

IQPACS WEBCONNECT

DICOM 3.0 Conformance Statement

Revision history

Revision	Date	Description	Author
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1. INTRODUCTION

1.1. Purpose of this document

This document describes the conformance to the DICOM standard, version 3 for the **IQPACS WebConnect** application and follows the contents and structuring requirements of DICOM PS 3.2. InfoWorld is continually improving and enhancing the functionalities of its products based on customer requirements. This document is updated as appropriate.

1.2. IQPACS WebConnect overview

IQPACS System is a completely DICOM compliant picture and archiving system intended for the radiology and imagistic departments. IQPACS connects to any type of modality, processes and stores DICOM images in long and short time archive.

The application is written in Java code and uses Microsoft SQL Server.

IQPACS WebConnect is mainly intended for storing the DICOM instances received from other DICOM nodes in the network so that web clients can access them.

The application uses DICOM as the interface to the external world. The IQPACS WebConnect accepts DICOM association requests for the purpose of storing images and for query and retrieval of images. It also initiates DICOM association requests for the purpose of sending images to an external application entity.

1.3. General acronyms, abbreviations and definitions

AE – Application Entity

DB – Database

DICOM – Digital Imaging and Communications in Medicine

DICOM node = other DICOM compliant application entities with which communication can be established

DICOMDIR – DICOM directory

DIMSE – DICOM Message Service Element

DIMSE-C – DICOM Message Service Element – Composite

DIMSE-N – DICOM Message Service Element – Normalized

ID – Identifier

IQPACS – InfoMediQ Picture Archiving and Communication System

MPPS – Modality performed Procedure Step

PACS – Picture Archiving and Communication System

PDU – Protocol Data Unit

RIS – Radiology Information System

SCP – Service Class Provider

SCU – Service Class User

SOP – Service-Object Pair

TCP/IP – Transmission Control Protocol

Trusted node = see DICOM node

UID – Unique Identifier

1.4. Interoperability

This Conformance Statement and the DICOM standard do not guarantee interoperability of the IQPACS WebConnect with other vendors' applications or equipment. The user must compare the relevant DICOM Conformance Statements and if a successful interconnection should be possible, the user is responsible to specify an appropriate test suite and to validate the interoperability, which is required.

1.5. References

American College of Radiology – National Electrical Manufacturers Association (ACR-NEMA) Digital Imaging and Communications in Medicine – DICOM v3.0

2. IMPLEMENTATION MODEL

IQPACS WebConnect contains a single Application Entity that implements the Verification Service Class, the Storage Service Class and the Query/Retrieve Service Class as a Service Class User (SCU), Patient Management and Study Management and a Service Class Provider (SCP) and provides Media Storage capabilities.

IQPACS WebConnect provides the following DICOM 3.0 functions:

- Verification of a link at the application level using the DICOM 3.0 verify service class as a SCP and SCU;
- Short and long term storage for images using the DICOM 3.0 Storage service class as a SCP;
- Sending images to other DICOM nodes in the network using the DICOM 3.0 Storage service class as a SCU;
- Retrieval/sending of data from or to other AE using the DICOM Query/Retrieve service class as a SCP and SCU;
- Sending/receiving patient and study related information using the Patient Management and Study Management Services

2.1. Application data flow diagram

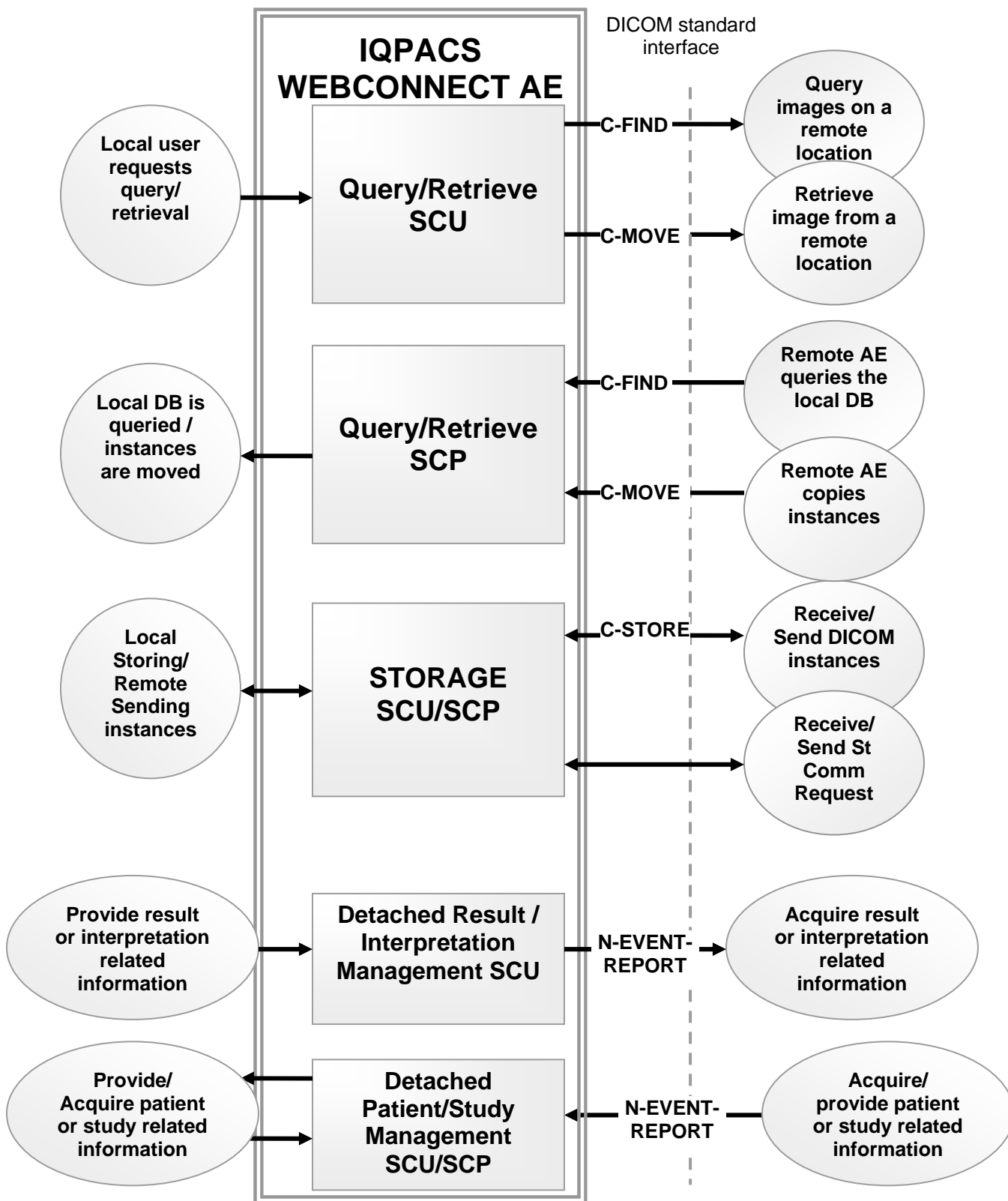


Figure 2.1. Application Data Flow Diagram

2.2. Functional definitions of the AE

The IQPACS WebConnect is an application providing the data storage interface for the IQPACS clients or other vendor diagnosis applications. Each request will be handled by IQPACS WebConnect as a unique thread.

