



GE Medical Systems

Technical Publications

**Direction 2016498-200
Revision 0.2**

**GE PACS Broker v2.0 (Modality Worklist Interfaces)
DICOM CONFORMANCE STATEMENT**

**GE Medical Systems
Information Technologies**

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Revision History

Revision	Date	Author	Description of changes
0.1	June 8, 2004	S. Perich	Creation of this document, based off of Mitra DICOM Conformance Statement for GE PACS Broker 2.0 Revision 1.1.
0.2	June 16, 2004	S. Perich	Corrected spelling errors. Changed document number from 2016509-209 to 2016498-200.

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OVERVIEW

This DICOM Conformance Statement is divided into two sections as described below:

- **Section 1 (Introduction)**, which describes the overall structure, intent, and references for this Conformance Statement.
- **Section 2 (OEM Conformance Statement)**, is an attachment of the original OEM DICOM Conformance Statement.

SECTION 1

INTRODUCTION

This document specifies the DICOM v3.0 implementation. It is entitled:

*GE PACS Broker v2.0 (Modality Worklist Interfaces)
DICOM Conformance Statement
Document # 2016498-200*

This DICOM Conformance Statement documents the DICOM v3.0 Conformance Statement and Technical Specification required to interoperate with the GE network interface. Introductory information, which is applicable to all GE Conformance Statements, is described in the document:

*Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0)
Conformance Statement
Direction: 2118780*

This document familiarizes the reader with DICOM terminology and general concepts. It should be read prior to reading the individual products DICOM Conformance Statements.

The OEM Conformance Statement, contained in this document, also specifies the Lower Layer communications which it supports (e.g., TCP/IP). However, the Technical Specifications are defined in the DICOM v3.0 Part 8 standard.

For more information regarding the DICOM Standard, copies of the Standard may be obtained on the Internet at <http://medical.nema.org>. Comments on the Standard may be addressed to:

DICOM Secretariat
NEMA
1300 North 17th Street, Suite 1847
Rosslyn, VA 22209 USA
Phone: +1.703.841.3200

INTENDED AUDIENCE

The reader of this document is concerned with software design and/or system integration issues. It is assumed that the reader of this document is familiar with the DICOM v3.0 Standard and with the terminology and concepts which are used in that Standard.

If readers are unfamiliar with DICOM v3.0 terminology they should first refer to the document listed below, then read the DICOM v3.0 Standard itself, prior to reading this DICOM Conformance Statement document.

*Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0)
Conformance Statement
Direction: 2118780*

SCOPE AND FIELD OF APPLICATION

It is the intent of this document, in conjunction with the *Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0) Conformance Statement, Direction: 2118780*, to provide an unambiguous specification for this OEM DICOM implementation. This specification, called a Conformance Statement, includes a DICOM v3.0 Conformance Statement and is necessary to ensure proper processing and interpretation of GE medical data exchanged using DICOM v3.0. The GEMS Conformance Statements are available to the public.

The reader of this DICOM Conformance Statement should be aware that different GEMS devices are capable of using different Information Object Definitions. For example, a GEMS CT Scanner may send images using the CT Information Object, MR Information Object, Secondary Capture Object, etc.

Included in this DICOM Conformance Statement are the Module Definitions, which define all data elements, used by this GE implementation. If the user encounters unspecified private data elements while parsing a DICOM Data Set, the user is well advised to ignore those data elements (per the DICOM v3.0 standard). Unspecified private data element information is subject to change without notice. If, however, the device is acting as a "full fidelity storage device", it should retain and re-transmit all of the private data elements which are sent by these devices.

IMPORTANT REMARKS

The use of this DICOM Conformance Statement, in conjunction with the DICOM v3.0 Standards, is intended to facilitate communication with GE imaging equipment. However, **by itself, it is not sufficient to ensure that inter-operation will be successful.** The **user (or user's agent)** needs to proceed with caution and address at least four issues:

- **Integration** - The integration of any device into an overall system of interconnected devices goes beyond the scope of standards (DICOM), and of this introduction and associated DICOM Conformance Statements when interoperability with non-GE equipment is desired. The responsibility to analyze the applications requirements and to design a solution that integrates GEMS imaging equipment with non-GEMS systems is the **user's** responsibility and should not be underestimated. The **user** is strongly advised to ensure that such an integration analysis is correctly performed.
- **Validation** - Testing the complete range of possible interactions between any GE device and non-GE devices, before the connection is declared operational, should not be overlooked. Therefore, the **user** should ensure that any non-GEMS provider accepts full responsibility for all validation required for their connection with GE devices. This includes the accuracy of the image data once it has crossed the interface between the GEMS imaging equipment and the non-GEMS device and the stability of the image data for the intended applications.

Such a validation is required before any clinical use (diagnosis and/or treatment) is performed. It applies when images acquired on GE imaging equipment are processed/displayed on a non-GE device, as well as when images acquired on non-GE equipment is processed/displayed on a GE console or workstation.
- **Future Evolution** - GE understands that the DICOM Standard will evolve to meet the user's growing requirements. GE is actively involved in the development of the DICOM Standards. DICOM will incorporate new features and technologies and GE may follow the evolution of the Standard. The GE protocol is based on DICOM as specified in each DICOM Conformance Statement. Evolution of the Standard may require changes to devices which have implemented DICOM. **In addition, GE reserves the right to discontinue or make changes to the support of communications features, on its products, as described by these DICOM Conformance Statements.** The **user** should ensure that any non-GE provider, which connects with GE devices, also plans for the future evolution of the DICOM Standard. Failure to do so will likely result in the loss of function and/or connectivity as the DICOM Standard changes and GE Products are enhanced to support these changes.
- **Interaction** - It is the sole responsibility of the **non-GE provider** to ensure that communication with the interfaced equipment does not cause degradation of GE imaging equipment performance and/or function.

