

AGFA HEALTHCARE DICOM Conformance Statement



Impax EL Off-line Archive

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Conformance Statement Overview

The IMPAX EL Off-line Archive is comprised of a storage facility and connectivity to DICOM modalities and other external RIS (Radiology Information System). The IMPAX EL Off-line Archive is comprised of two application entities (AE), an Off-line Archive application entity and a Broker application entity.

The IMPAX EL Off-line Archive:

- stores images sent to it by service class users;
- takes responsibility for storage of the images;
- allows image queries based on several standard query models;
- retrieves and transmits requested images;
- uses patient and order information to fulfill modality worklist requests;
- and receives modality performed procedure step information.

The IMPAX EL Off-line Archive is able to validate images before they are stored internally by querying the Broker DataBase for demographic information. Images found to be registered with the RIS are stored, while images not found to be registered are automatically corrected, where possible, or set aside for a technician to correct. The IMPAX EL Off-line Archive can store images to CD or DVD media.

The IMPAX EL Off-line Archive acts as a service class user (SCU) for Verification, Storage, Query/Retrieve Service Classes.

The IMPAX EL Off-line Archive acts as a service class provider (SCP) for Verification, Storage, Query/Retrieve, Modality Worklist, and Modality Performed Procedure Step Service Classes.

The IMPAX EL Off-line Archive conforms to the DICOM 3.0 standard.

Table 1.1-1: Network services supported

SOP Class Name	SOP Class UID	SCU	SCP
Transfer			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-Oral X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-Oral X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Yes	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes

SOP Class Name	SOP Class UID	SCU	SCP
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Yes	Yes
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Yes	Yes
ECG 12 Lead Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	Yes
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	Yes
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	Yes
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Yes	Yes
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Yes	Yes
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
X-Ray Angiographic BiPlane Image Storage Retired	1.2.840.10008.5.1.4.1.1.12.3	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Yes	Yes
VL Image Storage Retired	1.2.840.10008.5.1.4.1.1.77.1	Yes	Yes
VL Multi-frame Image Storage Retired	1.2.840.10008.5.1.4.1.1.77.2	Yes	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	Yes
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	Yes
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Yes	Yes
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Yes	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	Yes
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Yes	Yes
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Yes	Yes
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Yes	Yes
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3	Yes	Yes
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive Structured Report	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Yes	Yes
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Chest CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.65	Yes	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Yes	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Yes	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Yes	Yes
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Yes	Yes
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Yes	Yes
Stored Print Storage	1.2.840.10008.5.1.1.27	Yes	Yes
Query / Retrieve			
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes

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	Yes
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Patient/Study Only Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.3.1	Yes	Yes
Patient/Study Only Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2	Yes	Yes
Workflow Management			
Modality Worklist Information Model -FIND	1.2.840.10008.5.1.4.31	No	Yes
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	No	Yes

Table of Contents

1	Introduction	8
1.1	Revision Record	8
1.2	Purpose and Intended Audience of this Document	8
1.3	General Remarks.....	8
1.3.1	Integration and Validation Activities	8
1.3.2	Future Evolution	8
1.4	Acronyms and Abbreviations.....	9
1.5	Related Documents	9
2	Networking	10
2.1	Implementation Model	10
2.1.1	Application Data Flow Diagram	10
2.1.2	Functional Definitions of AE's.....	12
2.1.2.1	Functional Capability of the Off Line Archive AE	12
2.1.2.1.1	Verify Communication	12
2.1.2.1.2	Receive Images	12
2.1.2.1.3	Query from Other Devices	13
2.1.2.1.4	Retrieve to Other Devices	13
2.1.2.1.5	Transmit Images	13
2.1.2.2	Functional Capability of the Broker AE	13
2.1.2.2.1	Verify Communication	13
2.1.2.2.2	Modality Worklist Request.....	13
2.1.2.2.3	Modality Performed Procedure Step Information.....	13
2.2	AE Specifications.....	13
2.2.1	The Off-line Archive AE Specification	13
2.2.1.1	Default Transfer Syntaxes Supported	13
2.2.1.2	Extended Transfer Syntaxes Supported	14
2.2.1.3	Storage SOP Classes Supported.....	14
2.2.1.4	Association Establishment Policies.....	15
2.2.1.4.1	General.....	15
2.2.1.4.2	Number of Associations	16
2.2.1.4.3	Asynchronous Nature.....	16
2.2.1.4.4	Implementation Identifying Information	16
2.2.1.4.5	Called/Calling Titles	16
2.2.1.5	Association Initiation Policies	16
2.2.1.5.1	Real World Activity – Verification (C-ECHO)	17
2.2.1.5.1.1	Description and sequencing of Activity	17
2.2.1.5.1.2	Proposed Presentation Contexts	17
2.2.1.5.2	Real World Activity – Store Objects (SCU)	17
2.2.1.5.2.1	Description and Sequencing of Activity	17
2.2.1.5.2.2	Proposed Presentation Contexts	17
2.2.1.5.2.3	SOP Specific Conformance – Store Objects	17
2.2.1.5.3	Real World Activity – Find Object (SCU)	18
2.2.1.5.3.1	Description and Sequencing of Activity	18
2.2.1.5.3.2	Proposed Presentation Context	18
2.2.1.5.3.3	SOP Specific Conformance – Find Object	18
2.2.1.5.4	Real World Activity – Move Object (SCU).....	20
2.2.1.5.4.1	Description and Sequencing of Activity	20

