 4.2.1.2.2.1 Asynchronous Nature

STORAGE-SCP will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCP will not perform asynchronous operations window negotiation.

##### 4.2.1.2.3 Implementation Identifying Information

**Table 6. DICOM Implementation Class and Version for STORAGE-SCP**

Implementation Class UID	1.2.528.1.1008.0.203
Implementation Version Name	ROGAN_DICOM_203

#### 4.2.1.3 Association Initiation Policy

STORAGE-SCP does not initiate associations.

#### 4.2.1.4 Association Acceptance Policy

STORAGE-SCP accepts any incoming association. There is no limitation based on Called AE Title.

**4.2.1.4.1 Activity – Receive Storage Request**

**4.2.1.4.1.1 Description and Sequencing of Activities**

STORAGE-SCP is activated when it receives unsolicited or requested instances. The activation may happen in 2 different scenarios:

- o Local-Archive Scenario, as the network service to permanent store of instances on the local workstation.
- o Image-Display Scenario, as part of the process of retrieve instances prior to display them.

**4.2.1.4.1.1.1 Local Archive Scenario**

This scenario is activated when:

- o The user has requested from the user interface to copy to the Local Archive some selected entities (study, series or instances) from a remote AE Title.
- o A remote AE Title stores unsolicited instances in the Local Archive.

Then as instances are received, they are copied to the local file system and a record inserted into the local database. STORAGE-SCP can be configured to accept or to refuse duplicate images. Duplicates can also be silently discarded. Optionally, images from multiple studies/series can be collated (dependent on AE).

**4.2.1.4.1.1.2 Image Display Scenario**

This scenario is activated when the user has requested the retrieval of selected instances from a remote AE Title. As instances are received they are loaded into run-time memory where they may subsequently be viewed through the user interface. If the received instance does not match a requested instance, it will be discarded. If the requested instance is a duplicate of a previously received instance, the instance will be rejected.

**4.2.1.4.1.2 Accepted Presentation Contexts**

**Table 7. Acceptable presentation context for STORAGE-SCP and receive storage request**  
**Presentation Context Table**

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See Table 3	See Table 3	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

**4.2.1.4.1.2.1 Extended Negotiation**

No extended negotiation is performed, though STORAGE-SCP:

- o is a Level 2 Storage SCP (Full – does not discard any data elements)
- o does not support digital signatures
- o does not coerce any received data elements

**4.2.1.4.1.3 SOP Specific Conformance**

**4.2.1.4.1.3.1 SOP Specific Conformance to Storage SOP Classes**

STORAGE-SCP provides standard conformance to the Storage Service Class. The Mask Subtraction transformation is not supported by this implementation. It is not possible display Presentation States containing the Mask Subtraction Sequence (0028, 6100).

**4.2.1.4.1.3.2 Presentation Context Acceptance Criterion**

STORAGE-SCP will accept the first proposed Presentation Contexts that matches any of its accepted Presentation Contexts.

**4.2.1.4.1.3.3 Transfer Syntax Selection Policies**

Not applicable.

**4.2.1.4.1.3.4 Response Status**

Not applicable.

**4.2.2 STORAGE-SCU**

**4.2.2.1 SOP Classes**

STORAGE-SCU provides Standard Conformance to the following SOP Classes:

**Table 8. SOP Classes supported by STORAGE-SCU**

SOP Class Name:	SOP Class UID	SCU	SCP
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	Yes	No
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Yes	No

**4.2.2.2 Association Policies**

**4.2.2.2.1 General**

STORAGE-SCU initiates but never accepts associations.

**Table 9. Maximum PDU size received as a SCU for STORAGE-SCU**

Maximum PDU size received	65520 bytes
---------------------------	-------------

**4.2.2.2.2 Number of Associations**

**Table 10. Number Associations as a SCU for STORAGE-SCU**

Maximum number of simultaneous associations	1
---	---

**4.2.2.2.3 Asynchronous Nature**

STORAGE-SCU will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCU will not perform asynchronous operations window negotiation.

**4.2.2.2.4 Implementation Identifying Information**

Implementation Class UID	1.2.528.1.1008.0.203
--------------------------	----------------------

**Table 11. DICOM Implementation Class and Version for STORAGE-SCU**

Implementation Version Name	ROGAN_DICOM_203
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**4.2.2.3 Association Initiation Policy**

STORAGE-SCU attempts to initiate a new association for each instance it attempts to transfer.

**4.2.2.3.1 Activity – Send Storage Request**

**4.2.2.3.1.1 Description and Sequencing of Activities**

For each instance selected from the user interface to be transferred, a single attempt will be made to transmit it to the selected remote AE. If the send fails, for whatever reason, no retry will be performed.

**4.2.2.3.1.2 Proposed Presentation Contexts**

Presentation Context Table					
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**Table 12. Acceptable presentation context for STORAGE-SCU and receive storage request**

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See Table 8	See Table 8	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None



STORAGE-SCU will propose Presentation Contexts only for the SOP Class of the instance that is to be transferred.

**4.2.2.3.1.2.1 Extended Negotiation**

No extended negotiation is performed.

**4.2.2.3.1.3 SOP Specific Conformance**

**4.2.2.3.1.3.1 SOP Specific Conformance to Storage SOP Classes**

STORAGE-SCU provides standard conformance to the Storage Service Class.

**4.2.2.3.1.3.2 Presentation Context Acceptance Criterion**

STORAGE-SCU does not accept associations.

**4.2.2.3.1.3.3 Transfer Syntax Selection Policies**

Not applicable.

**4.2.2.3.1.3.4 Response Status**

Not applicable.

**4.2.2.4 Association Acceptance Policy**

STORAGE-SCU does not accept associations.