IQPACS WebConnect acts as a service class provider (SCP) in the following roles:

1. SCP for C-Echo operations to Verification service class users
2. SCP for C-Find operations to Query / Retrieve service class users
3. SCP for C-Move operations to Query / Retrieve service class users
4. SCP for C-Store operations to Storage service class users
5. SCP for N-Get and N-Event-Report operations to Detached Patient (Study) Management service class users

IQPACS WebConnect acts as a service class user (SCU) in the following roles:

1. SCU of C-Echo operations from Verification service class providers
2. SCU of C-Find operations from Query / Retrieve service class providers
3. SCU of C-Move operations from Query / Retrieve service class providers
4. SCU of C-Store operations from Storage service class providers
5. SCU for N-Get and N-Event-Report operations from Detached Patient (Study) Management service class providers
6. SCU of N-EVENT-REPORT operations from Detached Result (Interpretation) service class providers

2.2.1. Verify – Verification SCU/SCP

In order to test a link to another DICOM AE, the IQPACS WebConnect requests verification of communication using the C-ECHO request primitive. Upon receipt of the C-ECHO confirmation, the IQPACS WebConnect determines the verification is complete.

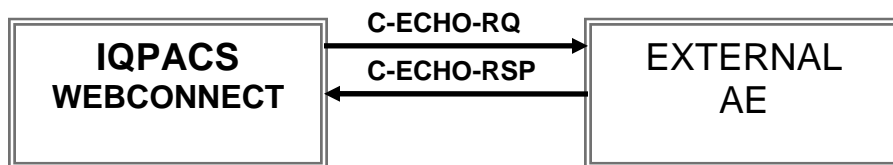


Figure 2.2. Verification SCU

When IQPACS WebConnect receives a request to verify a current DICOM association (C-ECHO-RQ), it responds with the C-ECHO-RSP primitive.

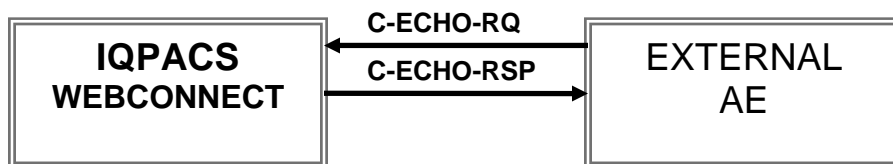


Figure 2.3. Verification SCP

2.2.2. Query an external AE – Query/Retrieve SCU

When the IQPACS WebConnect queries an external database, it sends a C-FIND-RQ with the attributes to be matched. A list of the attributes used for matching is described in the table xxx.xxx.

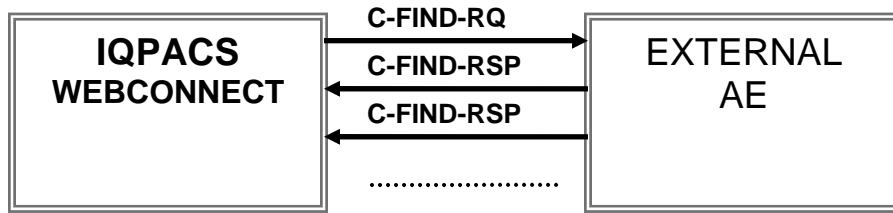


Figure 2.4. Query/Retrieve SCU

2.2.3. Query database – Query/Retrieve SCP

When the IQPACS WebConnect receives a query request (C-FIND-RQ), the database is queried for matches using the all the attributes supplied by the requesting application entity. The IQPACS WebConnect searches its database and generates a C-FIND-RSP for each match.

While IQPACS WebConnect is performing the matching process, C-FIND operations can be interrupted by the calling AE through the use of C-CANCEL-RQ.

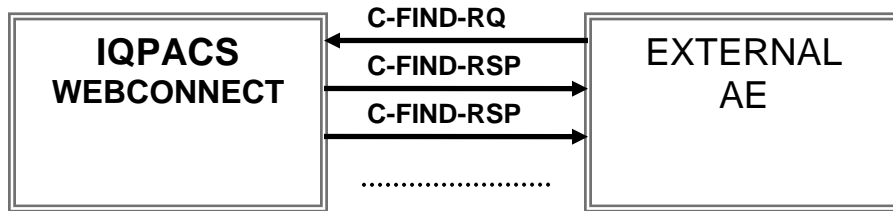


Figure 2.5. Query database

2.2.4. Image transfer – STORAGE SCU

Storage SCU is able to transfer DICOM instances to external AEs. The C-STORE DIMSE-C Service is the mechanism used to transfer the instances.

The IQPACS WebConnect acts as a Storage SCU either when it initiates a C-STORE-RQ, or when it receives a C-MOVE-RQ (also acting as a SCP for C-MOVE operations).



Figure 2.6. Image Transfer

When IQPACS WebConnect receives an image move request (C-MOVE-RQ), the database is queried using the values that uniquely identify the instances. IQPACS WebConnect initiates C-Store operations through a separate association and transfers images corresponding to the values supplied in the move request.

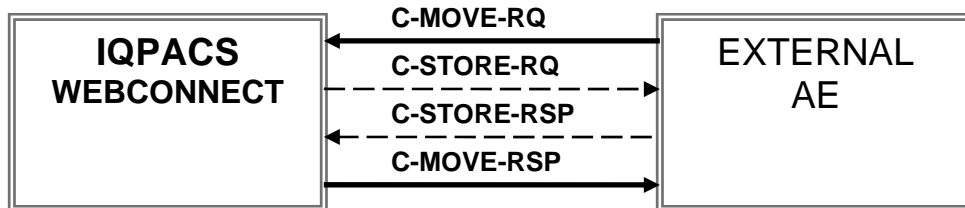


Figure 2.7. Image Transfer when a moving request received

2.2.5. Receiving and storing images – STORAGE SCP

When IQPACS WebConnect receives a request to store images (C-STORE-RQ), the received image is stored on the local hard disk and image attributes are extracted and stored in the local database. The location for storing the instances and the policies for removing the instances from the on-line storage are configurable.

However, the Storage SCP does not guarantee that the data will be archived. The remote AE submitting data to the IQPACS WebConnect should verify the data archiving commitment by sending a Storage Commitment Request – in a separate association. The IQ PACS WebConnect implements the Storage Commitment Push Model SOP Class. If a specific DICOM node in the network is not able to send Storage Commitment request, the IQPACS WebConnect can be configured to guarantee the instances archival.

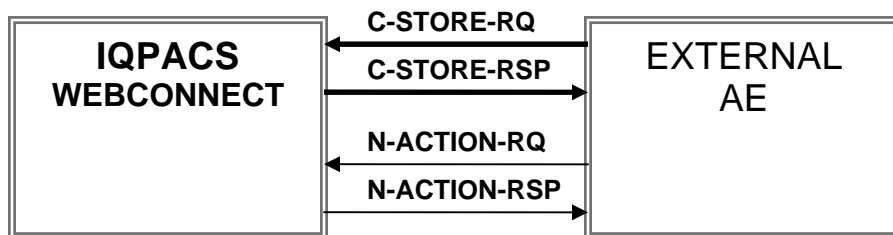


Figure 2.8. Receiving and storing images

2.3. Sequencing of Real-World Activities

Not applicable.