REFERENCES

A list of references which is applicable to all GEMS Conformance Statements is included in the document *Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0) Conformance Statement, Direction: 2118780.*

DEFINITIONS

A set of definitions which is applicable to all GEMS Conformance Statements is included in the document *Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0) Conformance Statement, Direction: 2118780.*

SYMBOLS, TERMS AND ABBREVIATIONS

A list of symbols, terms and abbreviations which is applicable to all GEMS Conformance Statements is included in the document *Introduction to the Integrated DICOM/Network v3.0 (ID/Net v3.0) Conformance Statement, Direction: 2118780.*

SECTION 2

ORIGINAL EQUIPMENT MANUFACTURERS (OEM) DICOM CONFORMANCE STATEMENT

The sections that follow are taken from the Original Equipment Manufacturer's DICOM Conformance Statement for this product.

Note: These sections are provided as reference and are subject to change without notice.

LIMITATIONS

- The GE PACS Broker is a general purpose product that provides a wide range of DICOM services, some of which are not needed nor supported in the GE PACS environment.
- The GE PACS Broker is used to integrate GE PACS with a number of Radiology Information Systems, not documented here, as well as to integrate modalities supporting the DICOM Modality Worklist SOP Class as an SCU. Therefore, the only DICOM service classes supported by the GE PACS environment through the use of the GE PACS Broker is Modality Worklist SOP Class as an SCP.
- The GE PACS Broker may also be used in a standalone configuration, when a GE PACS system is not present, to integrate modalities supporting DICOM Modality Worklist SCU with Radiology Information Systems (RIS) that do not offer native support for DICOM Modality Worklist SCP.
- The Extensions/Specialization provided by the GE PACS Broker includes six Private SOP Classes that are not defined by the DICOM Standard but a proprietary definition of the OEM. GE Medical Systems does not support these SOP Classes and does not encourage their use.

1. Introduction

1.1. Purpose of this Document

This document is a provisional DICOM Conformance Statement for the software product *Broker*. *Broker* is a service class provider for DIMSE-N services relating to access to Hospital Information Systems (HIS) and Radiology Information Systems (RIS). *Broker* is intended for use with a wide range of HIS/RIS technologies. Actual combinations for *Broker* plus HIS/RIS may be subject to restrictions not noted in this conformance statement. (For example, some combinations may support certain functions or attributes, and some may not.) Unless otherwise stated, all features conform to the DICOM V3.0 specification; all mandatory elements are supported.

Where the HIS/RIS functions as a service class provider of DIMSE-N services as described above, Broker can be configured to function as a service class user and/or service class provider of these services.

1.2. Sources for this Document

- ACN-NEMA Digital Imaging and Communications in Medicine (DICOM) v3.0, Final Text, 1996.
- Health Level Seven Version 2.1 (HL7 V2.1), 1991.

1.3. Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document.

- ACR American College of Radiology
- ANSI American National Standards Institute
- DICOM Digital Imaging and Communications in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element-Composite
- DIMSE-N DICOM Message Service Element-Normalized
- NEMA National Electrical Manufacturers Association
- PDU Protocol Data Unit
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier
- ISIS Information System - Imaging System interface

1.4. Typographical Conventions

This section is designed to assist the reader in understanding the terms and typographical conventions used in this document.

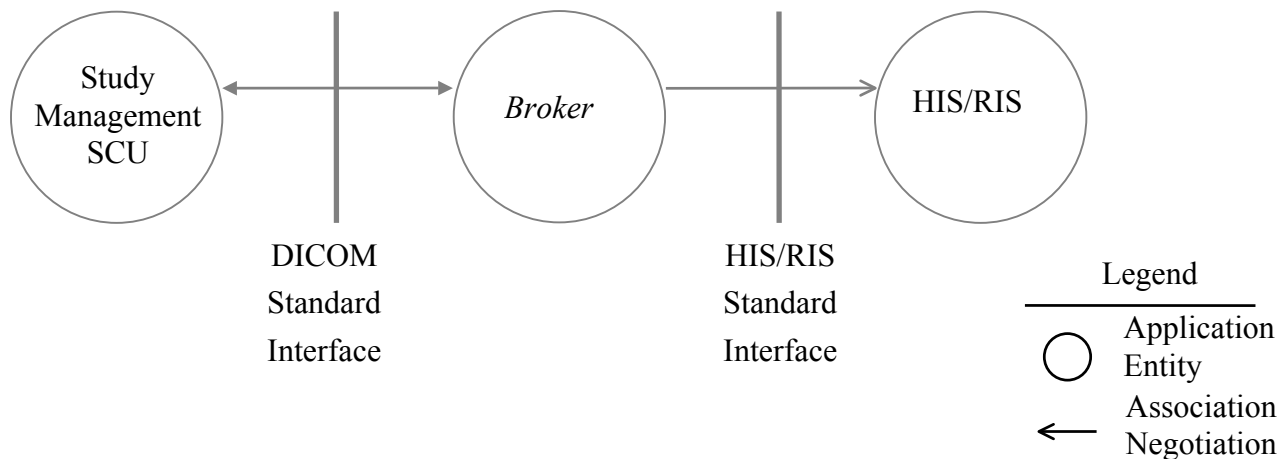
Formatting convention	Type of information
Bold type	DICOM SOP Class, or DIMSE Service
<i>Italic type</i>	Application Entity

2. Implementation Model

Broker includes the following components:

- There is a data repository that supports the ISIS model.
- There are one or more interfaces to devices in the hospital information system, including in most cases a RIS. Typically these interfaces will conform to a standard protocol such as HL7 or DICOM.
- *Broker* is a DICOM service class provider for the following service classes: Patient Management, Study Management, Results Management, and Basic Worklist Management. *Broker* both accepts DICOM requests and issues DICOM events.

2.1. Application Data Flow Diagram



2.1.1. N-EVENT-REPORTs

In most configurations, *Broker* will receive event notifications from the HIS/RIS. That information will be stored in the *Broker*'s data repository. Depending on how *Broker* is configured, *Broker* will also send matching DICOM events to specified devices in the PACS. The distribution pattern for each class of event, and the time at which events are issued, is all under the control of data tables that are configurable via the *Broker* GUI.

Where the HIS/RIS is a DICOM SCP, *Broker* can be configured to receive N-EVENT Reports as SCU.

2.1.2. N-GET Requests

As SCP, *Broker* responds to N-GET requests for patient, visit, study, study component, results and interpretation information. The information that is returned within the N-GET response comes from either *Broker*'s data repository or from secondary queries made to the HIS/RIS. Which method of information retrieval is dependent upon the capabilities of the HIS/RIS, and upon the configuration of *Broker*.