**4.2.3 MOVE-SCU**

**4.2.3.1 SOP Classes**

MOVE-SCU provides Standard Conformance to the following SOP Classes:

**Table 13. SOP Classes supported by MOVE-SCU**

SOP Class name:	SOP Class UID	SCU	SCP
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	No

**4.2.3.2 Association Policies**

**4.2.3.2.1 General**

MOVE-SCU initiates but never accepts associations.

**Table 14. Maximum PDU size received as a SCU for MOVE-SCU**

Maximum PDU size received	65520 bytes
---------------------------	-------------

**4.2.3.2.2 Number of Associations**

**Table 15. Number Associations as a SCU for MOVE-**

Maximum number of simultaneous associations	1
---	---

**4.2.3.2.3 Asynchronous Nature**

MOVE-SCU will only allow a single outstanding operation on an Association. Therefore, MOVE-SCU will not perform asynchronous operations window negotiation.

**4.2.3.2.4 Implementation Identifying Information**

Implementation Class UID	1.2.528.1.1008.0.203
--------------------------	----------------------

**Table 16. DICOM Implementation Class and Version for MOVE-SCU**

Implementation Version Name	ROGAN_DICOM_203
-----------------------------	-----------------

**4.2.3.3 Association Initiation Policy**

MOVE-SCU attempts to initiate a new association when the user performs the retrieve action from the user interface or a copy to action from the user interface.

**4.2.3.3.1 Activity – Send Storage Request**

**4.2.3.3.1.1 Description and Sequencing of Activities**

For the entity (study, series or instance) selected from the user interface to be retrieved, a single attempt will be made to retrieve it from the selected remote AE. If the retrieve fails, for whatever reason, no retry will be performed.

There are 2 scenarios when this activity will happen:

- o Copy To Scenario
- o Image Retrieval Scenario

**4.2.3.3.1.1.1 Copy To Scenario**

The user has requested from the user interface to copy to some selected entities (study, series or instances) from one AE Title to another AE Title.

**4.2.3.3.1.1.2 Image Display Scenario**

This scenario is activated when the user has requested the retrieval of selected instances from a remote AE Title in order to be displayed.

**4.2.3.3.1.2 Proposed Presentation Contexts**

**Table 17. Acceptable presentation context for MOVE-SCU and retrieve from remote AE**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See Table 13	See Table 13	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

**4.2.3.3.1.2.1 Extended Negotiation**

No extended negotiation is performed. In particular, relational retrievals are not supported.

**4.2.3.3.1.3 SOP Specific Conformance**

**4.2.3.3.1.3.1 SOP Specific Conformance to C-MOVE SOP Classes**

MOVE-SCU provides standard conformance to the supported C-MOVE SOP Classes.

Only a single information model, Patient Root, is supported.

Retrieval will be performed at the IMAGE level regardless on what level of entity has been selected by the user in the browser.

No CANCEL requests are ever issued.

The retrieval is performed from the AE that was specified in the Retrieve AE attribute returned from the query performed by PRINT-SCU. The instances are retrieved to the current application’s local database by specifying the destination as the AE Title of the STORE-SCP AE of the local application. This implies that the remote C-MOVE SCP must be preconfigured to determine the presentation address corresponding to the STORE-SCP AE. The STORE-SCP AE will accept storage requests addressed to it from anywhere, so no pre-configuration of the local application to accept from the remote AE is necessary (except in so far as it was necessary to configure PRINT-SCU).

**4.2.3.3.1.3.2 Presentation Context Acceptance Criterion**

MOVE-SCU does not accept associations.

**4.2.3.3.1.3.3 Transfer Syntax Selection Policies**

Not applicable.

**4.2.3.3.1.3.4 Response Status**

Not applicable.

**4.2.3.3.1.3.5 Sub-operation dependent behaviour**

Since the C-MOVE operation is dependent on completion of C-STORE sub-operations that are occurring on a separate association, the question of failure of operations on the other association(s) must be considered.

MOVE-SCU completely ignores whatever activities are taking place in relation to the STORAGE-SCP AE that is receiving the retrieved instances. Once the C-MOVE has been initiated it runs to completion (or failure) as described in the C-MOVE response command message(s). There is no attempt by MOVE-SCU to confirm that instances have actually been successfully received or locally stored.

Whether or not completely or partially successfully retrievals are made available in the local database to the user is purely dependent on the success or failure of the C-STORE sub-operations, not on any explicit action by MOVE-SCU.

Whether or not the remote AE attempts to retry any failed C-STORE sub-operations is beyond the control of MOVE-SCU.

If the association on which the C-MOVE was issued is aborted for any reason, whether or not the CSTORE sub-operations continue is dependent on the remote AE; the local STORAGE-SCP will continue to accept associations and storage operations regardless.

**4.2.3.4 Association Acceptance Policy**

MOVE-SCU does not accept associations.

**4.2.4 FIND-SCU**

**4.2.4.1 SOP Classes**

FIND-SCU provides Standard Conformance to the following SOP Classes:

SOP Class Name:	SOP Class UID	SCU	SCP
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No
General Purpose Worklist Information Model – FIND	1.2.840.10008.5.1.4.32.1	Yes	No

**Table 18. SOP Classes supported by FIND-SCU**

**4.2.4.2 Association Policies**

**4.2.4.2.1 General**

FIND-SCU initiates but never accepts associations.

**Table 19. Maximum PDU size received as a SCU for FIND-SCU**

Maximum PDU size received	65520 bytes
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**4.2.4.2.2 Number of Associations**

**Table 20. Number of Associations as a SCU for FIND-SCU**

Maximum number of simultaneous associations	1
---	---

**4.2.4.2.3 Asynchronous Nature**

FIND-SCU will only allow a single outstanding operation on an Association. Therefore, FIND-SCU will not perform asynchronous operations window negotiation.