3. AE SPECIFICATIONS

3.1. SOP Classes

IQPACS WebConnect Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
AmbulatoryECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.3
BasicTextSR	1.2.840.10008.5.1.4.1.1.88.11
BasicVoiceAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.1
CardiacElectrophysiologyWaveformStorage	1.2.840.10008.5.1.4.1.1.9.3.1
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1
CTImageStorage	1.2.840.10008.5.1.4.1.1.2
DigitalIntraoralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3
DigitalIntraoralXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1
DigitalXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1
EnhancedSR	1.2.840.10008.5.1.4.1.1.88.22
GeneralECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.2
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1
HemodynamicWaveformStorage	1.2.840.10008.5.1.4.1.1.9.2.1
KeyObjectSelectionDocument	1.2.840.10008.5.1.4.1.1.88.59
MammographyCADSR	1.2.840.10008.5.1.4.1.1.88.50
MRImageStorage	1.2.840.10008.5.1.4.1.1.4
MRSpectroscopyStorage	1.2.840.10008.5.1.4.1.1.4.2
MultiframeColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4
MultiframeGrayscaleByteSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.2
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3
MultiframeSingleBitSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.1
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20
NuclearMedicineImageStorageRetired	1.2.840.10008.5.1.4.1.1.5
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128
RawDataStorage	1.2.840.10008.5.1.4.1.1.66
RTBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5
RTStructureSetStorage	1.2.840.10008.5.1.4.1.1.481.3
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7
StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9

StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10
StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8
StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129
StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11
TwelveLeadECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.1
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1
UltrasoundImageStorageRetired	1.2.840.10008.5.1.4.1.1.6
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1
UltrasoundMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.3
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1
VImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.1
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2
VLMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.2
VLPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3
XRyAngiographicBiPlaneImageStorageRetired	1.2.840.10008.5.1.4.1.1.12.3
XRyAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1
XRyRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2
PatientRootQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.1.1
StudyRootQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.2.1
PatientStudyOnlyQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.3.1
PatientRootQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.1.2
StudyRootQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.2.2
PatientStudyOnlyQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.3.2
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1
DetachedStudyManagement	1.2.840.10008.3.1.2.3.1
BasicStudyContent Notification	1.2.840.10008.1.9
StorageCommitmentPushModel	1.2.840.10008.1.20.1

Table 3.1. Supported SOP Classes in the SCU role

And to the following DICOM V3.0 SOP Classes as an SCP:

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
AmbulatoryECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.3
BasicTextSR	1.2.840.10008.5.1.4.1.1.88.11
BasicVoiceAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.1
CardiacElectrophysiologyWaveformStorage	1.2.840.10008.5.1.4.1.1.9.3.1
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1
CTImageStorage	1.2.840.10008.5.1.4.1.1.2
DigitalIntraoralXRyImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3
DigitalIntraoralXRyImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1
DigitalMammographyXRyImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2
DigitalMammographyXRyImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1
DigitalXRyImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1
DigitalXRyImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1
EnhancedMRIImageStorage	1.2.840.10008.5.1.4.1.1.4.1
EnhancedSR	1.2.840.10008.5.1.4.1.1.88.22

GeneralECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.2
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1
HemodynamicWaveformStorage	1.2.840.10008.5.1.4.1.1.9.2.1
KeyObjectSelectionDocument	1.2.840.10008.5.1.4.1.1.88.59
MammographyCADSR	1.2.840.10008.5.1.4.1.1.88.50
MRImageStorage	1.2.840.10008.5.1.4.1.1.4
MRSpectroscopyStorage	1.2.840.10008.5.1.4.1.1.4.2
MultiframeColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4
MultiframeGrayscaleByteSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.2
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3
MultiframeSingleBitSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.1
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20
NuclearMedicineImageStorageRetired	1.2.840.10008.5.1.4.1.1.5
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128
RawDataStorage	1.2.840.10008.5.1.4.1.1.66
RTBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5
RTStructureSetStorage	1.2.840.10008.5.1.4.1.1.481.3
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7
StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9
StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10
StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8
StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129
StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11
TwelveLeadECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.1
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1
UltrasoundImageStorageRetired	1.2.840.10008.5.1.4.1.1.6
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1
UltrasoundMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.3
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1
VImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.1
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2
VLMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.2
VLPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3
XRayAngiographicBiPlaneImageStorageRetired	1.2.840.10008.5.1.4.1.1.12.3
XRayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1
XRayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2
PatientRootQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.1.1
StudyRootQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.2.1
PatientStudyOnlyQueryRetrieveInformationModelFIND	1.2.840.10008.5.1.4.1.2.3.1
PatientRootQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.1.2
StudyRootQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.2.2
PatientStudyOnlyQueryRetrieveInformationModelMOVE	1.2.840.10008.5.1.4.1.2.3.2
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1

DetachedStudyManagement	1.2.840.10008.3.1.2.3.1
BasicStudyContent Notification	1.2.840.10008.1.9
StorageCommitmentPushModel	1.2.840.10008.1.20.1

Table 3.2. Supported SOP Classes in the SCP role

3.2. Association Establishment Policies

3.2.1 General

All associations with IQPACS Image Server are established using the DICOM 3.0 Standard application context. All the parameters regarding association initiation or acceptance can be modified at the configuration level. These parameters are:

- the connection timeout
- the acceptance timeout (with a default value of 5000 ms)
- the dimse timeout
- the maximum length Protocol Data Unit (with a default value of 16352 bytes)
- the maximum number of operations invoked (with a default value of 500)
- the close delay (with a default value of 5000 ms)

3.2.2 Number of Associations

The number of permitted associations can be set at the configuration level in an interval between 1 and unlimited, depending on the available resources.

3.2.3 Asynchronous Nature

Not supported.

3.3. Association Initiation Policy

The IQPACS WebConnect initiates associations for:

- testing a trusted node
- query another DICOM node
- image acquisition from another DICOM node
- get detached information

3.3.1. Real World Activity: Request to verify a trusted node

3.3.1.1. Associated Real World Activity

The IQPACS WebConnect initiates an association to verify application level communication with a peer DICOM application entity.

This request is performed using the C-ECHO request primitive. The remote DICOM AE, supporting the Verification SOP Class SCP role, issues a C-ECHO response primitive. Upon receipt of the C-ECHO confirmation, the SCU determines that verification is complete.

3.3.1.2 Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	No

Table 3.3. Presentation Contexts to verify a DICOM association

3.3.2. Real World Activity: Request to query a DICOM node

3.3.2.1. Associated real-world activity

The IQPACS WebConnect queries an external application entity against matching the attributes supplied in the query request. A list of the supported optional keys is listed in the table below. The list contains only the attributes in the C-FIND request.

The level of the query	Optional Key	Tag
Patient level	PatientID	(0010,0020)
	PatientFirstName	(0010,0010)
	PatientBirthDate	(0010,0030)
	PatientBirthName	(0010,0032)
Study level	ModalitiesInStudy	(0008,0061)
	StudyStatusID	(0032,000A)
	StudyArrivalDate	(0008,0020)
	NameOfPhysicianReadingStudy	(0008,1060)
	RequestingPhysician	(0032,1032)
	InterpretationDiagnosesCode	(4008,0117)
	Accession Number	(0008,0050)
	Study Priority	(0032,000C)
Series level	PerformingPhysicianName	(0008,1050)
	Modality	(0008,0060)

Table 3.4. Optional Keys supported

3.3.2.2. Presentation Contexts

The presentation context shown in the following table is used for querying an external DICOM node:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
PatientRootQueryRetrieveInformationMode	1.2.840.10008.5.1.4.1.2.1.1	Case 1*	SCU	No

IFIND				
StudyRootQueryRetrieveInformationModel FIND	1.2.840.10008.5.1.4.1.2.2.1	Case 1*	SCU	No
PatientStudyOnlyQueryRetrieveInformation ModelFIND	1.2.840.10008.5.1.4.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.5. Presentation Contexts to query a DICOM node

3.3.3 Real World Activity: Request to move instances

3.3.3.1. Associated real world activity

The IQPACS WebConnect requests the moving of some specified instances to a specified destination.