As SCU, *Broker* issues N-GET requests for patient, visit, study, results and interpretation information. *Broker* supplies the requested SOP instance UID on all N-Get requests, and will update its data repository accordingly with the response.

2.1.3. N-CREATE and N-SET Study Component

Broker treats N-CREATE and N-SET study component exactly the same.

Broker will accept requests to N-CREATE a study component. These study components will be stored within the *Broker* data repository as specified by the ISIS model.

Broker can be configured to issue HL7 Trigger Events to interested parties in the HIS when study components are created. (See *Broker* HL7 Conformance Statement.)

2.1.4. C-FIND Modality Worklist

Broker will accept requests to C-FIND a modality worklist. These modality worklists will be stored within the *Broker* data repository as specified by the ISIS model. *Broker* can be configured to generate requests to C-FIND a modality worklist when the RIS supports C-FIND Modality Worklist as an SCP.

2.1.5. C-FIND Report

Broker will accept requests to C-FIND a report. This functionality is offered as an alternative to fetching reports using the normalized services specified by the DICOM specification. *Broker* can be configured to generate requests to C-FIND a report when the RIS supports C-FIND Report as an SCP.

2.1.6. C-FIND Study

Broker can be configured to generate requests to a PACS to C-FIND a study when the RIS issues a request to prefetch a study from the PACS.

2.1.7. C-MOVE Study

Broker can be configured to generate requests to a PACS to C-MOVE a study when the RIS issues a request to prefetch a study from the PACS.

2.1.8. N-CREATE and N-SET Modality Performed Procedure Step

Broker can be configured to accept requests to N-CREATE, and N-SET a Modality Performed Procedure Step. *Broker* stores these messages within the *Broker* data repository as specified by the ISIS model.

Broker updates its information such that it updates the procedure step status appropriately and the procedure step gets removed from subsequent Modality Work List queries.

2.2. Functional Definitions of AEs

Broker is implemented as a single application entity for a service class provider. The same application entity may also be configured as a service class user.

2.3. Sequencing of Real World Activities

Broker must have an installed/working connection with a HIS/RIS system in order for it to function properly in a hospital environment.

Broker will use its internal database to store the information received from the HIS/RIS for later retrieval via the N-GET mechanism. This database is built up with patient, visit, study, results, and interpretation information from the triggers that the HIS/RIS sends to *Broker*. *Broker* can also send out unsolicited information via the N-EVENT-REPORT mechanism, based upon the triggers received from the HIS/RIS.

Broker can also be configured to generate query requests and study move requests to a PACS system via the C-FIND, C-MOVE mechanisms, based upon a prefetch trigger received from the RIS. The C-FIND is issued to retrieve the PACS-based study UID which is then used in the C-MOVE request. *Broker*, based on the initial RIS trigger received, determines the prefetch destination. This is repeated for each study in the prefetch list provided by the RIS.

3. AE Specifications

3.1. Broker Specifications

Broker provides Standard Conformance to the following DICOM V3.0 **Verification** SOP Class as an SCU and an SCP.

Table 1: Verification SOP Class

SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1

Broker provides Standard Conformance to the following DICOM V3.0 **Management** SOP Classes as an SCP and SCU.

Table 2: Management SOP Classes

SOP Class	SOP Class UID
Detached Patient Management	1.2.840.10008.3.1.2.1.1
Detached Visit Management	1.2.840.10008.3.1.2.2.1
Detached Study Management	1.2.840.10008.3.1.2.3.1
Detached Results Management	1.2.840.10008.3.1.2.5.1
Detached Interpretation Management	1.2.840.10008.3.1.2.6.1
Modality Worklist Management	1.2.840.10008.5.1.4.31

Broker provides limited support for the following as an SCU and SCP:

SOP Class	SOP Class UID
Study Component Management	1.2.840.10008.3.1.2.3.2

Examine the specific section in regards to support for these items.

Broker provides Standard Conformance to the following DICOM V3.0 **Management** SOP Classes as an SCP.

SOP Class	SOP Class UID
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3

Broker provides Standard Conformance to the following DICOM V3.0 **Query/Retrieve** SOP Class as an SCU.

Table 3: Query/Retrieve SOP Classes

SOP Class	SOP Class UID
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2

3.1.1. Association Establishment Policies

3.1.1.1. General

3.1.1.1.1. Number of Associations

The maximum number of simultaneous associations accepted by *Broker* is configurable at run time, based on the system resources available. By default, the maximum number of associations is set at 32. There is no inherent limit to the number of associations other than limits imposed by the computer operating system.

3.1.1.1.2. Asynchronous Nature

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

3.1.1.1.3. Implementation Identifying Information

Broker will respond with the following implementation identifying parameters:

- Implementation Class UID **1.2.124.113532.3320.2.0.2001**
- Implementation Version Name **BROKER012.0**

The implementation version name policies are the following: product name “**BROKER**” followed by the year of the product “**01**”, and finally the version of the product, “**2.0**”.

3.1.1.1.4. Called/Calling Titles

The default calling title that *Broker* will use is “**BROKER**”. This parameter can be configured before application startup. *Broker* can be configured to validate the Called Title of the requesting SCU during association negotiation. This policy provides *Broker* with a rudimentary level of security, by preventing unknown SCU processes from accessing hospital information.

3.1.2. Association Initiation by Real World Activity

Broker attempts to issue a new association when an unsolicited event message needs to be sent to an SCU, or query/ retrieve issued to an SCP.

3.1.2.1. Real World Activity - Verification

3.1.2.1.1. Associated Real World Activity - Verification

Broker uses the verification service class to test communication with a remote entity.

3.1.2.1.2. Presentation Context Table - Verification

Broker supports the transfer syntaxes listed in Table 4.

Table 4: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 5: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Verification	1.2.840.10008.1.1	all from Table 4	SCU	None

3.1.2.1.3. SOP Specific Conformance – Verification

Broker provides standard conformance to the DICOM **Verification** Service Class.