**4.2.4.2.4 Implementation Identifying Information**

Implementation Class UID	1.2.528.1.1008.0.203
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**Table 21. DICOM IMPLEMENTATION CLASS AND VERSION FOR FIND-SCU**

Implementation Version Name	ROGAN_DICOM_203
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**4.2.4.3 Association Initiation Policy**

FIND-SCU attempts to initiate a new association when the user performs the query action from the user interface. If this involves recursive queries for lower query levels in the hierarchy, these will be performed on the same association.

**4.2.4.3.1 Activity – Query Remote AE**

**4.2.4.3.1.1 Description and Sequencing of Activities**

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

**4.2.4.3.1.2 Proposed Presentation Contexts**

**Table 22. Acceptable presentation context for FIND-SCU and receive storage request**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
General Purpose Worklist Information Model – FIND	1.2.840.10008.5.1.4.32.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

**4.2.4.3.1.2.1 Extended Negotiation**

No extended negotiation is performed. In particular, relational retrievals are not supported.

**4.2.4.3.1.3 SOP Specific Conformance**

**4.2.4.3.1.3.1 SOP Specific Conformance to SOP Class Study Root Query/Retrieve Information Model – FIND**

FIND-SCU provides standard conformance to SOP Class Study Root Query/Retrieve Information Model – FIND.

The user interface is a browser that allows a user to navigate through an information model based on DICOM levels (PATIENT, STUDY, SERIES, IMAGES).

There are browsing 2 scenarios:

- o Initial query or Refresh query. Initially the information model is empty and the user will request to be retrieved. Also the user may request to refresh the current information model. In this case a query is initiated at the highest level of the information model (the STUDY level) using pre-configured (by the user) matching criteria. Then for the responses received, one or multiple studies of one of the patients will become selected based on a pre-configuration behavior. For those selected studies, new queries are recursively repeated at the next lower levels (the SERIES and then IMAGE levels), in order to completely elucidate the “tree” of instances available on

the remote AE (from which the user may subsequently request a retrieval at any level).

- o Browse Information Model. Once the user has some information model, the user may select different instances at any level. In this case, a query can be initiated at different levels of the information model (from STUDY level till IMAGE level), and then for each response received, recursively repeated at the next lower levels (SERIES, IMAGE levels), in order to completely elucidate the “tree” of instances available on the remote AE (from which the user may subsequently request a retrieval at any level).

CANCEL requests may be issued. The user is capable to initiate another query request, since the user interface is decoupled from the execution of the query. The user can also explicitly cancel the current operation by using a specific CANCEL user interface control. In those cases the FIND-SCU will cancel on-going queries by sending CANCEL requests to the Remote AE Title. This will empty the information model. Unexpected attributes returned in a C-FIND response (those not requested) are not listed in the browser. Requested return attributes not returned by the SCP are ignored and displayed blank. Non-matching responses returned by the SCP due to unsupported (hopefully optional) matching keys are not filtered locally by the FIND-SCU and thus will still be presented in the browser. Duplicate responses are filtered.

Specific Character Set will not be used.

**Table 23. Study Root Request Identifier for FIND-SCU**

Name	Tag	Types of Matching
<b>STUDY Level</b>		
Study Date	(0008,0020)	S,*,U,R
Study Time	(0008,0030)	S,*,U,R
Accession Number	(0008,0050)	S,*,U
Modalities In Study	(0008,0061)	S,*,U
Institution Name	(0008,0080)	S,*,U
Referring Physician's Name	(0008,0090)	S,*,U
Study Description	(0008,1030)	S,*,U
Institutional Department Name	(0008,1040)	S,*,U
Name of Physician(s) Reading Study	(0008,1060)	S,*,U
Patient's Name	(0010,0010)	S,*,U
Patient's ID	(0010,0020)	S,*,U
Patient's Birth Date	(0010,0030)	S,*,U,R
Patient's Sex	(0010,0040)	S,*,U
Patient's Size	(0010,1020)	NONE
Patient's Weight	(0010,1030)	NONE
Contrast Allergies	(0010,2110)	NONE
Study Instance UID	(0020,000D)	UNIQUE
Study ID	(0020,0010)	NONE
Study Status ID	(0032,000a)	S,*,U
Study Priority ID	(0032,000c)	S,*,U
Requesting Service	(0032,1033)	S,*,U
Requested Procedure Description	(0032,1060)	S,*,U

Study Comments	(0032,4000)	S,*,U
Visit Status ID	(0038,0008)	NONE
Current Patient Location	(0038,0300)	NONE
Patients Institution Residence	(0038,0400)	NONE
<b>SERIES Level</b>		
`Series Date	(0008,0021)	NONE
`Series Time	(0008,0031)	NONE
Modality	(0008,0060)	NONE
`Manufacturer	(0008,0070)	NONE
Station Name	(0008,1010)	S,*,U
`Manufacturer's Model Name	(0008,1090)	NONE
Series Description	(0008,103E)	S,*,U
Body Part Examined	(0018,0015)	S,*,U
`Series Instance UID	(0020,000E)	UNIQUE
Series Number	(0020,0011)	NONE
Number Of Series Related Instances	(0020,1209)	NONE
<b>IMAGE Level</b>		
`SOP Class UID	(0008,0016)	NONE
`SOP Instance UID	(0008,0018)	UNIQUE
Content Date	(0008,0023)	NONE
Content Time	(0008,0033)	NONE
Instance Availability	(0008,0056)	NONE
Instance Number	(0020,0013)	NONE
`Image Comments	(0020,4000)	NONE
Storage Media File Set ID	(0088,0130)	NONE
Storage Media File Set UID	(0088,0140)	NONE

**Types of Matching:**

The types of Matching supported by the C-FIND SCU. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an n"\*" indicates wildcard matching, a "U" indicates Universal Matching, and an "L" indicates that UID lists are sent. "NONE" indicates that no matching is supported, but that values for this Element are requested to be returned (i.e. universal matching), and "UNIQUE" indicates that this is the Unique Key for that query level, in which case Universal Matching or Single Value Matching is used depending on the query level.