3.3.3.2. Presentation context

The presentation context shown in the following table is used for retrieval request:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
PatientRootQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.1.2	Case 2*	SCU	No
StudyRootQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.2.2	Case 2*	SCU	No
PatientStudyOnlyQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.3.2	Case 2*	SCU	No

*Note: Case 2 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.6. Presentation contexts to move instances

3.3.4. Real World Activity: Request to Transfer Images (copy images, auto-route images)

3.3.4.1 Associated Real World Activity

The IQPACS WebConnect initiates C-STORE requests when selecting instances from the local database and copying them to an external Storage SCP AE. The Storage SCU invokes a C-STORE DIMSE Service with every instance to be sent. If a successful C-STORE response is received for the C-STORE request initiated by the Storage SCU this means that the instance has been stored and a new C-STORE-RQ can be initiated for the next instance. If a failed C-STORE response is received, this won't imply any further action from the Storage SCU as long as the Storage service class does not guarantee that the data will be stored. After a failed C-STORE response for one instance the Storage SCU will proceed with a new C-STORE-RQ for the next instance.

IQPACS WebConnect can also initiate an association to transfer images as a result of a C-MOVE request.

3.3.4.2 Presentation Contexts

The presentation context shown in the following table is used for transfer request:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
AmbulatoryECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.3	Case 1*	SCU	No
BasicTextSR	1.2.840.10008.5.1.4.1.1.88.11	Case 1*	SCU	No
BasicVoiceAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.1	Case 1*	SCU	No
CardiacElectrophysiologyWaveformStorage	1.2.840.10008.5.1.4.1.1.9.3.1	Case 1*	SCU	No
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	Case 1*	SCU	No
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	Case 2*	SCU	No
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	Case 2*	SCU	No
DigitalIntraoralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	Case 2*	SCU	No
DigitalIntraoralXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1	Case 2*	SCU	No
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	Case 2*	SCU	No
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	Case 2*	SCU	No
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	Case 2*	SCU	No
DigitalXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1	Case 2*	SCU	No
EnhancedMRIImageStorage	1.2.840.10008.5.1.4.1.1.4.1	Case 2*	SCU	No
EnhancedSR	1.2.840.10008.5.1.4.1.1.88.22	Case 1*	SCU	No
GeneralECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.2	Case 1*	SCU	No
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1	Case 1*	SCU	No
HemodynamicWaveformStorage	1.2.840.10008.5.1.4.1.1.9.2.1	Case 1*	SCU	No
KeyObjectSelectionDocument	1.2.840.10008.5.1.4.1.1.88.59	Case 1*	SCU	No
MammographyCADSR	1.2.840.10008.5.1.4.1.1.88.50	Case 1*	SCU	No
MRIImageStorage	1.2.840.10008.5.1.4.1.1.4	Case 2*	SCU	No
MRSpectroscopyStorage	1.2.840.10008.5.1.4.1.1.4.2	Case 2*	SCU	No
MultiframeColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	Case 2*	SCU	No
MultiframeGrayscaleByteSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.2	Case 2*	SCU	No
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	Case 2*	SCU	No
MultiframeSingleBitSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.1	Case 2*	SCU	No
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	Case 2*	SCU	No

NuclearMedicineImageStorageRetired	1.2.840.10008.5.1.4.1.1.5	Case 2*	SCU	No
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	Case 2*	SCU	No
RawDataStorage	1.2.840.10008.5.1.4.1.1.66	Case 1*	SCU	No
RTBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4	Case 1*	SCU	No
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6	Case 1*	SCU	No
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2	Case 1*	SCU	No
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1	Case 2*	SCU	No
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	Case 1*	SCU	No
RTStructureSetStorage	1.2.840.10008.5.1.4.1.1.481.3	Case 1*	SCU	No
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7	Case 1*	SCU	No
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	Case 2*	SCU	No
StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9	Case 1*	SCU	No
StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10	Case 1*	SCU	No
StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8	Case 2*	SCU	No
StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129	Case 1*	SCU	No
StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11	Case 1*	SCU	No
TwelveLeadECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.1	Case 1*	SCU	No
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	Case 2*	SCU	No
UltrasoundImageStorageRetired	1.2.840.10008.5.1.4.1.1.6	Case 2*	SCU	No
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	Case 2*	SCU	No
UltrasoundMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.3	Case 2*	SCU	No
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	Case 2*	SCU	No
VLImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.1	Case 2*	SCU	No
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	Case 2*	SCU	No
VMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.2	Case 2*	SCU	No
VLPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4	Case 2*	SCU	No
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3	Case 2*	SCU	No
XRayAngiographicBiPlaneImageStorageRetired	1.2.840.10008.5.1.4.1.1.12.3	Case 2*	SCU	No
XrayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	Case 2*	SCU	No
XrayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	Case 2*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

*Note: Case 2 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.7. Presentation contexts to transfer instances

3.3.5. Real world activity: Receive notifications – patient/study

3.3.5.1. Associated Real World Activity

IQPACS WebConnect is able to receive an unsolicited notification of a change in the Detached Patient Management SOP Instance or Detached Study Management SOP Instance, using the N-EVENT-REPORT service.

3.3.5.2. Presentation Contexts

The presentation context used for receiving notifications is presented in the following table:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1	Case 1*	SCU	No
DetachedStudyManagement	1.2.840.10008.3.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.8. Presentation contexts to receive notifications

The attributes that the IQPACS WebConnect will be able to interpret as a SCU are shown in the following tables:

Specific Character Set	(0008,0005)
Instance Creation Date	(0008,0012)
Instance Creation Time	(0008,0013)
Instance Creator UID	(0008,0014)
Patient Name	(0010,0010)
Patient ID	(0010,0020)
Issuer Of Patient ID	(0010,0021)
Other Patient IDs	(0010,1000)
Other Patient Names	(0010,1001)
Patient Birth Name	(0010,1005)
Mother Birth Name	(0010,1060)
Medical Record Locator	(0010,1090)
Occupation	(0010,2180)
Birth Date	(0010,0030)
Birth Time	(0010,0032)
Sex	(0010,0040)
Patient Size	(0010,1020)
Patient Weight	(0010,1030)
Address	(0010,1040)
Military Rank	(0010,1080)
Branch Of Service	(0010,1081)
Country Residence	(0010,2150)
Region Residence	(0010,2152)
Telephone Numbers	(0010,2154)
Ethnic Group	(0010,2160)
Religious Preference	(0010,21F0)
Comments	(0010,4000)

Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Smoking Status	(0010,21A0)
Patient History	(0010,21B0)
Pregnancy Status	(0010,21C0)
Last Menstrual Date	(0010,21D0)
Special Needs	(0038,0050)
Patient State	(0038,0500)