3.1.2.2. Real World Activity - Detached Patient Management

3.1.2.2.1. Associated Real World Activity - Detached Patient Management

3.1.2.2.1.1. Activity as SCP

Broker will send DIMSE-N EVENT-REPORTs to indicate that a change in the status of patient information has occurred. The following events are supported:

- Patient Created - to signal that a new patient has been added to the HIS/RIS database
- Patient Deleted - to signal that a patient has been removed from the HIS/RIS database
- Patient Updated - to signal that the patient information has changed

3.1.2.2.1.2. Activity as SCU

Broker will query for patient information using the DIMSE-N GET Patient to complete its information where the patient information is not locally stored.

Only the requested SOP Instance UID is specified in the N-GET request, it is expected that the SCP will provide additional elements of interest.

3.1.2.2.2. Presentation Context Table - Detached Patient Management

Broker supports the transfer syntaxes listed in Table 6.

Table 6: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 7: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Patient Management	1.2.840.10008.3.1.2.1.1	all from Table 6	SCU/SCP	None

3.1.2.2.3. SOP Specific Conformance - Detached Patient Management

Broker provides standard conformance to the DICOM **Detached Patient Management** Service Class.

Broker supports the following elements for this SOP class:

Table 8: Detached Patient Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Patient Created	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
Patient Deleted/Updated	Specific Character Set	(0008,0005)
	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 Telephone Numbers	(0010,2154)
	Patient Address	(0010,1040)
	Patient Birth Date	(0010,0030)
	Patient Sex	(0010,0040)
	Patient Weight	(0010,1030)
	Ethnic Group	(0010,2160)
	Patient Religious Preference	(0010,21F0)
	Patient Data Confidentiality Constraint Desc.	(0040,3001)
	Patient State	(0038,0500)
	Pregnancy Status	(0010,21C0)
	Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)	
Special Needs	(0038,0050)	
Referenced Study Sequence	(0008,1110)	

Event Type Name	Attribute Name	Tag
	>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)
	Reference Patient Alias Sequence	(0038,0004)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)

3.1.2.3. Real World Activity - Detached Visit Management

3.1.2.3.1. Associated Real World Activity - Detached Visit Management

3.1.2.3.1.1. Activity as SCP

Broker will send DIMSE-N EVENT-REPORTs to indicate that a change in the status of visit information has occurred. The following events are supported:

- Visit Created - to signal that this is a new visit for this patient
- Visit Scheduled - to signal that this patient will be arriving at some time in the future
- Patient Admitted - to signal that the patient has been admitted into the hospital
- Patient Transferred - to signal that a patient has moved to a new location
- Patient Discharged - to signal that the patient has been discharged from the hospital

3.1.2.3.1.2. Activity as SCU

Broker will query for patient information using the DIMSE-N GET Visit to complete its information where the patient information is not locally stored.

Only the requested SOP Instance UID is specified in the N-GET request, it is expected that the SCP will provide additional elements of interest.

3.1.2.3.2. Presentation Context Table - Detached Visit Management

Broker supports the transfer syntaxes listed in Table 9.

Table 9: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 10: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Visit Management	1.2.840.10008.3.1.2.2.1	all from Table 9	SCU/SCP	None

3.1.2.3.3. SOP Specific Conformance - Detached Visit Management

Broker provides standard conformance to the DICOM **Detached Visit Management** Service Class.

Broker supports the following elements for this SOP class:

Table 11: Detached Visit Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Visit Created	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
Visit Scheduled / Deleted / Updated, Patient Admitted / Transferred / Discharged	Specific Character Set	(0008,0005)
	Institution Name	(0008,0080)
	Institution Address	(0008,0081)
	Admission ID	(0038,0010)
	Issuer of Admission ID	(0038,0011)
	Visit Status ID	(0038,0008)
	Current Patient Location	(0038,0300)
	Patient's Institution Residence	(0038,0400)
	Admitting Date	(0038,0020)
	Admitting Time	(0038,0021)
	Admitting Diagnosis Description	(0008,1080)
	Discharge Date	(0038,0030)
	Discharge Time	(0038,0032)
	Discharge Diagnosis Description	(0038,0040)
	Route of Admissions	(0038,0016)
	Referring Physician's Name	(0008,0090)
	Referring Physician's Address	(0008,0092)
Scheduled Admission Date	(0038,001A)	
Scheduled Admission Time	(0038,001B)	

Event Type Name	Attribute Name	Tag
	Scheduled Patient Institution Residence	(0038,001E)
	Scheduled Discharge Date	(0038,001C)
	Scheduled Discharge Time	(0038,001D)
	Referenced Patient Sequence	(0008,1120)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)
	Referenced Study Sequence	(0008,1110)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)

3.1.2.4. Real World Activity - Detached Study Management

3.1.2.4.1. Associated Real World Activity - Detached Study Management

3.1.2.4.1.1. Activity as SCP

Broker will send DIMSE-N EVENT-REPORTs to indicate that a change in the status of study information has occurred. The following events are supported:

- Study Created - to signal that a new study has been created
- Study Scheduled - to signal that the study has been scheduled to occur
- Patient Arrived - to signal that the patient has arrived for this study
- Study Started - to signal that the study has begun
- Study Completed - to signal that a study has been completed
- Study Verified - to signal that this study was successful
- Study Read - to signal that this study has been reviewed
- Study Deleted - to signal that this study has been canceled
- Study Updated - to signal that the study information has changed

3.1.2.4.1.2. Activity as SCU

Broker will query for patient information using the DIMSE-N GET Study to complete its information where the patient information is not locally stored.

Only the requested SOP Instance UID is specified in the N-GET request, it is expected that the SCP will provide additional elements of interest.

3.1.2.4.2. Presentation Context Table - Detached Study Management

Broker supports the transfer syntaxes listed in Table 12.

Table 12: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 13: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Study Management	1.2.840.10008.3.1.2.3.1	all from Table 12	SCU/SCP	None

3.1.2.4.3. SOP Specific Conformance - Detached Study Management

Broker provides standard conformance to the DICOM **Detached Study Management** Service Class.