**4.2.4.3.1.3.2 SOP Specific Conformance to SOP Class Modality Worklist Information Model – FIND**

FIND-SCU provides standard conformance to SOP Class Modality Worklist Information Model – FIND.

The user interface is a browser that allows a user to specify a patient ID or a study accession number which will result in an information model filled with information from the Modality Worklist entity that matches the specified attribute value. This information model is then displayed and can be used.

There is 1 scenario where the Modality Worklist information is requested:

- o Modifying / correcting DICOM attribute values of a DICOM evidence object using the information supplied by a Modality Worklist entity (Quality Control).

CANCEL requests can not be done when executing the above mentioned scenario.

**Table 24. Modality Worklist Request Identifier for FIND-SCU** Specific Character Set will not be used.

Name	Tag	Types of Matching
Accession Number	(0008,0050)	S,*,U

Referring Physician's Name	(0008,0090)	S,*U
Institutional Department Name	(0008,1040)	S,*U
Patient's Name	(0010,0010)	S,*U
Patient's ID	(0010,0020)	S,*U
Patient's Birth Date	(0010,0030)	S,*U,R
Patient's Sex	(0010,0040)	S,*U
Requested Procedure Description	(0032,1060)	S,*U
Scheduled Procedure Step Sequence	(0040,0100)	SEQ
>Scheduled Procedure Step Start Date	(0040,0002)	S,R
>Scheduled Procedure Step Start Time	(0040,0003)	S,R
>Scheduled Procedure Step Description	(0040,0007)	NONE

**Types of Matching:**

The types of Matching supported by the C-FIND SCU. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "\*" indicates wildcard matching, a "U" indicates Universal Matching, an "L" indicates that UID lists are sent, and "SEQ" indicates Sequence Matching. "NONE" indicates that no matching is supported, but that values for this Element are requested to be returned (i.e. universal matching), and "UNIQUE" indicates that this is the Unique Key for that query level, in which case Universal Matching or Single Value Matching is used depending on the query level.

**4.2.4.3.1.3 SOP Specific Conformance to SOP Class General Purpose Worklist Information Model – FIND**

FIND-SCU provides standard conformance to SOP Class General Purpose Worklist Information Model – FIND.

The user interface is the same browser as the one used for the Study Root Q/R SOP Class, but now the PATIENT list is filled by issuing a C-FIND for the GP Worklist SOP Class. There are 2 scenarios:

- Initial query or Refresh query. Initially the information model is empty and the user will request to be retrieved. Also the user may request to refresh the current information model.

In this case a GP Worklist query is issued to determine the patients for which there are scheduled work items. Then for the responses received, one of the patients will become selected based on a pre-configuration behavior. For that selected patient, new queries are recursively repeated at the next lower levels (STUDY, SERIES and IMAGE), in order to completely elucidate the "tree" of instances available on the remote AE (from which the user may subsequently request a retrieval at any level).

- Browse Information Model. Once the user has some information model, the user may select different instances at any level. In this case, a query can be initiated at different levels of the information model (from STUDY level till IMAGE level), and then for each response received, recursively repeated at the next lower levels (SERIES, IMAGE levels), in order to



completely elucidate the “tree” of instances available on the remote AE (from which the user may subsequently request a retrieval at any level).

CANCEL requests may be issued. The user is capable to initiate another query request, since the user interface is decoupled from the execution of the query. The user can also explicitly cancel the current operation by using a specific CANCEL user interface control. In those cases the FIND-SCU will cancel on-going queries by sending CANCEL requests to the Remote AE Title. This will empty the information model. Unexpected attributes returned in a C-FIND response (those not requested) are not listed in the browser. Requested return attributes not returned by the SCP are ignored and displayed blank. Non-matching responses returned by the SCP due to unsupported (hopefully optional) matching keys are not filtered locally by the FIND-SCU and thus will still be presented in the browser. Duplicate responses are filtered.

**Table 25. General Purpose Worklist Request Identifier for FIND-SCU**

Specific Character Set will not be used.

Name	Tag	Types of Matching
Patient’s Name	(0010,0010)	S,*U
Patient’s ID	(0010,0020)	S,*U
Body Part Examined	(0018,0015)	S,*U
General Purpose Scheduled Procedure Step Status	(0040,4001)	S,*U
Scheduled Procedure Step Priority	(0040,4003)	NONE
Scheduled Procedure Step Start Date and Time	(0040,0005)	NONE
Scheduled Procedure Step ID	(0040,0009)	NONE
Scheduled Procedure Step Status	(0040,0020)	NONE
Actual Human Performers Sequence	(0040,4035)	SEQ
>Human Performers Name	(0040,4037)	S,*U
Comments on the Performed Procedure Step	(0040,2080)	S,*U

**Types of Matching:**

The types of Matching supported by the C-FIND SCU. An "S" indicates the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "\*" indicates wildcard matching, a "U" indicates Universal Matching, an "L" indicates that UID lists are sent, and "SEQ" indicates Sequence Matching. "NONE" indicates that no matching is supported, but that values for this Element are requested to be returned (i.e. universal matching), and "UNIQUE" indicates that this is the Unique Key for that query level, in which case Universal Matching or Single Value Matching is used depending on the query level.

**4.2.4.3.1.3.4 Presentation Context Acceptance Criterion**

FIND-SCU does not accept associations.

**4.2.4.3.1.3.5 Transfer Syntax Selection Policies**

Not applicable.

**4.2.4.3.1.3.6 Response Status**

Not applicable.



#### 4.2.4.4 Association Acceptance Policy

FIND-SCU does not accept associations.