Table 3.9. Patient notification event information

Study Instance UID	(0020,000D)
Accession Number	(0008,0050)
Study ID	(0020,0010)
Study ID Issuer	(0032,0012)
Other Study Numbers	(0020,1070)
Study Status ID	(0032,000A)
Study Priority ID	(0032,000C)
Study Comments	(0032,4000)
Scheduled Start Date	(0032,1000)
Scheduled Start Time	(0032,1001)
Scheduled Stop Date	(0032,1010)
Scheduled Stop Time	(0032,1011)
Scheduled Location	(0032,1020)
Scheduled Location AETitle	(0032,1021)
Reason For Study	(0032,1030)
Requesting Physician	(0032,1032)
Requesting Service	(0032,1033)
Requested Procedure Description	(0032,1060)
Requested Contrast Agent	(0032,1070)
Study Arrival Date	(0032,1040)
Study Arrival Time	(0032,1041)
Study Date	(0008,0020)
Study Time	(0008,0030)
Study Completion Date	(0032,1050)
Study Completion Time	(0032,1051)
Study Verified Date	(0032,0032)
Study Verified Time	(0032,0033)
Modalities In Study	(0008,0061)
Series In Study	(0020,1000)
Acquisitions In Study	(0020,1004)
Name Physician Reading	(0008,1060)
Study Read Date	(0032,0034)
Study Read Time	(0032,0035)
Referenced Visit Sequence	(0008,1125)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Patient Sequence	(0008,1120)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Results Sequence	(0008,1100)
Referenced Performed Procedure Step	(0008,1111)

Sequence	
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Requested Procedure Code Sequence	(0032,1064)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Coding Scheme Version	(0008,0103)
>Code Meaning	(0008,0104)
Instance Creation Time	(0008,0013)
Instance Creator UID	(0008,0014)
Specific Character Set	(0008,0005)

Table 3.10. Study notification event information

3.3.6. Real world activity: Obtain information – patient/study

3.3.6.1. Associated Real World Activity

The IQPACS WebConnect can be configured so that when receiving a new patient/study to get information from the RIS, using N-GET Detached Patient Management or N-GET Detached Study Management service.

3.3.6.2. Presentation Contexts

The presentation context used for getting patient or study related information is presented in the following table:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1	Case 1*	SCU	No
DetachedStudyManagement	1.2.840.10008.3.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.11. Presentation contexts to obtain information

The attributes that the IQPACS WebConnect will be able to interpret as a SCU are shown in the following tables:

Specific Character Set	(0008,0005)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Visit Sequence	(0008,1125)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Patient's Name	(0010,0010)
Patient ID	(0010,0020)
Patient's Birth Date	(0010,0030)
Patient's Birth Time	(0010,0032)
Patient's Sex	(0010,0040)
Issuer Of Patient ID	(0010,0021)

Other Patient IDs	(0010,1000)
Other Patient Names	(0010,1001)
Birth Name	(0010,1005)
Mother Birth Name	(0010,1060)
Medical Record Locator	(0010,1090)
Occupation	(0010,2180)
Patient Size	(0010,1020)
Patient Weight	(0010,1030)
Address	(0010,1040)
Military Rank	(0010,1080)
Branch Of Service	(0010,1081)
Country Residence	(0010,2150)
Region Residence	(0010,2152)
Telephone Numbers	(0010,2154)
Ethnic Group	(0010,2160)
Religious Preference	(0010,21F0)
Comments	(0010,4000)
Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Smoking Status	(0010,21A0)
Patient History	(0010,21B0)
Pregnancy Status	(0010,21C0)
Last Menstrual Date	(0010,21D0)
Special Needs	(0038,0050)
Patient State	(0038,0500)

Table 3.12. Detached Management SOP Class N-GET Attributes – patient

Study Instance UID	(0020,000D)
Accession Number	(0008,0050)
Study ID	(0020,0010)
Study ID Issuer	(0032,0012)
Other Study Numbers	(0020,1070)
Study Status ID	(0032,000A)
Study Priority ID	(0032,000C)
Study Comments	(0032,4000)
Scheduled Start Date	(0032,1000)
Scheduled Start Time	(0032,1001)
Scheduled Stop Date	(0032,1010)
Scheduled Stop Time	(0032,1011)
Scheduled Location	(0032,1020)
Scheduled Location ATitle	(0032,1021)
Reason For Study	(0032,1030)
Requesting Physician	(0032,1032)
Requesting Service	(0032,1033)
Requested Procedure Description	(0032,1060)
Requested Contrast Agent	(0032,1070)
Study Arrival Date	(0032,1040)
Study Arrival Time	(0032,1041)
Study Date	(0008,0020)
Study Time	(0008,0030)
Study Completion Date	(0032,1050)
Study Completion Time	(0032,1051)

Study Verified Date	(0032,0032)
Study Verified Time	(0032,0033)
Modalities In Study	(0008,0061)
Series In Study	(0020,1000)
Acquisitions In Study	(0020,1004)
Name Physician Reading	(0008,1060)
Study Read Date	(0032,0034)
Study Read Time	(0032,0035)
Referenced Visit Sequence	(0008,1125)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Patient Sequence	(0008,1120)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Results Sequence	(0008,1100)
Referenced Performed Procedure Step Sequence	(0008,1111)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Requested Procedure Code Sequence	(0032,1064)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Coding Scheme Version	(0008,0103)
>Code Meaning	(0008,0104)
Instance Creation Time	(0008,0013)
Instance Creator UID	(0008,0014)
Specific Character Set	(0008,0005)

Table 3.13. Detached Management SOP Class N-GET Attributes - study

3.4. Association Acceptance Policy

The associations that can be accepted by the IQPACS WebConnect can be established at the configuration level. The IQPACS WebConnect is able to accept associations in the following situations:

- For storing instances received from modalities or other DICOM nodes (C-STORE)
- Interrogation (C-FIND)
- Request to move instances (C-MOVE)
- Provide detached patient/study information/notification

At the configuration level, the system administrator can deny these services, if this is considered to be necessary.

3.4.1. Real World Activity: Respond to Verification Request

3.4.1.1 Associated Real World Activity

When IQPACS WebConnect receives a request to verify a current DICOM association (C-ECHO-RQ), it responds with the C-ECHO-RSP primitive.

3.4.1.2 Presentation Contexts

The presentation context used for verification is presented in the following table:

Abstract Syntax		Transfer Syntax		Role	Extended negotiation
Name	UID	Name	UID		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	No

Table 3.14. Presentation contexts to verification request

3.4.2. Real World Activity: Respond to Query Database Request

3.4.2.1 Associated Real World Activity

When queried by an external application entity, the IQPACS WebConnect is able to perform matching for the attributes in the table below, contained in the Identifier of a C-FIND request.