2.2.1.5.4.2	Proposed Presentation Context	20
2.2.1.5.4.3	SOP Specific Conformance – Move Object	20
2.2.1.6	Associations Acceptance Policies	20
2.2.1.6.1	Real World Activity – Verify Communication (SCP)	21
2.2.1.6.1.1	Description and Sequencing of Activity	21
2.2.1.6.1.2	Accepted Presentation Contexts	21
2.2.1.6.1.3	Presentation Context Acceptance Criterion – Verify Communication	21
2.2.1.6.1.4	Transfer Syntax Selection Policies – Verify Communication	21
2.2.1.6.2	Real World Activity – Store Object (SCP)	21
2.2.1.6.2.1	Description and Sequencing of Activity	21
2.2.1.6.2.2	Accepted Presentation Contexts	22
2.2.1.6.2.3	SOP Specific Conformance – Store Object	22
2.2.1.6.3	Real World Activity – Find Object (SCP)	22
2.2.1.6.3.1	Description and Sequencing of Activity	22
2.2.1.6.3.2	Accepted Presentation Context	22
2.2.1.6.3.3	SOP Specific Conformance – Find Object	23
2.2.1.6.3.4	Presentation Context Acceptance Criterion – Find Object	24
2.2.1.6.3.5	Transfer Syntax Selection Policies – Find Object	24
2.2.1.6.4	Real World Activity - Move Object (SCP)	24
2.2.1.6.4.1	Description and Sequencing of Activity	24
2.2.1.6.4.2	Accepted Presentation Contexts	25
2.2.1.6.4.3	SOP Specific Conformance - Move Object	25
2.2.1.6.4.4	Presentation Context Acceptance Criterion - Move Object	26
2.2.1.6.4.5	Transfer Syntax Selection Policies - Move Object	26
2.2.2	The Broker AE Specification	26
2.2.2.1	Default Transfer Syntaxes Supported	26
2.2.2.2	SOP Classes Supported	26
2.2.2.3	Association Establishment Policies	26
2.2.2.3.1	General	26
2.2.2.3.2	Number of Associations	27
2.2.2.3.3	Asynchronous Nature	27
2.2.2.3.4	Implementation Identifying Information	27
2.2.2.4	Association Acceptance Policies	27
2.2.2.4.1	Real World Activity – Verify Communication (SCP)	27
2.2.2.4.1.1	Description and Sequencing of Activity	27
2.2.2.4.1.2	Accepted Presentation Contexts	27
2.2.2.4.1.3	SOP Specific Conformance – Verification SCP	27
2.2.2.4.2	Real World Activity – Modality Worklist (SCP)	28
2.2.2.4.2.1	Description and Sequencing of Activity	28
2.2.2.4.2.2	Accepted Presentation Context	28
2.2.2.4.2.3	SOP Specific Conformance	29
2.2.2.4.3	Real World Activity – Modality Performed Procedure Step (SCP)	30
2.2.2.4.3.1	Description and Sequencing of Activity	30
2.2.2.4.3.2	Accepted Presentation Context	30
2.2.2.4.3.3	SOP Specific Conformance	30
2.3	Network Interfaces	30
2.3.1	Physical Medium Support	31
2.4	Configuration	31
3	Media Interchange	32
4	Support for Extended Character Sets	33

1 INTRODUCTION

1.1 Revision Record

Revision Number	Date	Reason for Change
1.0	July 21 st 2006	Initial Revision

1.2 Purpose and Intended Audience of this Document

This document is a DICOM Conformance Statement for the DICOM Services of the *IMPAX EL Off-line Archive* product.

The user of this document is involved with system integration and/or software design. We assume that the reader is familiar with the terminology and concepts that are used in the DICOM 3.0.

Readers not familiar with DICOM 3.0 terminology should first read the appropriate parts of the DICOM standard itself, prior to reading this conformance statement.

Although the use of this conformance statement in conjunction with the DICOM 3.0 standard is intended to facilitate communication with IMPAX EL Off-line Archive and other DICOM devices, it is not sufficient to guarantee, by itself, the inter-operation of the connection. Section 1.3 outlines issues that need to be considered to ensure interoperability.

1.3 General Remarks

1.3.1 Integration and Validation Activities

The integration of any device into a system of interconnected devices goes beyond the scope of the DICOM 3.0 standard and this conformance statement when *interoperability* is desired. The responsibility for analyzing the applications requirements and developing a solution that integrates the Agfa equipment with other vendors' systems is the user's responsibility and should not be underestimated.

In some circumstances it might be necessary to perform a validation to make sure that functional interoperability between the Agfa equipment and non-Agfa devices works as expected. The user should ensure that any non-Agfa provider accepts responsibility for any validation required for their connection with the Agfa equipment.

1.3.2 Future Evolution

As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, Agfa will follow the evolution of the standard. This evolution of the standard may require changes to devices that have implemented DICOM 3.0. The user should ensure that any non-Agfa provider, who connects with Agfa devices, also plans for future evolution of the DICOM standard. A refusal to do so may result in the loss of functionality and/or connectivity between the different products.

1.4 Acronyms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard. Abbreviations and terms are as follows:

AE	DICOM Application Entity
AET	Application Entity Title
ASCE	Association Control Service Element
CD-R	Compact Disk Recordable
DICOM	Digital Imaging and Communications in Medicine
FSC	File-Set Creator
FSU	File-Set Updater
FSR	File-Set Reader
GSDF	Grayscale Standard Display Function
GSPS	Grayscale Softcopy Presentation State
IE	Information Entity
IOD	(DICOM) Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
MSPS	Modality Scheduled Procedure Step
MWL	Modality Worklist
OLA	Off-line archive
PDU	DICOM Protocol Data Unit
RIS	Radiology Information System
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
TCP/IP	Transmission Control Protocol / Internet Protocol
UID	Unique Identifier
UTF-8	Unicode Transformation Format - 8
VR	Value Representation

1.5 Related Documents

- ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0. 2004.
- IMPAX EL Off-line Archive Manuals
- IHE Radiology Technical Framework Revision 6 – Final Text, May 2005

2 NETWORKING

2.1 Implementation Model

2.1.1 Application Data Flow Diagram

The Application Data Flow Diagram in Figure 2.1-1 depicts the DICOM data flow to and from the individual application entities that are included in the IMPAX EL Off-line Archive. The tail of the arrow between a local AE and the remote real world activity indicates the party (AE or remote real world activity) that initiates the association negotiation.