#### 4.2.5 GPPS-SCU

##### 4.2.5.1 SOP Classes

GPPS-SCU provides Standard Conformance to the following SOP Classes:

SOP Class Name:	SOP Class UID	SCU	SCP
General Purpose Scheduled Procedure Step SOP Class	1.2.840.10008.5.1.4.32.2	Yes	No
General Purpose Performed Procedure Step SOP Class	1.2.840.10008.5.1.4.32.3	Yes	No

**Table 26. SOP Classes supported by GPPS-SCU**

##### 4.2.5.2 Association Policies

###### 4.2.5.2.1 General

GPPS-SCU initiates but never accepts associations.

**Table 27. Maximum PDU size received as a SCU for GPPS-SCU**

Maximum PDU size received	65520 bytes
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###### 4.2.5.2.2 Number of Associations

**Table 28. Number of Associations as a SCU for GPPS-SCU**

Maximum number of simultaneous associations	1
---	---

###### 4.2.5.2.3 Asynchronous Nature

GPPS-SCU will only allow a single outstanding operation on an Association. Therefore, GPPS-SCU will not perform asynchronous operations window negotiation.

###### 4.2.5.2.4 Implementation Identifying Information

Implementation Class UID	1.2.528.1.1008.0.203
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**Table 29. DICOM IMPLEMENTATION CLASS AND VERSION FOR GPPS-SCU**

Implementation Version Name	ROGAN_DICOM_203
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##### 4.2.5.3 Association Initiation Policy

FIND-SCU attempts to initiate a new association when the user performs the query action from the user interface. If this involves recursive queries for lower query levels in the hierarchy, these will be performed on the same association.

###### 4.2.5.3.1 Activity – Query Remote AE

###### 4.2.5.3.1.1 Description and Sequencing of Activities

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

###### 4.2.5.3.1.2 Proposed Presentation Contexts

**Table 30. Acceptable presentation context for GPPS-SCU and receive storage request**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
General Purpose Scheduled Procedure Step SOP Class	1.2.840.10008.5.1.4.32.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
General Purpose Performed	1.2.840.10008	Implicit VR	1.2.840.10008	SCU	None

Procedure Step SOP Class	.5.1.4.32.3	Little Endian	.1.2		
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**4.2.5.3.1.2.1 Extended Negotiation**

No extended negotiation is performed.

**4.2.5.3.1.3 SOP Specific Conformance**

**4.2.5.3.1.3.1 SOP Specific Conformance to the General Purpose Scheduled Procedure Step SOP Class**

When the user selects one of the patients in a GP Worklist for reading, GPPS-SCU will send an N-ACTION message with Action Type equal to 1 and Requested SOP Instance UID equal to the UID of the work item as found in the GP Worklist, with the purpose to claim the associated work item. The contents of the message are:

Name	Tag	Value
General Purpose Scheduled Procedure Step Status	(0040,4001)	IN PROGRESS
Transaction UID	(0008,1195)	generated UID
Actual Human Performers Sequence	(0040,4035)	1 item:
>Human Performer Code Sequence	(0040,4009)	
>>Code Value	(0008,0100)	user code
>>Coding Scheme	(0008,0102)	site specific value
>>Code Meaning	(0008,0104)	user code

When the user stops using the work item that is “in progress”, GPPS-SCU will send an N-ACTION message with Action Type equal to 1 and Requested SOP Instance UID equal to the UID of the work item as found in the GP Worklist, with the purpose to release the associated work item. The contents of the message are:

Name	Tag	Value
General Purpose Scheduled Procedure Step Status	(0040,4001)	COMPLETED, SCHEDULED, SUSPENDED or DISCONTINUED
Transaction UID	(0008,1195)	UID used in the IN PROGRESS message

**4.2.5.3.1.3.2 SOP Specific Conformance to the General Purpose Performed Procedure Step SOP Class**

When the user selects one of the patients in a GP Worklist for reading, GPPS-SCU will send an N-CREATE message with Affected SOP Instance UID set to a newly generated UID. The contents of the message are:

Name	Tag	Value
General Purpose Performed Procedure Step Status	(0040,4002)	IN PROGRESS
Study Instance UID	(0020,000D)	Study Instance UID referenced by the work item
Actual Human Performers Sequence	(0040,4035)	1 item:
>Human Performer Code Sequence	(0040,4009)	
>>Code Value	(0008,0100)	user code
>>Coding Scheme	(0008,0102)	site specific value
>>Code Meaning	(0008,0104)	user code
Performed Procedure Step Start Date	(0040,0244)	today's date
Performed Procedure Step Start Time	(0040,0245)	time when the message was

		sent
Performed Procedure Step ID	(0040,0253)	To Be Determined
Referenced Request Sequence	(0040,A370)	To Be Determined (empty)
Referenced General Purpose	(0040,4016)	1 item:
Scheduled Procedure Step Sequence		
>Referenced SOP Class UID	(0008,1150)	1.2.840.10008 .5.1.4.32.2
>Referenced SOP Instance UID	(0008,1155)	UID of the selected work item
>Referenced General Purpose	(0040,4023)	Transaction UID used in the GP-SPS N-ACTION
Scheduled Procedure Step Transaction UID		
Patient ID	(0010,0020)	Value from GP-WL
Patient's Name	(0010,0010)	Value from GP-WL
Patient's Birth Date	(0010,0030)	Value from GP-WL
Patient's Sex	(0010,0040)	Value from GP-WL
Performed Station Name Code Sequence	(0040,4028)	To Be Determined (empty)
Performed Station Class Code Sequence	(0040,4029)	To Be Determined (empty)
Performed Station Geographic Location Code Sequence	(0040,4030)	To Be Determined (empty)
Performed Processing Applications Code Sequence	(0040,4007)	To Be Determined (empty)
Performed Procedure Step Description	(0040,0254)	To Be Determined
Performed Workitem Code Sequence	(0040,4019)	1 item:
>Code Value	(0008,0100)	Value from GP-WL
>Coding Scheme	(0008,0102)	Value from GP-WL
>Code Meaning	(0008,0104)	Value from GP-WL
Performed Procedure Step End Date	(0040,0250)	To Be Determined (empty)
Performed Procedure Step End Time	(0040,0251)	To Be Determined (empty)
Output Information Sequence	(0040,4033)	To Be Determined (empty)
Requested Subsequent Workitem Code Sequence	(0040,4031)	To Be Determined (empty)
Non-DICOM Output Code Sequence	(0040,4032)	To Be Determined (empty)