Broker supports the following elements for this SOP class:

Table 14: Detached Study Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Study Created / Deleted / Scheduled / Started / Completed / Verified / Read, Patient Arrived	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
	Specific Character Set	(0008,0005)
	Study ID	(0020,0010)
	Study ID Issuer	(0032,0012)
	Accession Number	(0008,0050)
	Study Instance UID	(0020,000D)
	Study Status ID	(0032,000A)
	Study Priority ID	(0032,000C)
	Scheduled Study Start Date	(0032,1000)
	Scheduled Study Start Time	(0032,1001)
	Scheduled Study Stop Date	(0032,1010)
	Scheduled Study Stop Time	(0032,1011)
	Scheduled Study Location	(0032,1020)
	Scheduled Study Location Application Entity Title	(0032,1021)
Requesting Service	(0032,1033)	

Event Type Name	Attribute Name	Tag
	Requesting Physician	(0032,1032)
	Requested Procedure Description	(0032,1060)
	Requested Procedure Code Sequence	(0032,1064)
	>Code Value	(0008,0100)
	>Coding Scheme Designator	(0008,0102)
	>Code Meaning	(0008,0104)
	Study Arrival Date	(0032,1040)
	Study Arrival Time	(0032,1041)
	Study Date	(0008,0020)
	Study Time	(0008,0030)
	Study Completed Date	(0032,1050)
	Study Completed Time	(0032,1051)
	Study Verified Date	(0032,0032)
	Study Verified Time	(0032,0033)
	Study Read Date	(0032,0034)
	Study Read Time	(0032,0035)
	Name of Physician(s) Reading Study	(0008,1060)
	Reason For Study	(0032,1030)
	Referenced Patient Sequence	(0008,1120)
	>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)
	Referenced Results Sequence	(0008,1100)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)
	Referenced Study Component Sequence	(0008,1111)
	>Referenced SOP Class UID	(0008,1150)
	>Referenced SOP Instance UID	(0008,1155)

3.1.2.5. Real World Activity - Detached Results Management

3.1.2.5.1. Associated Real World Activity - Detached Results Management

3.1.2.5.1.1. Activity as SCP

Broker will send DIMSE-N EVENT-REPORTs to indicate that a change in the status of Results information has occurred. The following events are supported:

- Results Created - to signal that the results have been created
- Results Updated - to signal that the results information has changed
- Results Deleted - to signal that the results information has been removed from the HIS/RIS database

3.1.2.5.1.2. Activity as SCU

Broker will query for patient information using the DIMSE-N GET Results to complete its information where the patient information is not locally stored. Only the requested SOP Instance UID is specified in the N-GET request, it is expected that the SCP will provide additional elements of interest.

3.1.2.5.2. Presentation Context Table - Detached Results Management

Broker supports the transfer syntaxes listed in Table 15.

Table 15: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 16: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Results Management	1.2.840.10008.3.1.2.5.1	all from Table 15	SCU/SCP	None

3.1.2.5.3. SOP Specific Conformance - Detached Results Management

Broker provides standard conformance to the DICOM **Detached Interpretation Management** Service Class.

Broker supports the following elements for this SOP class:

Table 17: Detached Results Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Results Created	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
Results Updated / Deleted	Specific Character Set	(0008,0005)

Event Type Name	Attribute Name	Tag
	Results ID	(4008,0040)
	Results ID Issuer	(4008,0042)
	Impressions	(4008,0300)
	Referenced Study Sequence	(0008,1110)
	> Referenced SOP Class UID	(0008,1150)
	> Referenced SOP Instance UID	(0008,1155)
	Referenced Interpretation Sequence	(4008,0005)
	> Referenced SOP Class UID	(0008,1150)
	> Referenced SOP Instance UID	(0008,1155)
	> Referenced SOP Instance UID	(0008,1155)

3.1.2.6. Real World Activity - Detached Interpretation Management

3.1.2.6.1. Associated Real World Activity - Detached Interpretation Management

3.1.2.6.1.1. Activity as SCP

Broker will send DIMSE-N EVENT-REPORTs to indicate that a change in the status of interpretation information has occurred. The following events are supported:

- Interpretation Created - to signal the creation of the interpretation
- Interpretation Recorded - to signal that the results have been dictated
- Interpretation Transcribed - to signal that the preliminary results are ready
- Interpretation Approved - to signal that the final results are ready
- Interpretation Updated - to signal that the interpretation information has changed
- Interpretation Deleted - to signal that the interpretation information has been removed from the HIS/RIS database

3.1.2.6.1.2. Activity as SCU

Broker will query for patient information using the DIMSE-N GET Interpretation to complete its information where the patient information is not locally stored.

Only the requested SOP Instance UID is specified in the N-GET request, it is expected that the SCP will provide additional elements of interest.

3.1.2.6.2. Presentation Context Table - Detached Interpretation Management

Broker supports the transfer syntaxes listed in Table 18.

Table 18: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 19: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Interpretation Management	1.2.840.10008.3.1.2.6.1	all from Table 18	SCU/SCP	None

3.1.2.6.3. SOP Specific Conformance - Detached Interpretation Management

Broker provides standard conformance to the DICOM **Detached Interpretation Management** Service Class.

Broker supports the following elements for this SOP class:

Table 20: Detached Interpretation Management Object N-Event-Report Attributes

Event Type Name	Attribute Name	Tag
Interpretation Created	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
Interpretation Updated / Deleted / Recorded / Transcribed / Approved	Specific Character Set	(0008,0005)
	Interpretation ID	(4008,0200)
	Interpretation ID Issuer	(4008,0202)
	Interpretation Type ID	(4008,0210)
	Interpretation Status ID	(4008,0212)
	Interpretation Recorded Date	(4008,0100)
	Interpretation Recorded Time	(4008,0101)
	Interpretation Recorder	(4008,0102)
	Interpretation Transcription Date	(4008,0108)
	Interpretation Transcription Time	(4008,0109)
	Interpretation Transcriber	(4008,010A)
	Interpretation Author	(4008,010C)
	Interpretation Text	(4008,010B)
	Referenced Results Sequence	(0008,1100)

Event Type Name	Attribute Name	Tag
	> Referenced SOP Class UID	(0008,1150)
	> Referenced SOP Instance UID	(0008,1155)
	Interpretation Approver Sequence	(4008,0111)
	>Interpretation Approval Date	(4008,0112)
	>Interpretation Approval Time	(4008,0113)
	>Physicians Approving Interpretation	(4008,0114)

3.1.2.7. Real World Activity - Study Component Management

3.1.2.7.1. Associated Real World Activity - Study Component Management

3.1.2.7.1.1. Activity as SCP

Broker will receive DIMSE-N CREATE, and DIMSE-N SET of Study Component to indicate that a Study Component object has been created.