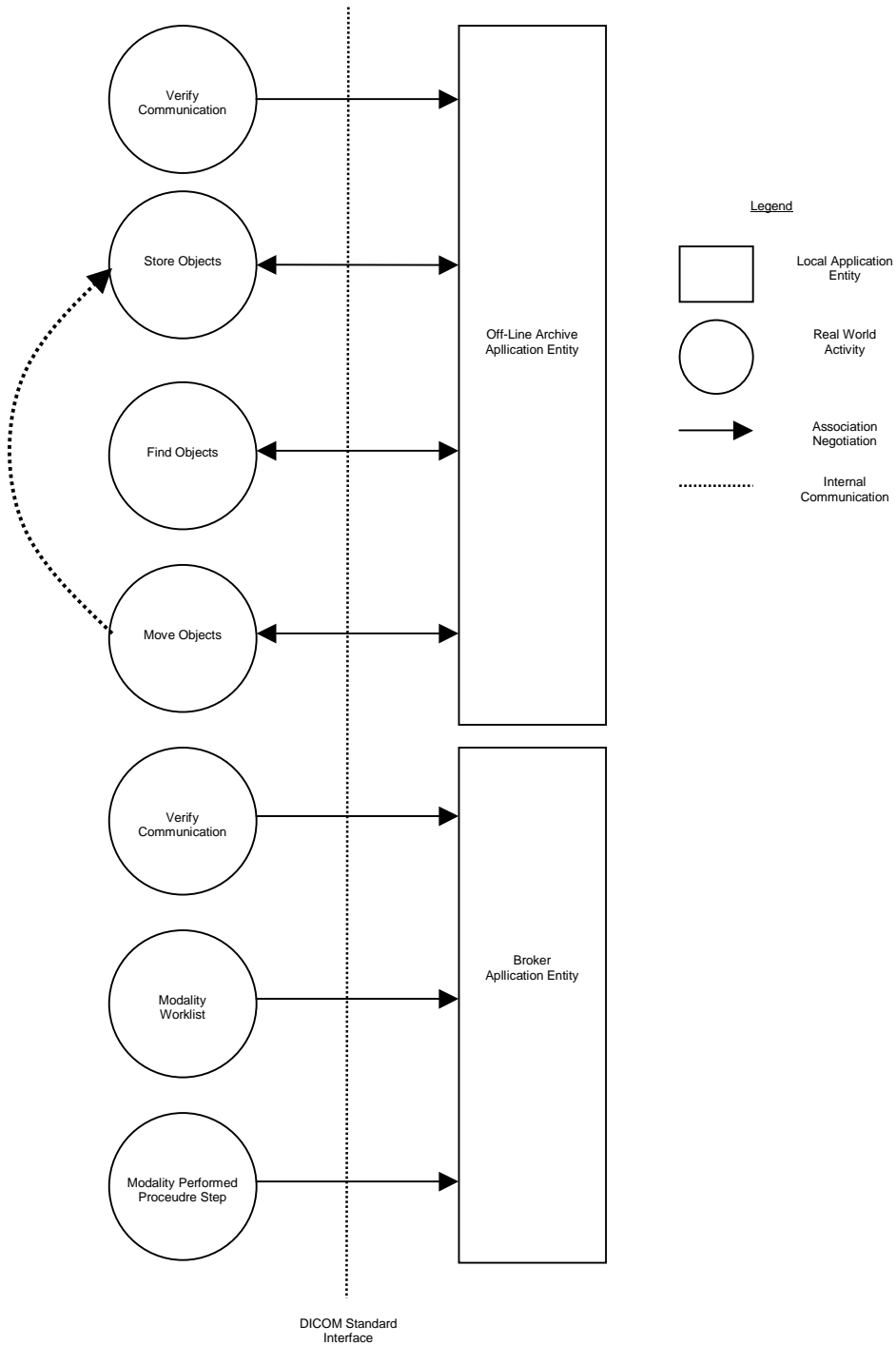


Figure 2.1-1: Functional Overview – Application Data Flow

The following data flows are depicted in the diagram:

- In the remote real-world activity labeled “Verify Communication”, a remote application entity (AE) can initiate an association and verify communications with the Off-line Archive AE or the Broker AE.
- In the remote real-world activity “Store Objects”, a remote AE initiates an association with the Off-line Archive AE and sends one or more objects. When the Off-line Archive AE receives an object, it stores the object in short term cache or long term media and registers the object in the database. The Off-line Archive AE can also initiate an association and send one or more objects to a remote AE.
- In the remote real-world activity “Find Objects”, a remote AE initiates an association with the Off-line Archive AE and sends a query. The Off-line Archive AE will search the database for possible matches with composite SOP instances. The results of the query are returned to the remote AE using the same association. The Off-line Archive AE can also initiate an association and send a query to a remote AE.
- In the remote real-world activity “Move Objects”, a remote AE initiates an association with the Off-line Archive AE and requests some composite SOP instances be retrieved. The Off-line Archive AE will search the database for possible matches with composite SOP instances. The resulting composite SOP instances are transferred to either the same AE that requested the retrieval or to another AE over a new association. The Off-line Archive AE can also initiate an association and request some composite SOP instances be retrieved from a remote AE.
- In the remote real-world activity “Modality Work List”, a remote AE initiates an association with the Integration Services AE and requests a DICOM Modality Work List. The Integration Services AE will query its database and return to work list results to the remote AE.
- In the remote real world activity "Modality Performed Procedure Step", a remote AE initiates an association with the Broker AE and sends a DICOM MPPS message. The Broker AE receives the MPPS message and updates the status of the study in its database.

2.1.2 Functional Definitions of AE's

The following sections contain a functional definition for each Application Entity that is part of the IMPAX EL Off-line Archive. These definitions describe the functions to be performed by the AE, and the DICOM services used to accomplish these functions (both DICOM service classes and lower level DICOM services such as Association Services).

2.1.2.1 Functional Capability of the Off Line Archive AE

2.1.2.1.1 Verify Communication

The Off-line Archive AE will respond to a DICOM C-Echo request from a remote AE and verify communications.