When the user stops using the work item, GPPS-SCU will send an N-SET message with Requested SOP Instance UID equal to the UID sent in the N-CREATE message. The contents of the message are:

<b>Name</b>	<b>Tag</b>	<b>Value</b>
General Purpose Performed Procedure Step Status	(0040,4002)	COMPLETED, SUSPENDED or DISCONTINUED
Performed Procedure Step Description	(0040,0254)	Depends on the PPS status. COMPLETED: "NEGATIVE" or "POSITIVE", optionally with user supplied information. SUSPENDED: "Second consultation required", optionally with user supplied information. DISCONTINUED: "Incomplete", optionally with user supplied

Performed Procedure Step End Date	(0040,0250)	information. today's date
Performed Procedure Step End Time	(0040,0251)	time when the message was sent
Output Information Sequence	(0040,4033)	To Be Determined (empty, but should contain the SR's that were generated, if any...)
Requested Subsequent Workitem Code Sequence	(0040,4031)	To Be Determined (empty)
Non-DICOM Output Code Sequence	(0040,4032)	To Be Determined (empty)

When retrieving the GP Worklist, GPPS-SCU will also retrieve the Performed Procedure Step SOP instances as specified in: DICOM standard, section 3.4, F.11.2.3 GET General Purpose Performed Procedure Step Information. The GPPS-SCU will send an N-GET message with a Requested SOP Instance UID equal to the UID retrieved from the Scheduled Procedure Step that references it. The message will indicate the attributes that are to be returned in the Performed Procedure Step. The contents of the message are:

<b>Name</b>	<b>Tag</b>	<b>Value</b>
SOP Instance UID	(0008,0018)	UID of the Performed Procedure Step to get, retrieved from the Scheduled Procedure Step that references it.

**4.2.5.3.1.3.3 Presentation Context Acceptance Criterion**

GPPS-SCU does not accept associations.

**4.2.5.3.1.3.4 Transfer Syntax Selection Policies**

Not applicable.

**4.2.5.3.1.3.5 Response Status**

Not applicable.

**4.2.5.4 Association Acceptance Policy**

GPPS-SCU does not accept associations.

**4.2.6 PRINT-SCU**

**4.2.6.1 SOP Classes**

**Table 31. SOP Classes supported by PRINT-SCU**  
Standard Conformance to the following SOP Classes:

PRINT-SCU provides

SOP Class name:	SOP Class UID	SCU	SCP
Basic Greyscale Print Management Meta	1.2.840.10008.5.1.1.9	Yes	No
Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Yes	No

**Table 32. Number of Associations as a SCU for PRINT-SCU**

**4.2.6.1.1 Number of Associatio**

*ns*

Maximum number of simultaneous associations	1
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**4.2.6.1.2 Asynchronous Nature**

PRINT-SCU will only allow a single outstanding operation on an Association. Therefore, PRINT-SCU will not perform asynchronous operations window negotiation.

**4.2.6.1.3 Implementation**

**Table 33. DICOM Implementation Class and Version for PRINT-SCU**

**Identifying Information**

Implementation Class UID	1.2.528.1.1008.0.203
Implementation Version Name	ROGAN_DICOM_203

## 4.2.6.2 Association Initiation Policy

### 4.2.6.2.1 Activity – Film Images

#### 4.2.6.2.1.1 Description and Sequencing of Activities

A user composes images onto film sheets and requests them to be sent to a specific hardcopy device.

The user can select the desired film format and number of copies. Each print-job (non DICOM) is forwarded to the job queue and processed individually.

The PRINT-SCU is invoked by the job control interface that is responsible for processing network tasks.

The job consists of data describing the images and graphics to be printed as well as the requested layout and other parameters. If no association to the printer can be established, the print-job is switched to a failed state.

A typical sequence of DIMSE messages sent over an association between PRINT-SCU and a Printer is:

1. PRINT-SCU opens an association with the Printer.
2. N-GET on the Printer SOP Class is used to obtain current printer status information. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.
3. N-CREATE on the Film Session SOP Class creates a Film Session.
4. N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (PRINT-SCU only uses the format STANDARD\1,1). One film sheet may contain multiple images that the user has previously selected on the user interface.
5. N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer.
6. N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box.
7. The printer prints the requested number of film sheets
8. The Printer asynchronously reports its status via N-EVENT-REPORT notification (Printer SOP Class). The printer can send this message at any time. PRINT-SCU does not require the N-EVENT-REPORT to be sent. PRINT-SCU is capable of receiving an N-EVENT-REPORT notification at any time during an association. If the Printer reports a status of WARNING or FAILURE, the print job will be suspended. Optionally, a message can be sent to the submitter of the job or a system administrator.
9. N-DELETE on the Film Box SOP Class
10. If there are more films to be printed, go to step 4.
11. When there are no more films to be printed, N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
12. PRINT-SCU closes the association with the Printer

Only one job will be active at a time for each separate hardcopy device. If any Response from the remote Application contains a status other than Success or Warning, the Association is aborted and the related Job is switched to a failed state. It can be restarted any time by automated pre-configured retry.