Broker may be queried by the SCU for existing study components using the DIMSE-N GET Study Component service class.

3.1.2.7.2. Presentation Context Table - Study Component Management

Broker supports the transfer syntaxes listed in Table 21.

Table 21: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 22: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Study Component Management	1.2.840.10008.3.1.2.3.2	all from Table 21	SCU/SCP	None

3.1.2.7.3. SOP Specific Conformance - Study Component Management

Broker provides standard conformance to the DICOM **Study Component Management** Service Class.

Broker supports the following elements for this SOP class:

Table 23: Study Component Management Object N-Create Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Retrieve Application Entity Title	(0008,0054)
Modality	(0008,0060)
Study Description	(0008,1030)
Acquisition In Study	(0020,1004)
Study Status ID	(0032,000a)

3.1.2.8. Real World Activity - Modality Worklist Management

3.1.2.8.1. Associated Real World Activity - Modality Worklist Management

3.1.2.8.1.1. Extensions

Broker makes use of either the Study Status Id attribute from the Imaging Service Request module (or for some legacy systems, the private element Scheduled Procedure Step Status from the Scheduled Procedure Step module). This has been added so that a PACS may obtain the status of the study via the Modality Worklist response.

Removal of these elements is a configurable option.

3.1.2.8.1.2. Activity as SCU

Broker can be configured to send DICOM C-Find requests in response to an external device querying *Broker* for Worklist or as the result of *Broker* being configured to poll for Worklist automatically.

3.1.2.8.2. Presentation Context Table - Modality Worklist Management

Broker supports the transfer syntaxes listed in Table 24.

Table 24: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 25: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Modality Worklist Info Model –FIND	1.2.840.10008.5.1.4.31	all from Table 24	SCU	None

3.1.2.8.3. SOP Specific Conformance - Modality Worklist Management

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

Broker supports all required matching key types:

Matching Key Types	
SV	single valued match
WC	wild card match
SQ	sequence match
DR	date range match

Subject to availability from the HIS, *Broker* supports all required return keys.

Broker supports a 'NOT' operator (!) for all attributes with a single valued match (SV) type.

Broker supports the following elements for this SOP class:

Table 26: Modality Worklist Information Model Attributes

Module	Attribute Name	Tag	Match	Return
SOP Common	Specific Character Set	(0008,0005)		1C
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	SQ	1
	>Scheduled Station AE Title	(0040,0001)	SV	1
	>Scheduled Procedure Step Start Date	(0040,0002)	DR	1
	>Scheduled Procedure Step Start Time	(0040,0003)	DR	1
	>Scheduled Procedure Step End Date	(0040,0004)		1
	>Scheduled Procedure Step End Time	(0040,0005)		1
	>Modality	(0008,0060)	SV	1
	>Scheduled Performing Physician	(0040,0006)	WC	2
	>Scheduled Procedure Step Desc.	(0040,0007)		1C
	>Scheduled Station Name	(0040,0010)	SV	2
	>Scheduled Procedure Step Location	(0040,0011)		2

Module	Attribute Name	Tag	Match	Return
Requested Procedure	>Scheduled Action Item Code Seq.	(0040,0008)		1C
	>>Code Value	(0008,0100)		1C
	>>Coding Scheme Designator	(0008,0102)		1C
	>Pre-Medication	(0040,0012)		2C
	>Scheduled Procedure Step ID	(0040,0009)		1
	>Scheduled Procedure Step Status	(0040,0020)	SV	3
	>Requested Contrast Agent	(0032,1070)		2C
	>Comments on the Scheduled Procedure Step	(0040,0400)		3
	Requested Procedure ID	(0040,1001)		1
Imaging Service Request	Requested Procedure Description	(0032,1060)		1C
	Reason for Requested Procedure	(0040,1002)		3
	Requested Procedure Code Sequence	(0032,1064)		1C
	>Code Value	(0008,0100)		1C
	>Coding Scheme Designator	(0008,0102)		1C
	Study Instance UID	(0020,000D)	SV	1
	Referenced Study Sequence	(0008,1110)		2
	>Referenced SOP Class UID	(0008,1150)		1C
	>Referenced SOP Instance UID	(0008,1155)	SV	1C
	Requested Procedure Priority	(0040,1003)		2
	Patient Transport Arrangements	(0040,1004)		2
	Procedure Location	(0040,1005)		3
	Procedure Placer Order	(0040,1006)		3
	Procedure Filler Order	(0040,1007)		3
	Requested Procedure Comments	(0040,1400)		3
	Accession Number	(0008,0050)	SV	2
	Requesting Physician	(0032,1032)		2
	Requesting Service	(0032,1032)		3
	Referring Physician Name	(0008,0090)		2
	Reason for Imaging Service Request	(0040,2001)		3
Visit Identification	Study Status Id	(0032,000a)	SV	3
	Study Priority Id	(0032,000c)		3
	Admission ID	(0038,0010)	SV	2
	Current Patient Location	(0038,0300)	SV	2
Visit Status				
Visit Relationship	Referenced Patient Sequence	(0008,1120)		2

Module	Attribute Name	Tag	Match	Return
Patient Identification	>Referenced SOP Class UID	(0008,1150)		2
	>Referenced SOP Instance UID	(0008,1155)	SV	2
	Patient Name	(0010,0010)	WC	1
	Patient ID	(0010,0020)	SV	1
	Other Patient Id	(0010,1000)		3
	Other Patient Name	(0010,1001)		3
	Patient Address	(0010,1040)		3
Patient Demographic	Patient Telephone Numbers	(0010,2154)		3
	Patient Birth Date	(0010,0030)		2
	Patient Sex	(0010,0040)		2
	Patient Weight	(0010,1030)		2
	Confidentiality Constraint	(0040,3001)		2
Patient Medical	Patient State	(0038,0500)		2
	Pregnancy Status	(0010,21C0)		2
	Medical Alerts	(0010,2000)		2
	Contrast Allergies	(0010,2110)		2
	Special Needs	(0038,0050)		2

3.1.2.9. Real World Activity - Find

3.1.2.9.1. Associated Real World Activity - Find

3.1.2.9.1.1. Activity as SCU

Broker will query the SCP (typically a PACS) to get the study UID associated with the accession number provided by the RIS. This is done in preparation for a C-Move request as described in section 3.1.2.10. *Broker* negotiates the Study Root query/ retrieve model only.