2.1.2.1.2 Receive Images

The PACS AE stores a received image in its entirety, in its internal data store. The Off-line Archive AE stores each image with the File Meta Information attached to it.

The Off-line Archive AE extracts the query information with respect to the patient, study, series, and object, and stores this information within its internal

database.

2.1.2.1.3 Query from Other Devices

The Off-line Archive AE responds to queries based on the records stored in its database.

2.1.2.1.4 Retrieve to Other Devices

The Off-line Archive AE acts as a Service Class Provider of C-Move to retrieve DICOM objects. It does so by obtaining a reference from the database and then obtaining the object itself from the data store.

2.1.2.1.5 Transmit Images

The Off-line Archive AE acts a Service Class User of C-Store to transmit objects to other compatible devices.

2.1.2.2 Functional Capability of the Broker AE

2.1.2.2.1 Verify Communication

The Broker AE will respond to a DICOM C-Echo request from a remote AE and verify communications.

2.1.2.2.2 Modality Worklist Request

The Broker AE returns a Modality Worklist in response to a request from a compatible device. In order to return a worklist, the Broker AE must receive scheduling information from a scheduling system (directly using the IMPAX EL RIS or via DMWL RIS linker interface using a third party RIS). This information is cached in the Broker AE's local database. When a DICOM MWL request is received, the Broker AE converts the request into a database query. The results of the database query are then returned via DICOM to the remote AE.

2.1.2.2.3 Modality Performed Procedure Step Information

The Broker AE is capable of receiving DICOM MPPS messages. These messages are used to update the status of the procedure in the Broker AE's local database. Once a procedure is COMPLETED or DISCONTINUED, it is considered inactive, and can be filtered out of a modality worklist request. The Broker AE is also capable of sending Status Update message to the integrated IMPAX EL RIS.

2.2 AE Specifications

This section outlines the specifications for each of the Application Entities that are part of the IMPAX EL Off-line Archive.

2.2.1 The Off-line Archive AE Specification

2.2.1.1 Default Transfer Syntaxes Supported

The Off-line Archive AE provides Standard Conformance to the default transfer syntaxes listed in Table 2.2-1

Table 2.2 1: Default Transfer Syntaxes

SOP Class Name	SOP Class UID
Implic VR Little Endian	1.2.840.10008.1.2

2.2.1.2 Extended Transfer Syntaxes Supported

Not Applicable

2.2.1.3 Storage SOP Classes Supported

The Off-line Archive AE provides Standard Conformance to the SOP Classes listed in Table 2.2-3. This table lists the Network Services Supported as they appear in DICOM Supplement 64, Table A.1-2. The shaded items represent SOP classes that have been retired (so no longer appear in Supplement 64) but are still supported by the PACS AE.

Table 2.2-3: SOP Class for Off-line Archive AE Storage

SOP Class Name	SOP Class UID	SCU	SCP
Verification			
Verification	1.2.840.10008.1.1	Yes	Yes
Transfer			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
Digital Intra-Oral X-Ray Image Storage Presentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	Yes
Digital Intra-Oral X-Ray Image Storage Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	Yes
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	Yes	Yes
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Yes	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	Yes
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	Yes
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	Yes	Yes

SOP Class Name	SOP Class UID	SCU	SCP
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	Yes	Yes
ECG 12 Lead Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	Yes
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	Yes
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	Yes
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	Yes
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	Yes
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	Yes	Yes
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	Yes	Yes
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	Yes	Yes
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
X-Ray Angiographic BiPlane Image Storage Retired	1.2.840.10008.5.1.4.1.1.12.3	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	Yes	Yes
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	Yes	Yes
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	Yes	Yes
VL Image Storage Retired	1.2.840.10008.5.1.4.1.1.77.1	Yes	Yes
VL Multi-frame Image Storage Retired	1.2.840.10008.5.1.4.1.1.77.2	Yes	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	Yes
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	Yes
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	Yes
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Yes	Yes
VL Slide Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	Yes	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	Yes
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Yes	Yes
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Yes	Yes
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Yes	Yes
Stereometric Relationship Storage	1.2.840.10008.5.1.4.1.1.77.1.5.3	Yes	Yes
Basic Text Structured Report	1.2.840.10008.5.1.4.1.1.88.11	Yes	Yes
Enhanced Structured Report	1.2.840.10008.5.1.4.1.1.88.22	Yes	Yes
Comprehensive Structured Report	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Procedure Log	1.2.840.10008.5.1.4.1.1.88.40	Yes	Yes
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50	Yes	Yes
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Yes	Yes
Chest CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.65	Yes	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	Yes	Yes
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	Yes	Yes
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	Yes	Yes
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	Yes	Yes
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	Yes	Yes
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	Yes	Yes
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	Yes	Yes
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	Yes	Yes
Stored Print Storage	1.2.840.10008.5.1.1.27	Yes	Yes

2.2.1.4 Association Establishment Policies

2.2.1.4.1 General

The following Application Context Name will be proposed and recognized by the Off-line Archive AE.



Table 2.2-4: DICOM Application Context

Application Context Name	1.2.840.10008.3.1.1.1
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The Off-line Archive AE contains no limitations for maximum PDU size.

2.2.1.4.2 Number of Associations

The theoretical maximum number of simultaneous associations accepted by the Off-line Archive AE is fixed at 1024.

The real limit to the number of associations is imposed by the computer operating system capabilities.

2.2.1.4.3 Asynchronous Nature

The Off-line Archive AE allows a single outstanding operation on any association. Therefore, the Off-line Archive AE does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

Table 2.2-5: Asynchronous Nature as an Association Initiator for the Off-line Archive AE

Maximum number of outstanding asynchronous transaction	1
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2.2.1.4.4 Implementation Identifying Information

The Off-line Archive AE will respond with the implementation identifying parameters listed in the following table.