The level of the query	Optional Key	Comments	Tag
Patient level	PatientBirthDate		(0010,0030)
	PatientBirthTime		(0010,0032)
	PatientSex		(0010,0040)
	IssuerOfPatientID		(0010,0021)
	OtherPatientIDs		(0010,1000)
	OtherPatientNames		(0010,1001)
	PatientBirthName		(0010,1005)
	PatientMotherBirthName		(0010,1060)
	MedicalRecordLocator		(0010,1090)
	Occupation		(0010,2180)
	ConfidentialityPatientData		(0040,3001)
	PatientSize		(0010,1020)
	PatientWeight		(0010,1030)
	PatientAddress		(0010,1040)
	MilitaryRank		(0010,1080)
	BranchOfService		(0010,1081)
	CountryOfResidence		(0010,2150)
	PatientPhoneNumbers		(0010,2154)
	EthnicGroup		(0010,2160)
	PatientReligiousPreference		(0010,21F0)
	PatientComments		(0010,4000)
	MedicalAlerts		(0010,2000)
	ContrastAllergies		(0010,2110)
	SmokingStatus		(0010,21A0)
	AdditionalPatientHistory		(0010,21B0)
	PregnancyStatus		(0010,21C0)
	LastMenstrualDate		(0010,21D0)
	SpecialNeeds		(0038,0050)
	PatientState		(0038,0500)
	InstanceCreationDate		(0008,0012)

	InstanceCreationTime		(0008,0013)
Study level	StudyDescription		(0008,1030)
	ModalitiesInStudy		(0008,0061)
	StudyStatusID		(0032,000A)
	StudyPriorityID		(0032,000C)
	StudyComments		(0032,4000)
	StudyArrivalDate		(0032,1040)
	StudyArrivalTime		(0032,1041)
	StudyCompletionDate		(0032,1050)
	StudyCompletionTime		(0032,1051)
	StudyVerifiedDate		(0032,0032)
	StudyVerifiedTime		(0032,0033)
	SeriesInStudy		(0020,1000)
	AcquisitionsInStudy		(0020,1001)
	StudyIDIssuer		(0032,0012)
	OtherStudyNumbers		(0020,1070)
	NameOfPhysicianReadingStudy		(0008,1060)
	StudyReadDate		(0032,0034)
	StudyReadTime		(0032,0035)
	ScheduledStudyStartDate		(0032,1000)
	ScheduledStudyStartTime		(0032,1001)
	ScheduledStudyStopDate		(0032,1010)
	ScheduledStudyStopTime		(0032,1011)
	ScheduledStudyLocation		(0032,1020)
	ScheduledStudyLocationAET		(0032,1021)
	ReasonforStudy		(0032,1030)
	RequestingPhysician		(0032,1032)
	RequestingService		(0032,1033)
	RequestedProcedureDescription		(0032,1060)
	RequestedContrastAgent		(0032,1070)
	InterpretationAuthor		(4008,010C)
	InterpretationDiagnosesCode		(4008,0117)
	InterpretationStatusID		(4008,0212)
	ObservationDateTime	match only	(0040,A032)
ConceptNameCodeSq	match only	(0040,A043)	
Series level	SeriesDate		(0008,0021)
	SeriesTime		(0008,0031)
	SeriesDescription		(0008,103E)
	Laterality		(0020,0060)
	BodyPartExamined		(0018,0015)
	PatientPosition		(0018,5100)
	PPSStartDate		(0040,0244)
	PPSStartTime		(0040,0245)
	Manufacturer		(0008,0070)
	StationName		(0008,1010)
	ManufacturerModelName		(0008,1090)
	PerformingPhysicianName		(0008,1050)
	OperatorName		(0008,1070)
	SeriesCommentsRetired		
Image (Instance) level	PatientOrientation		(0020,0020)
	ImageType		(0008,0008)
	AcquisitionNumber		(0020,0012)
	AcquisitionDate		(0008,0022)

AcquisitionTime		(0008,0032)
OverlayNumber		(0020,0022)
CurveNumber		(0020,0024)
LUTNumber		(0020,0026)
ContentDate		(0008,0023)
ContentTime		(0008,0033)
Rows		(0028,0010)
Columns		(0028,0011)
BitsAllocated		(0028,0100)
NumberOfFrames		(0028,0008)
PresentationLabel		(0070,0080)
PresentationDescription		(0070,0081)
PresentationCreationDate		(0070,0082)
PresentationCreationTime		(0070,0083)
PresentationCreatorName		(0070,0084)
CompletionFlag		(0040,A491)
CompletionFlagDescription		(0040,A492)
VerificationFlag		(0040,A493)
ObservationDateTime		(0040,A032)
ConceptNameCodeSq	match only	(0040,A043)

Table 3.15. Optional Keys supported

Note: “Match only” means that the specified attribute will not be returned in a C-FIND response, only the matching will be verified for that attribute.

3.4.2.2. Presentation Context

The presentation context shown in the following table is used when IQPACS WebConnect is queried by an external DICOM node:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
PatientRootQueryRetrieveInformationMode IFIND	1.2.840.10008.5.1.4.1.2.1.1	Case 1*	SCU	No
StudyRootQueryRetrieveInformationModel FIND	1.2.840.10008.5.1.4.1.2.2.1	Case 1*	SCU	No
PatientStudyOnlyQueryRetrieveInformation ModelIFIND	1.2.840.10008.5.1.4.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.16. Presentation contexts to query database request

The following table lists the C-FIND status values, with their meaning, that may be returned by the IQPACS WebConnect.

Service Status	Status Code	Meaning
Unable To Process	C000	The C-FIND query identifier is valid for the specified SOP Class but cannot be used to query the database
Success	0000	Matching is complete

Pending	FF00	Matches are continuing
---------	------	------------------------

Table 3.17. C-FIND response values

The IQPACS WebConnect ignores the Priority attribute in the C-FIND-RQ messages.

3.4.2.3. SOP Specific Conformance

The Optional Keys are returned only if they are specified in the request. The “match” is performed for every optional key supported.

IQPACS WebConnect doesn’t support case-insensitive matching for PN VR attributes.

3.4.3. Real World activity: Move instances

3.4.3.1. Associated Real World Activity

The IQPACS WebConnect is able to move instances to a specified destination, when requested via a C-MOVE request.

3.4.3.2. Present Context

The presentation context shown in the following table is used when acting as a SCP for C-MOVE operations:

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
PatientRootQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.1.2	Case 2*	SCU	No
StudyRootQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.2.2	Case 2*	SCU	No
PatientStudyOnlyQueryRetrieveInformationModel MOVE	1.2.840.10008.5.1.4.1.2.3.2	Case 2*	SCU	No

*Note: Case 2 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.18. Presentation contexts to move instances

3.4.3.3. SOP Specific Conformance

When an external node initiates a C-MOVE request, the requested instances can be sent for storage with the transfer syntax the instances use, if it is in the list proposed by the requesting node. If not, the instance can be transformed in the transfer syntax requested by the external application entity.

Service Status	Status Code	Meaning
MoveDestinationUnknown	A801	Not included in the trusted nodes list
UnableToCalculateNumberOfMatches	A701	
UnableToProcess	C000	
unableToPerformSubOperation	A702	
IdentifierDoesNotMatchSOPClass	A900	The C-FIND query identifier contains invalid Elements or values, or is missing mandatory Elements or values for the

		specified SOP Class
Success	0000	Matching is complete
Pending	FF00	Matches are continuing

Table 3.19. C-MOVE response values

The IQPACS WebConnect ignores the Priority attribute in the C-MOVE-RQ messages.

3.4.4. Real World Activity: Store Images

3.4.4.1 Associated Real World Activity

The IQPACS WebConnect is responsible with storing the instances. The IQPACS WebConnect will issue a failed response if it is unable to store the instance. The incorrect formatted data will not be taken into account and will not be stored.

3.4.4.2 Presentation Contexts

The presentation contexts shown in the following tables are acceptable for the IQPCAS WebConnect to store the corresponding images.