3.1.2.9.2. Presentation Context Table - Find

Broker supports the transfer syntaxes listed in Table 27. *Broker* will initiate any of the Presentation Contexts listed in Table 28 for Query.

Table 27: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 28: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1	all from Table 27	SCU	None

3.1.2.9.3. SOP Specific Conformance - Find

SOP classes of the **Query/Retrieve Service Class** are implemented via the DIMSE **C-FIND** and **C-MOVE** services as defined in Part 7 of the DICOM standard.

Broker will include the following key attributes in its C-Find request issued to the PACS:

Table 29: C-Find Key Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Accession Number	(0008,0050)
Study Instance UID	(0020,000D)

Broker will include the Study Instance UID attribute as an empty string indicating that *Broker* is requesting the study UID be returned.

3.1.2.10. Real World Activity - Move

3.1.2.10.1. Associated Real World Activity - Move

3.1.2.10.1.1. Activity as SCU

Broker will request the SCP (typically a PACS) move the study associated with the study UID provided by the C-Find (section 0) to the destination AE which is determined based on the 'RIS-based prefetch event' received from the RIS. *Broker* negotiates the Study Root query/ retrieve model only.

3.1.2.10.2. Presentation Context Table - Move

Broker supports the transfer syntaxes listed in Table 30. *Broker* will initiate any of the Presentation Contexts listed in Table 31 for Retrieval.

Table 30: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 31: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2	all from Table 30	SCU	see Note 1

Note 1: C-Move Extended Negotiation will be supported. *Broker* will include the following information in its association negotiation request:

Table 32: Move Extended Negotiation

Field Name	Value	Description of Field
Relational-retrieval	1	relational retrieval supported

3.1.2.10.3. SOP Specific Conformance - Move

SOP classes of the **Query/Retrieve** Service Class are implemented via the DIMSE **C-FIND** and **C-MOVE** services as defined in Part 7 of the DICOM standard.

3.1.3. Association Acceptance Policy

3.1.3.1. Real World Activity - Verification

3.1.3.1.1. Associated Real World Activity - Verification

Broker will respond to **Verification** requests to provide an SCU with the ability to determine if *Broker* is receiving DICOM requests.

3.1.3.1.2. Presentation Context Table - Verification

Broker supports the transfer syntaxes listed in Table 33. *Broker* will accept any of the Presentation Contexts listed in Table 34 for **Verification**.

Table 33: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 34: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Verification	1.2.840.10008.1.1	all from Table 33	SCP	None

3.1.3.1.3. SOP Specific Conformance - Verification

Broker provides standard conformance to the DICOM **Verification** Service Class.

Broker returns one of the following status codes:

Table 35: Verification Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000		Operation performed properly.

3.1.3.1.4. Presentation Context Acceptance Criterion - Verification

Broker will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax listed in Table 33.

3.1.3.1.5. Transfer Syntax Selection Policies - Verification

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

3.1.3.2. Real World Activity - Detached Patient Management

3.1.3.2.1. Associated Real World Activity - Detached Patient Management

3.1.3.2.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve patient demographic information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

3.1.3.2.1.2. Activity as SCU

Broker will receive DIMSE-N EVENT-REPORTs to indicate that a change in the status of patient information has occurred. The following events are supported:

- Patient Created - to signal that a new patient has been added to the HIS/RIS database
- Patient Deleted - to signal that a patient has been removed from the HIS/RIS database
- Patient Updated - to signal that the patient information has changed

3.1.3.2.2. Presentation Context Table - Detached Patient Management

Broker supports the transfer syntaxes listed in Table 36.

Table 36: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 37: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Patient Management	1.2.840.10008.3.1.2.1.1	all from Table 36	SCP	None

3.1.3.2.3. SOP Specific Conformance - Detached Patient Management

Broker provides standard conformance to the DICOM **Detached Patient Management** Service Class.

Broker supports the following elements for this SOP class:

Table 38: Detached Patient Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
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 Telephone Numbers	(0010,2154)
Patient Address	(0010,1040)
Patient Birth Date	(0010,0030)
Patient Sex	(0010,0040)
Patient Weight	(0010,1030)
Ethnic Group	(0010,2160)
Patient Religious Preference	(0010,21F0)
Patient Data Confidentiality Constraint Desc.	(0040,3001)
Patient State	(0038,0500)
Pregnancy Status	(0010,21C0)
Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Special Needs	(0038,0050)

Attribute Name	Tag
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)
Reference Patient Alias Sequence	(0038,0004)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 39: Detached Patient Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.2.4. Presentation Context Acceptance Criterion - Detached Patient Management

Broker will always accept a Presentation Context for the Detached Patient Management SOP Class.

3.1.3.2.5. Transfer Syntax Selection Policies - Detached Patient Management

Broker supports only the Little Endian Implicit Transfer Syntax.

3.1.3.3. Real World Activity - Detached Visit Management

3.1.3.3.1. Associated Real World Activity - Detached Visit Management

3.1.3.3.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve visit information. Broker does not support any other DIMSE-N command as an SCP with this presentation context.

3.1.3.3.1.2. Activity as SCU

Broker will receive DIMSE-N EVENT-REPORTs to indicate that a change in the status of visit information has occurred. The following events are supported:

- Visit Created - to signal that this is a new visit for this patient
- Visit Scheduled - to signal that this patient will be arriving at some time in the future

- Patient Admitted - to signal that the patient has been admitted into the hospital
- Patient Transferred - to signal that a patient has moved to a new location
- Patient Discharged - to signal that the patient has been discharged from the hospital

3.1.3.3.2. Presentation Context Table - Detached Visit Management

Broker supports the transfer syntaxes listed in Table 40.

Table 40: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 41: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Visit Management	1.2.840.10008.3.1.2.2.1	all from Table 40	SCP	None

3.1.3.3.3. SOP Specific Conformance - Detached Visit Management

Broker provides standard conformance to the DICOM **Detached Visit Management** Service Class.