Table 2.2-6: Implementation Class and Version for the Off-line Archive AE

Implementation Class UID	1.2.840.10008.114368.1.3
Implementation Version Name	IMPAXEL-REC1.0

2.2.1.4.5 Called/Calling Titles

The default calling title that the Off-line Archive AE will use is IMPAXEL. This parameter can be configured via the Configure Application GUI. The Off-line Archive AE is configured to validate the Called Title of the requesting SCU during association negotiation.

2.2.1.5 Association Initiation Policies

The PACS AE initiates associations for the following real-world activities:

- Store Objects

- Find Object
- Move Object

2.2.1.5.1 Real World Activity – Verification (C-ECHO)

2.2.1.5.1.1 Description and sequencing of Activity

The Off-line Archive AE provides standard conformance to the DICOM Verification Service Class as an SCU.

2.2.1.5.1.2 Proposed Presentation Contexts

Table 2.2-8: Presentation Contexts Proposed by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.5.2 Real World Activity – Store Objects (SCU)

2.2.1.5.2.1 Description and Sequencing of Activity

The Off-line Archive AE will transmit images that have been sent to it previously, driven by user requests. An association is established when the user initiates a transmit request. The Off-line Archive AE will establish an association automatically in response to a C-MOVE request, or configured study routing rules.

2.2.1.5.2.2 Proposed Presentation Contexts

The Off-line Archive AE may request any of the Presentation Contexts listed in Table 2.2-8 for Storage. The Off-Line Archive AE will propose the transfer syntax used when the object was initially accepted by the server and Implicit VR Little Endian.

Table 2.2-8: Presentation Contexts Proposed by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All Table 2.2-3		Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.5.2.3 SOP Specific Conformance – Store Objects

The Off-line Archive AE provides Standard conformance to the DICOM Storage Service

Class as an SCU.

A successful C-Store response status will not generate any actions.

An unsuccessful C-Store response will generate a warning and the operation will remain in the Job Queue.

A warning status received in response to a C-Store operation will be treated in the same manner as an unsuccessful C-Store response.

2.2.1.5.3 Real World Activity – Find Object (SCU)

2.2.1.5.3.1 Description and Sequencing of Activity

The Off-line Archive AE will negotiate Find requests to an SCP. The Off-line Archive AE can query a remote AE for composite objects to the Study Level. An association is established when the user initiates a query from the graphical user interface. The Off-line Archive AE will establish an association automatically to query a remote AE to obtain a list of objects.

2.2.1.5.3.2 Proposed Presentation Context

The Off-line Archive AE will initiate any of the Presentation Contexts listed in Table 2.2-12 for Query. The Off-line Archive AE will initiate one Find Presentation Context per association request. Any single Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

Table 2.2-12: Presentation Contexts Proposed by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient/Study Only Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.5.3.3 SOP Specific Conformance – Find Object

The Off-line Archive AE provides standard conformance to the DICOM Query/Retrieve Service Class as an SCU. The Query/Retrieve Information Model used depends on the attributes used to constrain the query.

The Off-line Archive AE supports the Relational-queries extended SCU behavior for the Patient Root Query, Study Root Query, and Patient/Study Only Query/Retrieve.

The Off-line Archive AE may request any mandatory search keys during a relational query. Tables 2.2-14 to 2.2-17 describe the search keys for the four levels of query that the Off-line Archive AE requests.

Table 2.2-14: Patient Level Attributes

Description	Tag
Patient Name	(0x0010, 0x0010)
Patient ID	(0x0010, 0x0020)
Patient Birth Date	(0x0010, 0x0030)

Table 2.2-15: Study Level Attributes

Description	Tag
Study Date	(0x0008, 0x0020)
Study Time	(0x0008, 0x 0030)
Accession Number	(0x0008, 0x 0050)
Modalities in Study	(0x0008, 0x 0061)
Study Description	(0x0008, 0x 1030)
Admitting Diagnoses Description	(0x0008, 0x 1080)
Patient's Name	(0x0010, 0x 0010)
Patient ID	(0x0010, 0x 0020)
Patient's Age	(0x0010, 0x 1010)
Occupation	(0x0010, 0x 2180)
Additional Patient History	(0x0010, 0x 21B0)
Study Instance UID	(0x0020, 0x 000D)
Study ID	(0x0020, 0x 0010)
Number of Study Related Series	(0x0020, 0x 1206)
Number of Study Related Instances	(0x0020, 0x 1208)

The PACS AE automatically adds a wildcard "*" to matching keys with a VR of PN. The user is not required to add one manually.

The following matching keys are available from the User Interface within the Off-line Archive AE during a relational query:

- patient_id
- patient_name
- accession_number
- modality

A user can also query using time constraints through the User Interface. No matching keys are available during a hierarchical query.

Within the application, the exact Patient ID has to be entered in the patient_id field.

2.2.1.5.4 Real World Activity – Move Object (SCU)

2.2.1.5.4.1 Description and Sequencing of Activity

The Off-line Archive AE can retrieve composite objects from a remote AE. An association is established when the user initiates a query from the graphical user interface. The Off-line Archive AE will establish an association automatically to retrieve objects that were archived to the remote.

2.2.1.5.4.2 Proposed Presentation Context

The PACS AE will initiate any of the Presentation Contexts listed in Table 2.2-18 for Move. The PACS AE will accept any number of Move Presentation Contexts per association request. Any single Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

Table 2.2-18: Presentation Contexts Proposed by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve IMMove	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Patient/Study Only Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.5.4.3 SOP Specific Conformance – Move Object

The Off-line Archive AE provides standard conformance to the DICOM Query/Retrieve Service Class as an SCU. The Off-line Archive AE supports the Relational-retrieve extended SCU behavior.

The Off-line Archive AE will try to establish an association with the move destination specified in the Move request. One or more of the Presentation Contexts listed in the Store section of this document may be negotiated in this association.

2.2.1.6 Associations Acceptance Policies

The Off-line Archive AE accepts associations for the following real world activities:

- Verify Communication
- Store Objects

- Find Object
- Move Object

Association requests from unknown Application Entities will be rejected by the Off-line Archive AE AE.