#### 4.2.6.2.1.2 Proposed Presentation Contexts

**Table 34. Acceptable presentation context for PRINT-SCU and receive storage request**  
Presentation Context Table

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Greyscale Print Management Meta	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

Basic Color Print Management Meta	1.2.840.10008.5.1.1.18	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
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**4.2.6.2.1.3 SOP Specific Conformance**

**4.2.6.2.1.3.1 SOP Specific Conformance to All Print SOP Classes**

PRINT-SCU provides standard conformance to the supported C-FIND SOP Classes. PRINT-SCU supports the following DIMSE operations and notifications for the Printer SOP Class:

- o N-GET
- o N-EVENT-REPORT
- o N-CREATE
- o N-DELETE
- o N-ACTION

**4.2.6.2.1.3.2 Presentation Context Acceptance Criterion**

PRINT-SCU does not accept associations.

**4.2.6.2.1.3.3 Transfer Syntax Selection Policies**

Not applicable.

**4.2.6.2.1.3.4 Response Status**

Not applicable.

**4.2.6.3 Association Acceptance Policy**

PRINT-SCU does not accept associations.

## 4.3 NETWORK INTERFACES

### 4.3.1 Physical Network Interface

The application is indifferent to the physical medium over which TCP/IP executes; which is dependent on the underlying operating system and hardware.

### 4.3.2 Additional Protocols

When host names rather than IP addresses are used in the configuration properties to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system.

## 4.4 CONFIGURATION

Configuration is performed through the user interface of the application or editing configuration files stored in pre-defined locations that are specific to the underlying operating system. Refer to the Release Notes and service manuals for specific details.

### 4.4.1 AE Title/Presentation Address Mapping

The application allows defining till 3 different Calling AE Title types, which are configurable in the preferences file. The mapping of the logical name by which remote AEs are described in the user interface to Called AE Titles as well as presentation address (hostname or IP address and port number) is configurable in the preferences file.

**Table 35. Calling AE Title Types**

Calling AE Type	AE Function	Default AE Title	Default TCP/IP Port
Image Display	<ul style="list-style-type: none"> <li>○ STORAGE-SCU</li> <li>○ STORAGE-SCP in Image Display Scenario</li> <li>○ FIND-SCU</li> <li>○ MOVE-SCU</li> </ul>	"VPXAE"	3000
Local Archive	<ul style="list-style-type: none"> <li>○ STORAGE-SCP in Local Archive Scenario</li> </ul>	"ARCHIVE"	104
Print User	<ul style="list-style-type: none"> <li>○ PRINT-SCU</li> </ul>	"View Pro-X"	Not Applicable

As Local Archive multiple AE Titles are possible, each one representing a different database location. The maximum number of database locations is 10. The configuration is described in the service manual.

### 4.4.2 Parameters

The functionality of the application is implemented by 3 different software components, as it was mentioned in section 4.1.1.

#### 4.4.2.1 Image Display Parameters

The properties of the Image Display can be configured via the user interface. The following are relevant for its DICOM properties.

- Application Entity Title
- TCP/IP Port
- Names, IP addresses and ports of other DICOM AE's query, move, retrieve or print instances.

#### 4.4.2.2 Local Archive Parameters

The properties of the Local Archive can be configured in a file called HPCONFIG.INI. The following are relevant for its DICOM properties.

- Application Entity Title per image repository



- TCP/IP Port (shared for all the image repositories)
- Names, IP addresses and ports of other DICOM AE's to move instances.
- Behaviour when receiving duplicate images
- PDU size to request

#### **4.4.2.3 Print Client Parameters**

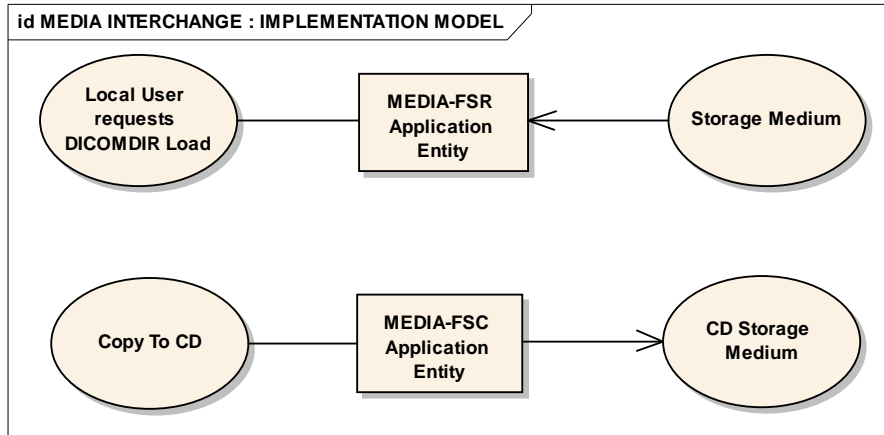
The properties of the Print User can be configured in the registry settings. The following are relevant for its DICOM properties.

- Application Entity Title

## 5. Media Interchange

### 5.1 Implementation Model

#### 5.1.1 Application Data Flow



The application provides a user interface, network support and media support as a File Set Reader and File Set Creator.

Conceptually it may be modelled as two AE's:

- o MEDIA-FSR, which loads a user-selected PS 3.10 compliant file, which may be a DICOMDIR or an image or spectroscopy object, either from the local file system or from PS 3.12 compliant media according to one of the General Purpose Media Application Profiles of PS 3.11 (CD-R or DVD-R).

In effect, the application is media-neutral, since the user is required to browse and locate the DICOMDIR file. Once the PS 3.10 compliant meta information header is found, the information model is displayed to the user in order to allow the selection of DICOM image instances to be displayed. Only uncompressed Transfer Syntaxes are supported.

- o MEDIA-FSC, which exports images to a CD-R Storage medium. It is associated with the local real-world activity "Copy to CD". "Copy to CD" is performed upon user request for selected patients, studies, series or instances.

#### 5.1.2 Functional Definitions of AE's

##### 5.1.2.1 MEDIA-FSR

MEDIA-FSR is activated through the user interface to select directories and images for display.