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
AmbulatoryECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.3	Case 1*	SCU	No
BasicTextSR	1.2.840.10008.5.1.4.1.1.88.11	Case 1*	SCU	No
BasicVoiceAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.1	Case 1*	SCU	No
CardiacElectrophysiologyWaveformStorage	1.2.840.10008.5.1.4.1.1.9.3.1	Case 1*	SCU	No
ComprehensiveSR	1.2.840.10008.5.1.4.1.1.88.33	Case 1*	SCU	No
ComputedRadiographyImageStorage	1.2.840.10008.5.1.4.1.1.1	Case 2*	SCU	No
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	Case 2*	SCU	No
DigitalIntraoralXRImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	Case 2*	SCU	No
DigitalIntraoralXRImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1	Case 2*	SCU	No
DigitalMammographyXRImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	Case 2*	SCU	No
DigitalMammographyXRImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	Case 2*	SCU	No
DigitalXRImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	Case 2*	SCU	No
DigitalXRImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1	Case 2*	SCU	No
EnhancedMRIImageStorage	1.2.840.10008.5.1.4.1.1.4.1	Case 2*	SCU	No
EnhancedSR	1.2.840.10008.5.1.4.1.1.88.22	Case 1*	SCU	No
GeneralECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.2	Case 1*	SCU	No
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1	Case 1*	SCU	No

HemodynamicWaveformStorage	1.2.840.10008.5.1.4.1.1.9.2.1	Case 1*	SCU	No
KeyObjectSelectionDocument	1.2.840.10008.5.1.4.1.1.88.59	Case 1*	SCU	No
MammographyCADSR	1.2.840.10008.5.1.4.1.1.88.50	Case 1*	SCU	No
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	Case 2*	SCU	No
MRSpectroscopyStorage	1.2.840.10008.5.1.4.1.1.4.2	Case 2*	SCU	No
MultiframeColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	Case 2*	SCU	No
MultiframeGrayscaleByteSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.2	Case 2*	SCU	No
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	Case 2*	SCU	No
MultiframeSingleBitSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.1	Case 2*	SCU	No
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	Case 2*	SCU	No
NuclearMedicineImageStorageRetired	1.2.840.10008.5.1.4.1.1.5	Case 2*	SCU	No
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	Case 2*	SCU	No
RawDataStorage	1.2.840.10008.5.1.4.1.1.66	Case 1*	SCU	No
RTBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4	Case 1*	SCU	No
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6	Case 1*	SCU	No
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2	Case 1*	SCU	No
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1	Case 2*	SCU	No
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	Case 1*	SCU	No
RTStructureSetStorage	1.2.840.10008.5.1.4.1.1.481.3	Case 1*	SCU	No
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7	Case 1*	SCU	No
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	Case 2*	SCU	No
StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9	Case 1*	SCU	No
StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10	Case 1*	SCU	No
StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8	Case 2*	SCU	No
StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129	Case 1*	SCU	No
StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11	Case 1*	SCU	No
TwelveLeadECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.1	Case 1*	SCU	No
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	Case 2*	SCU	No
UltrasoundImageStorageRetired	1.2.840.10008.5.1.4.1.1.6	Case 2*	SCU	No
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	Case 2*	SCU	No
UltrasoundMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.3	Case 2*	SCU	No
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	Case 2*	SCU	No
VLImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.1	Case 2*	SCU	No
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	Case 2*	SCU	No
VLMultiframeImageStorageRetired	1.2.840.10008.5.1.4.1.1.77.2	Case 2*	SCU	No

VLPPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4	Case 2*	SCU	No
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3	Case 2*	SCU	No
XRayAngiographicBiPlaneImageStorageRetired	1.2.840.10008.5.1.4.1.1.12.3	Case 2*	SCU	No
XrayAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	Case 2*	SCU	No
XrayRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	Case 2*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

*Note: Case 2 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.20. Presentation contexts to store instances

3.4.4.3. SOP Specific Conformance

The application can also generate a new patient ID when storing images locally when one of the following situations occur:

- If the PatientID for the received images is missing it is automatically generated.
- If the series/study containing the instance is already attached to an existing patient, the patientID will be copied from the existing patient. This is also applicable to the StudyInstanceUID, SeriesInstanceUID, SOPInstanceUID attributes.
- If, at the configuration level, the user chooses to generate a new PatientID for any image received.

For every C-STORE-RQ received, a successful or failed C-STORE response will be send. The Storage SCP always saves the successfully received SOP Instances, so that they will be stored locally. The C-STORE STATUS codes are presented in the following table:

DataSetDoesNotMatchSOPClassError	<ul style="list-style-type: none"> • if one of the following UIDs is missing: <ul style="list-style-type: none"> - StudyInstanceUID, - SeriesInstanceUID, - SOPInstanceUID, - SOPClassUID, • if the SOPClassUID or SOPInstanceUID from Command differs from the one in the Dataset
StorageOutOfResources	if there is no space available for storing in the on-line archive
CannotUnderstand	if a parsing error occurred
ProcessingFailure	when errors occurred when saving the information in the database
CoercionOfDataElements	depending on configurations done, the IQPACS WebConnect generates this message if some attributes were modified
Success	successful storing
SOPClassNotSupported	If the service is inactive

Table 3.21. C-STORE STATUS codes

3.4.5. Real World Activity: Provide patient/study related information

3.4.5.1 Associated Real World Activity

IQPACS WebConnect is able to provide patient or study related information to other DICOM nodes using N-GET Detached Patient Management or N-GET Detached Study Management service.

3.4.5.2 Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1	Case 1*	SCU	No
DetachedStudyManagement	1.2.840.10008.3.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.22. Presentation contexts to provide patient/study information

The attributes that the IQPACS WebConnect will be able to interpret as a SCP are shown in the following tables:

Specific Character Set
Referenced Study Sequence
>Referenced SOP Class UID)
>Referenced SOP Instance UID
Referenced Visit Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Patient's Name
Patient ID
Patient's Birth Date
Patient's Birth Time
Patient's Sex
Referenced Patient Alias
SOP Instance UIDs
Issuer Of Patient ID
Other Patient IDs
Other Patient Names
Birth Name
Mother Birth Name
Medical Record Locator
Occupation
Patient Size
Patient Weight
Address
Military Rank
Branch Of Service
Country Residence
Region Residence
Telephone Numbers
Ethnic Group

Religious Preference
Comments
Medical Alerts
Contrast Allergies
Smoking Status
Patient History
Pregnancy Status
Last Menstrual Date
Special Needs
Patient State

Table 3.23. Detached Management SOP Class N-GET Attributes – patient

Specific Character Set
Referenced Study Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Referenced Visit Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Patient's Name
Patient ID
Patient's Birth Date
Patient's Sex
Referenced Patient Alias
SOP Instance UIDs
Accession Number
Study ID Issuer
Other Study Numbers
Study Status ID
Study Priority ID
Study Comments
Scheduled Start Date
Scheduled Start Time
Scheduled Stop Date
Scheduled Stop Time
Scheduled Location
Scheduled Location AETitle
Reason For Study
Requesting Physician
Requesting Service
Requested Procedure Description
Requested Contrast Agent
Study Arrival Date
Study Arrival Time
Study Date
Study Time
Study Completion Date
Study Completion Time
Study Verified Date
Study Verified Time
Modalities In Study
Series In Study

Acquisitions In Study
Name Physician Reading
Study Read Date
Study Read Time

Table 3.24. Detached Management SOP Class N-GET Attributes – study

3.4.6. Real World Activity: Accept notifications about patient/study related information

3.4.6.1 Associated Real World Activity

IQPACS WebConnect is able to modify patient or study related information when receiving notifications invoked by a SCP through the use of the DIMSE N-EVENT-REPORT Service used in conjunction with the appropriate Detached Patient Management SOP Instance or detached Study Management SOP Instance.