2.2.1.6.1 Real World Activity – Verify Communication (SCP)

2.2.1.6.1.1 Description and Sequencing of Activity

The Off-line Archive AE will respond to Verification requests to provide an SCU with the ability to determine if the Off-Line Archive AE is receiving DICOM requests.

2.2.1.6.1.2 Accepted Presentation Contexts

The Off-line Archive AE will accept any of the Presentation Contexts listed in Table 2.2-36 for Verification.

Table 2.2-36: Accepted Presentation Context for Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.2.1.6.1.3 Presentation Context Acceptance Criterion – Verify Communication

The Off-line Archive AE will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax listed in Table 2.2-36.

2.2.1.6.1.4 Transfer Syntax Selection Policies – Verify Communication

Since no DICOM data object is associated with a Verification command, only the default DICOM transfer syntax is required/supported.

2.2.1.6.2 Real World Activity – Store Object (SCP)

2.2.1.6.2.1 Description and Sequencing of Activity

The Off-line Archive AE will store images that are sent to it from an SCU. All images received by the Off-line Archive AE can be retrieved at a later time from the Off-line Archive AE; however, the rate of return of the images will vary depending on the state of the images. The images can be in one of two states, as listed in Table 2.2-38.

Table 2.2-38: Image States

Image State	SOP Class UID
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Online	The image is immediately available.
Offline	The image requires manual assistance to become online. The retrieval request will return a failure code

2.2.1.6.2.2 Accepted Presentation Contexts

The PACS AE will accept any of the Presentation Contexts listed in Table 2.2-39 for Storage.

Table 2.2-39: Presentation Contexts Accepted by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
All Table 2.2-3		Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.2.1.6.2.3 SOP Specific Conformance – Store Object

The Off-line Archive AE conforms to the DICOM Storage Service Class as a Level 2 (Full) SCP. No elements are discarded or coerced by the Off-line Archive AE. All Type 1, Type 2 and Type 3 attributes will be retained. Private attributes will be stored and included when the object is sent out again.

Upon successful storage of objects contained within a study the study can be automatically transferred to a remote AE or returned in response to a retrieval request. The Off-line archive AE can be configured to automatically route study to a remote AE. Studies may be manually transferred, archived or deleted through the graphical user interface.

2.2.1.6.3 Real World Activity – Find Object (SCP)

2.2.1.6.3.1 Description and Sequencing of Activity

The Off-line Archive AE will respond to query requests that are sent to it by an SCU. The latency for retrieval of SOP Instances is dependent on the object state, as specified in Table 2.2-46.

Table 2.2-46: Image States

Image State	SOP Class UID
Online	The image is immediately available.
Offline	The image requires manual assistance to become online. The retrieval request will return a failure code

2.2.1.6.3.2 Accepted Presentation Context

Table 2.2-47: Presentation Contexts Accepted by Off-line Archive AE

Presentation Context Table				
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Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.2.1.6.3.3 SOP Specific Conformance – Find Object

The Off-line Archive AE provides standard conformance to the DICOM Query/Retrieve Service Class as an SCP.

The Off-line AE supports the Relational-queries extended SCP behavior. The Off-line Archive AE supports all mandatory Unique and Required Matching Keys. Case-insensitive matching for PN VR attributes is supported.

The tables below contain detailed information on matching and returned keys:

Table 2.2-49: Patient Level Attributes

Description	Tag	Support
Patient Name	(0x0010, 0x0010)	Matching / Returned
Patient ID	(0x0010, 0x0020)	Matching / Returned

Table 2.2-50: Study Level Attributes

Description	Tag	Support
Study Instance UID	(0x0020, 0x000D)	Matching / Returned
Study ID	(0x0020, 0x0010)	Matching / Returned
Accession Number	(0x0008, 0x0050)	Matching / Returned
Study Date	(0x0008, 0x0020)	Matching / Returned
Patient Name	(0x0010, 0x0010)	Matching / Returned
Patient ID	(0x0010, 0x0020)	Matching / Returned

Table 2.2-51: Series Level Attributes

Description	Tag	Support
Series Instance UID	(0x0020, 0x000E)	Matching / Returned
Series Number	(0x0020, 0x0011)	Matching / Returned
Modality	(0x0008, 0x0060)	Matching / Returned
Study Instance UID	(0x0020, 0x000D)	Matching / Returned

Table 2.2-51: Instance Level Attributes

Description	Tag	Support
Sop Instance UID	(0x0008, 0x0018)	Matching / Returned
Instance Number	(0x0020, 0x0013)	Matching / Returned
Series Instance UID	(0x0020, 0x000E)	Matching / Returned

The Off-line Archive AE returns one of the following status codes to a C-FIND request.

Table 2.2-53: C-FIND Status Codes

Service Status	Further Meaning	Protocol Codes	Description
Refused	Out of Resources	A700	Out of resources.
Failed	Identifier does not match SOP Class	A900	The specified identifier contains a request that does not match the specified SOP Class.
	Unable to process	C001	For some reason (such as the database being off-line) this request cannot be processed at this time.
Cancel	Matching terminated due to Cancel Request	FE01	The original requester canceled this operation.
Pending	Pending	FF00	All Optional Keys are supported in the same manner as Required Keys.
	Pending	FF01	The matching operation is continuing. Warning that one or more Optional Keys were not supported in the same manner as Required Keys.
Success	Success	0000	Operation performed properly.

2.2.1.6.3.4 Presentation Context Acceptance Criterion – Find Object

The Off-line Archive AE will accept any number of Find Presentation Contexts per association request. Any single Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

2.2.1.6.3.5 Transfer Syntax Selection Policies – Find Object

The Off-line Archive AE currently only supports the default transfer syntax of Implicit VR Little Endian.

2.2.1.6.4 Real World Activity - Move Object (SCP)

2.2.1.6.4.1 Description and Sequencing of Activity

The Off-line Archive AE will respond to retrieve requests that are sent to it by an SCU.