##### 5.1.2.2 MEDIA-FSC

MEDIA-FSC is activated by selecting the "Copy to CD" icon or menu entry, which will pass the currently selected patients, studies, series or instances to the MEDIA-FSC Application Entity. The SOP Instances associated with the selection will be collected into one single internal copy job. Once the user confirms that he/she has completed the selection, the contents of the export job will be written to one single CD-R medium.

### **5.1.3 Sequencing of Real-World Activities**

#### **5.1.3.1 MEDIA-FSR**

All FSR activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

#### **5.1.3.2 MEDIA-FSC**

At least one image or presentation state must exist and be selected before the MEDIA-FSC Application Entity can be invoked. The operator can insert a new CD-R medium at any time before or after invocation of the MEDIA-FSC Application Entity. The MEDIA-FSC Application Entity will wait indefinitely for a CD-R to be inserted before starting to write to the CD-R device. If no CD-R medium is available the user will be notified and he/she can cancel the process.

#### **5.1.3.3 File Meta Information Options**

The implementation information written to the File Meta Header in each file is:

**Table 36. DICOM Implementation Class and Version for Media Storage**

<b>Implementation Class UID</b>	1.2.528.1.1008.0.203
<b>Implementation Version Name</b>	ROGAN_DICOM_203

## 5.2 AE SPECIFICATIONS

### 5.2.1 MEDIA-FSR

MEDIA-FSR provides standard conformance to the DICOM Interchange Option of the Media Storage.

**Table 37. Application Profiles, Activities and Roles for Media-FSR**

Application Profiles Supported	Real World Activity	Role	SC Option
STD-GEN-CD	Load DICOMDIR	FSR	Interchange
STD-GEN-DVD-R	Load DICOMDIR	FSR	Interchange

**Note:** *The application is media neutral and dependent on the underlying hardware. Any (non-secure) General Purpose Profile can be supported.*

#### 5.2.1.1 File Meta Information for the Application Entity

Not applicable, since MEDIA-FSR is not an FSC or FSU.

#### 5.2.1.2 Real World Activities

##### 5.2.1.2.1 Activity - Load DICOMDIR

MEDIA-FSR is activated through the user interface when a user selects a location that contains a DICOMDIR. A browser will be displayed, from which instances may be selected and loaded for display.

##### 5.2.1.2.1.1 Application Profile Specific Conformance

There are no extensions or specializations.

### 5.2.2 MEDIA-FSC Application Entity

The MEDIA-FSC Application Entity provides standard conformance to the DICOM Interchange Option of the Media Storage Service Class. The Application Profiles and roles are listed below:

Application Profiles Supported	Real World Activity	Role	SC Option
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**Table 38 Application Profiles, Activities and Roles for Offline-Media**

STD-GEN-CD	Burn To CD	FSC	Interchange
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#### 5.2.2.1 File Meta Information for the Application Entity

None.

#### 5.2.2.2 Real-World Activities

##### 5.2.2.2.1 Activity – Copy to CD



The MEDIA-FSC Application Entity acts as an FSC using the interchange option when requested to copy SOP Instances from a PACS archive to a CD-R medium.<sup>1</sup>

A dialog will be presented asking the user if he/she wants to select more SOP Instances from another patient. This dialog is presented every time the user selects the option "Copy To CD". Once the user indicates in the dialog that he/she does not want to select more instances, the contents of the existing selections will be written together into a single-session CDR together with the corresponding DICOMDIR.

**5.2.2.2.1.1 Media Storage Application Profiles**

The MEDIA-FSC Application Entity supports the STD-GEN-CD Application Profile.

**5.2.2.2.1.1.1 Options**

The MEDIA-FSC Application Entity supports the SOP Classes and Transfer Syntaxes listed in the Table below plus the Sop Classes and Transfer Syntaxes listed in the Table 3. SOP

**Table 39. IODs, SOP Classes and Transfer Syntaxes for MEDIA-FSC**  
Classes supported by STORAGE-SCP:

Information Object	Definition SOP Class UID	Transfer Syntax	Transfer Syntax UID
Media Storage Directory Storage	1.2.840.10008.1.3.10	Explicit VR Little Endian	1.2.840.10008.1.2.1

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<sup>1</sup> "Copy to CD" functionality is only supported for Windows XP.

## **5.3 Augmented and Private Profiles**

### ***5.3.1 Augmented Profiles***

None.

### ***5.3.2 Private Profiles***

None.

## **5.4 Media Configuration**

None.

## 6. Support of Character Sets

Rogan View Pro-X retains any extended character information. Use of single byte extended character sets is supported as long as all characters are from the same repertoire.

## **7. Security**

### **7.1 Security Profiles**

None supported.

### **7.2 Association Level Security**

None supported.

Any calling AE Titles and/or IP addresses may open an association.

### **7.3 Application Level Security**

None supported.



## **8. Annexes**

### **8.1 IOD Contents**

#### ***8.1.1 Created SOP Instances***

None.

#### ***8.1.2 Usage of Attributes from Received IOD's***

No SOP Class specific fields are required.

The local database, remote query and directory browsers make use of the conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, they will be treated as the same in the browser and the local database.

#### ***8.1.3 Attribute Mapping***

Not applicable.

#### ***8.1.4 Coerced/Modified Fields***

No coercion is performed.

### **8.2 Data Dictionary of Private Attributes**

No private attributes are defined.

### **8.3 Coded Terminology and Templates**

The value for Code Meaning will be displayed for all code sequences. No local lexicon is provided to look up alternative code meanings.

### **8.4 Grayscale Image Consistency**

High-resolution display monitor are not distributed with this product. It is the responsibility of service engineers to perform calibration procedures according to the Grayscale Standard Display Function (GSDF).

### **8.5 Standard Extended/Specialized/Private SOP Classes**

None.

### **8.6 Private Transfer Syntaxes**

None.