3.4.6.2 Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
DetachedPatientManagement	1.2.840.10008.3.1.2.1.1	Case 1*	SCU	No
DetachedStudyManagement	1.2.840.10008.3.1.2.3.1	Case 1*	SCU	No

*Note: Case 1 – The transfer syntaxes supported are listed in **table 3.31**

Table 3.25. Presentation contexts to accept notifications

The attributes that the IQPACS WebConnect will be able to interpret as a SCU are shown in the following tables:

Specific Character Set
Instance Creation Date
Instance Creation Time
Instance Creator UID
Patient Name
Patient ID
Issuer Of Patient ID
Other Patient IDs
Other Patient Names
Birth Name
Mother Birth Name
Medical Record Locator
Occupation
Birth Date
Birth Time
Sex
Patient Size

Patient Weight
Address
Military Rank
Branch Of Service
Country Residence
Region Residence
Telephone Numbers
Ethnic Group
Religious Preference
Comments
Medical Alerts
Contrast Allergies
Smoking Status
Patient History
Pregnancy Status
Last Menstrual Date
Special Needs
Patient State

Table 3.26. Patient notification event information

Study Instance UID
Accession Number
Study ID
Study ID Issuer
Other Study Numbers
Study Status ID
Study Priority ID
Study Comments
Scheduled Start Date
Scheduled Start Time
Scheduled Stop Date
Scheduled Stop Time
Scheduled Location
Scheduled Location AETitle
Reason For Study
Requesting Physician
Requesting Service
Requested Procedure Description
Requested Contrast Agent
Study Arrival Date
Study Arrival Time
Study Date
Study Time
Study Completion Date
Study Completion Time
Study Verified Date
Study Verified Time
Modalities In Study
Series In Study
Acquisitions In Study

Name Physician Reading
Study Read Date
Study Read Time
Referenced Visit Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Referenced Patient Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Referenced Results Sequence
Referenced Performed Procedure Step Sequence
>Referenced SOP Class UID
>Referenced SOP Instance UID
Requested Procedure Code Sequence
>Code Value
>Coding Scheme Designator
>Coding Scheme Version
>Code Meaning
Instance Creation Time
Instance Creator UID
Specific Character Set

Table 3.27. Study notification event information

3.4.7. Real World Activity: Verify if it has all the images that currently make the Study and return this information to the SCU

3.4.7.1 Associated Real World Activity

The IQPACS WebConnect is able to receive the Study Content Notification through the use of the DIMSE C-STORE.

3.4.7.2. Presentation Context

Abstract Syntax		Transfer Syntax	Role	Extended negotiation
Name	UID			
Basic Study Content Notification	1.2.840.10008.1.9	Case 1*	SCP	No

Table 3.28. Presentation contexts to verify the study content

3.4.7.3. SCP Conformance Requirements

The IQPACS WebConnect verifies all the instances a SCU announces and constructs a response depending on this criterion.

RESPONSE STATUSES	Service Status Further Meaning Response	Status Codes
Success	Complete Study Content	0000

	exists on system supporting SCP	
	Partial Study Content exists on system supporting SCP	0001
	None of the Study Content exists on system supporting SCP	0002
	It is unknown whether or not study content exists on system supporting SCP	0003
Failure	Failed operation	Cxxx

Table 3.29. Response statuses

The information, which is interpreted by the IQPACS WebConnect, is presented in the table below:

Patient's Name	(0010,0010)
Patient ID	(0010,0020)
Study ID	(0020,0010)
Study Instance UID	(0020,000D)
Referenced Series Sequence	(0008,1115)
>Series Instance UID	(0020,000E)
>Retrieve AE Title	(0008,0054)
>Modality	(0008,0060)
>Referenced Image Sequence	(0008,1140)
>>Referenced SOP Class UID	(0008,1150)
>>Reference SOP Instance UID	(0008,1155)
>>Retrieve AE	(0008,0054)

Table 3.30. Basic Study Content Notification attributes

3.5 Transfer Syntax Selection Policies

When initiating an association the transfer syntaxes supported are depicted in the table below:

	Transfer Syntax	
	Name	UID
Case 1 (TS supported)	Implicit VR Little Endian	1.2.840.10008.1.2
	Explicit VR Little Endian	1.2.840.10008.1.2.1
	Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99
	Explicit VR Big Endian	1.2.840.10008.1.2.2
Case 2 (TS supported)	Implicit VR Little Endian	1.2.840.10008.1.2
	Explicit VR Little Endian	1.2.840.10008.1.2.1
	Deflated Explicit VR Little Endian	1.2.840.10008.1.2.1.99
	Explicit VR Big Endian	1.2.840.10008.1.2.2
	JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50
	JPEG Extended (Process 2 &	1.2.840.10008.1.2.4.51

	4)	
	JPEG Lossless Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
	JPEG Lossless Non-Hierarchical, First Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
	JPEG 2000 Lossless Image Compression	1.2.840.10008.1.2.4.90
	JPEG 2000 Lossy Image Compression	1.2.840.10008.1.2.4.91
	RLE Lossless	1.2.840.10008.1.2.5

Table 3.31. Supported transfer syntaxes

4. COMMUNICATION PROFILES

4.1. Supported Communications Stacks (parts 8, 9)

The IQPACS WebConnect provides DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard.

4.2. TCP/IP Stack

The IQPACS WebConnect inherits its TCP/IP stack from the operating system.

4.2.1. Physical Media Support

IQPACS WebConnect is indifferent to the physical media over which TCP/IP operates. It inherits the medium from the operating system upon which it executes. The WebConnect platform has been quality assurance tested to work with 10 and 100 Base-T Ethernet media. Therefore, the use of these media is recommended as the primary point of delivering the network traffic to the server platform.

5. EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

Not applicable.

6. CONFIGURATION

6.1. AE Title/Presentation Address Mapping

The AE Title and port for the IQPACS WebConnect is defined at the configuration level. The default TCP port for the IQPACS WebConnect is 1100.

In order for communication to be established with other DICOM application entities, the AE Title, port and IP address (or host name) must be defined for each application. These applications are therefore named DICOM nodes and can be image servers, diagnosis workstations, or any other DICOM compliant application. This information is configurable and can be modified at any time.

6.2. Configurable Parameters

Parameter	Configurable (Yes/No)	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	Yes	5000 msec
General DIMSE level time-out values	Yes	60000 msec – incoming 60001 msec – outgoing
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	Yes	5000
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	Yes	5000
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	-
Close delay	Yes	500 msec
AE Specific Parameters		
Maximum PDU size the AE can receive	Yes	16352 bytes
Maximum PDU size the AE can send	Yes	16352 bytes
AE specific DIMSE level time-out values	Yes	
Number of simultaneous Associations by Service and/or SOP Class	Yes	unlimited

Table 6.1. Configuration parameters table

RIS node address is configurable.

The automatic policies for deleting the studies from the temporary or archive storage are configurable. The studies will be deleted after a percentage of used space is reached. The number of studies that will be deleted when this space is reached is also configurable.

7. SUPPORT OF EXTENDED CHARACTER SETS

The IQPACS WebConnect also supports

ISO-IR 100 Latin-1,
ISO-IR 101 Latin-2,
ISO-IR 109 Latin-3,
ISO-IR 110 Latin-4,
ISO-IR 144 Cyrillic,
ISO-IR 127 Arabic,
ISO-IR 126 Greek,
ISO-IR 138 Hebrew,
ISO-IR 148 Latin-5 (Turkish),
EUC-JP Japanese,
TIS-620 Thai

8. CODES AND CONTROLLED TERMINOLOGY

Not applicable