The Off-line AE will establish a new Association with the Remote AE specified in the Move Destination for the C_STORE sub-operations. The Off-line Archive AE will propose the transfer syntax used when the object was initially accepted by the server and Implicit VR Little Endian.

2.2.1.6.4.2 Accepted Presentation Contexts

The PACS AE will accept any of the Presentation Contexts listed in Table 2.2-54 for Query.

Table 2.2-54: Presentation Contexts Accepted by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Patient/Study Only Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.2.1.6.4.3 SOP Specific Conformance - Move Object

The Off-line Archive AE will try to establish an association with the move destination specified in the Move request. One or more of the Presentation Contexts listed in the Store section of this document may be negotiated in this association.

The Off-line Archive AE returns one of the following status codes to a C-MOVE request.

Table 2.2-55: C-MOVE Status Codes

Service Status	Further Meaning	Protocol Codes	Description
Refused	Out of Resources	A701	Out of resources.
Failed	Identifier does not match SOP Class	A702	The specified identifier contains a request that does not match the specified SOP Class.
	Unable to process	A801	For some reason (such as the database being off-line) this request cannot be processed at this time.
Cancel	Matching terminated due to Cancel Request	A900	The original requester canceled this operation.
Pending	Pending	FF00	All Optional Keys are supported in the same manner as Required Keys.
	Pending for a long time	FF01	The matching operation is continuing. Warning that one or more Optional Keys were not supported in the same manner as Required Keys.
Success	Success	0000	Operation performed properly.

2.2.1.6.4.4 Presentation Context Acceptance Criterion - Move Object

The Off-line Archive AE will accept any number of Move Presentation Contexts per association request. Any single Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

2.2.1.6.4.5 Transfer Syntax Selection Policies - Move Object

By default, the Off-line Archive AE sends the IOD using the transfer syntax that was used when the image was originally stored. It will convert the IOD to Implicit VR Little Endian if the original transfer syntax is not supported by the destination.

The Off-line Archive AE can be configured on a per-destination basis to convert the IOD from the original transfer syntax to Implicit VR Little Endian.

2.2.2 The Broker AE Specification

2.2.2.1 Default Transfer Syntaxes Supported

The Broker AE provides Standard Conformance to the default transfer syntaxes listed in Table 2.2-1.

Table 2.2 1: Default Transfer Sintaxes

SOP Class Name	SOP Class UID
Implic VR Little Endian	1.2.840.10008.1.2

2.2.2.2 SOP Classes Supported

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 2.2-1: SOP Class for Broker AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification	1.2.840.10008.1.1	Yes	Yes
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	No	Yes
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	No	Yes

2.2.2.3 Association Establishment Policies

2.2.2.3.1 General

The DICOM standard Application context shall be specified.

Table 2.2-2: DICOM Application Context

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

2.2.2.3.2 Number of Associations

The maximum number of simultaneous associations accepted by the Broker AE is not constrained. There is no inherent limit to the number of associations other than limits imposed by the computer operating system.

2.2.2.3.3 Asynchronous Nature

The Broker AE allows a single outstanding operation on any association. Therefore, the Broker AE does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

2.2.2.3.4 Implementation Identifying Information

The Broker AE will respond with the following implementation identifying parameters:

Table 2.2 3: DICOM implementation Class and Version for Verification

SCP Identification Parameters	
Implementation Class UID	1.2.840.10008.114368.1.2
Implementation Version Name	IMPAXEL-WKL1.0

2.2.2.4 Association Acceptance Policies

2.2.2.4.1 Real World Activity – Verify Communication (SCP)

2.2.2.4.1.1 Description and Sequencing of Activity

The Broker AE will respond to Verification requests to provide a SCU with the ability to determine if the Broker AE is receiving DICOM requests.

2.2.2.4.1.2 Accepted Presentation Contexts

Table 2.2-8: Presentation Contexts Accepted by Off-line Archive AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCP	None

2.2.2.4.1.3 SOP Specific Conformance – Verification SCP

The Integration Services AE provides standard conformance to the DICOM Verification Service Class. The Integration Services AE returns one of the following status codes:

Table 2.2-9: Verification SOP Response Status

Service Status	Error Code	Reason
Success	0000	Operation performed properly

2.2.2.4.2 Real World Activity – Modality Worklist (SCP)

2.2.2.4.2.1 Description and Sequencing of Activity

The Broker AE can be configured to respond to DICOM C-FIND requests in response to an external device querying the Broker AE for Worklist.

Before the Broker AE can respond to a DICOM Modality Worklist query, it must be populated with data via RLI messages. The following diagram shows the sequence of events involved in a DICOM Modality Worklist query:

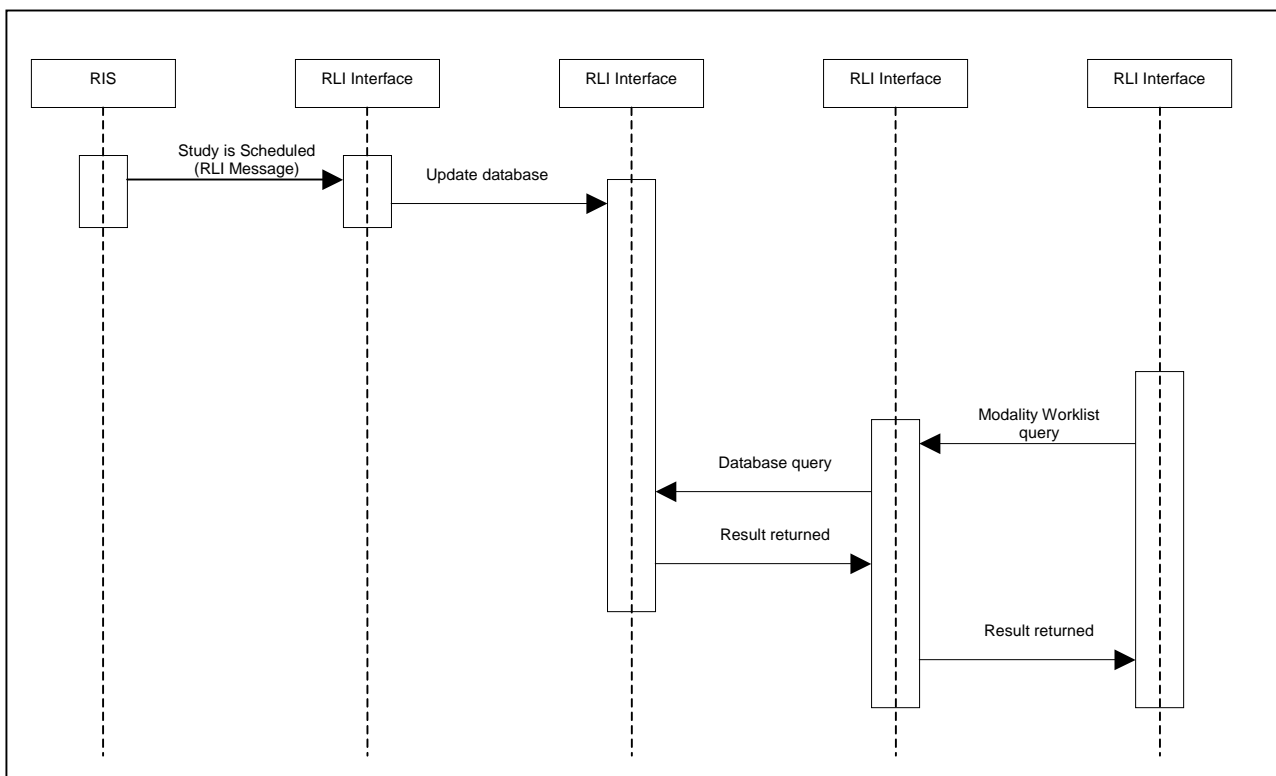


Figure 2.2-2: DICOM Modality Worklist Sequence Diagram

2.2.2.4.2.2 Accepted Presentation Context

Table 2.2-10: Presentation Contexts Accepted by Modality Worklist SCP

Presentation Context Table

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Worklist Info Model - FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.2.2.4.2.3 SOP Specific Conformance

The Broker AE provides standard conformance to the DICOM Basic Worklist Management Service Class.

Table 2.2-9: Modality Worklist Information Model Attributes

Module	Attribute Name	Tag
Patient Identification Module	Patient's Name	(0010,0010)
	Patient ID	(0010,0020)
	Other Patient IDs	(0010,1000)
Patient Demographic Module	Patient's Birth Date	(0010,0030)
	Patient's Sex	(0010,0040)
Visit Status Module	Current Patient Location	(0038,0300)
Scheduled Procedure Step Module	Scheduled Procedure Step Sequence	(0040,0100)
	> Modality	(0008,0060)
	> Scheduled Procedure Step Start Date	(0040,0002)
	> Scheduled Procedure Step Start Time	(0040,0003)
	> Scheduled Procedure Step Description	(0040,0007)
Requested Procedure Module	> Scheduled Procedure Step ID	(0040,0009)
	Referenced Study Sequence	(0008,1110)
	> Referenced SOP Class UID	(0008,1150)
	> Referenced SOP Instance UID	(0008,1155)
	Study Instance UID	(0020,000D)
	Requested Procedure Description	(0032,1060)
	Requested Procedure code Sequence	(0032,1064)
Imaging Service Request Module	> Code Value	(0008,0100)
	> Coding Scheme Designator	(0008,0102)
	> Code Meaning	(0008,0104)
	Accession Number	(0008,0050)
	Filler Order Number/Imaging Service Request	(0040,2017)

The Broker AE returns one of the following status codes in the C-FIND response:

Table 2.2-13: Modality Worklist SCP Response Status

Service Status	Error Code	Reason
Success	0000	Operation performed properly
Fail	A900	Sent when an SCU attempts to request an Identifier that doesn't match SOP Class attributes.
	Cxxx	Sent when the SCP is Unable to Process the SCU request
Cancel	FE00	It is terminated due to Cancel request.

Pending Visit Status Module	FF00	Matches are continuing – Current Match is supplied and any Optional keys were supported in the same manner as Required keys
	FF01	Matches are continuing – Warning that one or more Optional keys were not supported for existence for this identifier.

2.2.2.4.3 Real World Activity – Modality Performed Procedure Step (SCP)

2.2.2.4.3.1 Description and Sequencing of Activity

The Broker AE acts as an SCP to DIMSE N-CREATE or N-SET Modality Performed Procedure Steps. Attributes values for the performed procedure step are stored within the Broker AE's data repository. A common application for MPPS is to trim the modality worklist of completed or discontinued procedures.

2.2.2.4.3.2 Accepted Presentation Context

Table 2.2-14: Presentation Contexts Accepted by Performed Procedure Step SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCP	None

2.2.2.4.3.3 SOP Specific Conformance

The Integration Services AE returns one of the following status codes in the N-SET-RSP:

Table 2.2-17: Modality Performed Procedure Step SCP Response Status

Service Status	Error Code	Reason
Success	0000	Operation performed properly
Performed Procedure Step may no longer be updated	0110	Sent when an SCU attempts to update a performed procedure step which is COMPLETED or DISCONTINUED

2.3 Network Interfaces

The IMPAX EL Solution provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS

3.8 of the DICOM Standard. The IMPAX EL Solution inherits its TCP/IP stack from the computer system upon which it executes.

2.3.1 Physical Medium Support

The IMPAX EL Solution is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it is being executed.

2.4 Configuration

To be defined.

3 MEDIA INTERCHANGE

Not Applicable

4 SUPPORT FOR EXTENDED CHARACTER SETS

The IMPAX EL-OLA is indifferent to Extended Character Sets and will therefore accept all DICOM C-STORE requests using any character set without modification to the text being sent.

Impax EL Off-line Archive supports the following character sets:

• ISO-IR 6 (default)	Basic G0 Set
• ISO-IR 100	Latin Alphabet No. 1