Broker supports the following elements for this SOP class:

Table 42: Detached Visit Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Institution Name	(0008,0080)
Institution Address	(0008,0081)
Admission ID	(0038,0010)
Issuer of Admission ID	(0038,0011)
Visit Status ID	(0038,0008)
Current Patient Location	(0038,0300)
Patient's Institution Residence	(0038,0400)
Admitting Date	(0038,0020)
Admitting Time	(0038,0021)
Admitting Diagnosis Description	(0008,1080)
Discharge Date	(0038,0030)
Discharge Time	(0038,0032)
Discharge Diagnosis Description	(0038,0040)

Attribute Name	Tag
Route of Admissions	(0038,0016)
Referring Physician's Name	(0008,0090)
Referring Physician's Address	(0008,0092)
Scheduled Admission Date	(0038,001A)
Scheduled Admission Time	(0038,001B)
Scheduled Patient Institution Residence	(0038,001E)
Scheduled Discharge Date	(0038,001C)
Scheduled Discharge Time	(0038,001D)
Referenced Patient Sequence	(0008,1120)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 43: Detached Visit Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.3.4. Presentation Context Acceptance Criterion - Detached Visit Management

Broker will always accept a Presentation Context for the Detached Visit Management SOP Class.

3.1.3.3.5. Transfer Syntax Selection Policies - Detached Visit Management

Broker supports only the Little Endian Implicit Transfer Syntax.

3.1.3.4. Real World Activity - Detached Study Management

3.1.3.4.1. Associated Real World Activity - Detached Study Management

3.1.3.4.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve study information. Broker does not support any other DIMSE-N command as an SCP with this presentation context.

3.1.3.4.1.2. Activity as SCU

Broker will receive DIMSE-N EVENT-REPORTs to indicate that a change in the status of study information has occurred. The following events are supported:

- Study Created - to signal that a new study has been created
- Study Scheduled - to signal that the study has been scheduled to occur
- Patient Arrived - to signal that the patient has arrived for this study
- Study Started - to signal that the study has begun
- Study Completed - to signal that a study has been completed
- Study Verified - to signal that this study was successful
- Study Read - to signal that this study has been reviewed
- Study Deleted - to signal that this study has been canceled
- Study Updated - to signal that the study information has changed

3.1.3.4.2. Presentation Context Table - Detached Study Management

Broker supports the transfer syntaxes listed in Table 44.

Table 44: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 45: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Study Management	1.2.840.10008.3.1.2.3.1	all from Table 44	SCP	None

3.1.3.4.3. SOP Specific Conformance - Detached Study Management

Broker provides standard conformance to the DICOM **Detached Study Management** Service Class.

Broker supports the following elements for this SOP class:

Table 46: Detached Study Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Study ID	(0020,0010)
Study ID Issuer	(0032,0012)
Accession Number	(0008,0050)
Study Instance UID	(0020,000D)
Study Status ID	(0032,000A)
Study Priority ID	(0032,000C)

Attribute Name	Tag
Scheduled Study Start Date	(0032,1000)
Scheduled Study Start Time	(0032,1001)
Scheduled Study Stop Date	(0032,1010)
Scheduled Study Stop Time	(0032,1011)
Scheduled Study Location	(0032,1020)
Scheduled Study Location Application Entity Title	(0032,1021)
Requesting Service	(0032,1033)
Requesting Physician	(0032,1032)
Requested Procedure Description	(0032,1060)
Requested Procedure Code Sequence	(0032,1064)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Code Meaning	(0008,0104)
Study Arrival Date	(0032,1040)
Study Arrival Time	(0032,1041)
Study Date	(0008,0020)
Study Time	(0008,0030)
Study Completed Date	(0032,1050)
Study Completed Time	(0032,1051)
Study Verified Date	(0032,0032)
Study Verified Time	(0032,0033)
Study Read Date	(0032,0034)
Study Read Time	(0032,0035)
Name of Physician(s) Reading Study	(0008,1060)
Reason For Study	(0032,1030)
Referenced Patient Sequence	(0008,1120)
>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)
Referenced Results Sequence	(0008,1100)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Attribute Name	Tag
Referenced Study Component Sequence	(0008,1111)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 47: Detached Study Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.4.4. Presentation Context Acceptance Criterion - Detached Study Management

Broker will always accept a Presentation Context for the Detached Study Management SOP Class.

3.1.3.4.5. Transfer Syntax Selection Policies - Detached Study Management

Broker supports only the Little Endian Implicit Transfer Syntax.

3.1.3.5. Real World Activity - Detached Results Management

3.1.3.5.1. Associated Real World Activity - Detached Results Management

3.1.3.5.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve results information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

3.1.3.5.1.2. Activity as SCU

Broker will receive DIMSE-N EVENT-REPORTs to indicate that a change in the status of results information has occurred. The following events are supported:

- Results Created - to signal that the results have been created
- Results Updated - to signal that the results information has changed
- Results Deleted - to signal that the results information has been removed from the HIS/RIS database

3.1.3.5.2. Presentation Context Table - Detached Results Management

Broker supports the transfer syntaxes listed in Table 48.

Table 48: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 49: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Results Management	1.2.840.10008.3.1.2.5.1	all from Table 48	SCP	None

3.1.3.5.3. SOP Specific Conformance - Detached Results Management

Broker provides standard conformance to the DICOM **Detached Results Management** Service Class.

Broker supports the following elements for this SOP class:

Table 50: Detached Results Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Results ID	(4008,0040)
Results ID Issuer	(4008,0042)
Impressions	(4008,0300)
Referenced Study Sequence	(0008,1110)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)
Referenced Interpretation Sequence	(4008,0005)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 51: Detached Results Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.5.4. Presentation Context Acceptance Criterion - Detached Results Management

Broker will always accept a Presentation Context for the Detached Results Management SOP Class.

3.1.3.5.5. Transfer Syntax Selection Policies - Detached Results Management

Broker supports only the Little Endian Implicit Transfer Syntax.

3.1.3.6. Real World Activity - Detached Interpretation Management

3.1.3.6.1. Associated Real World Activity - Detached Interpretation Management

3.1.3.6.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve interpretation information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

3.1.3.6.1.2. Activity as SCU

Broker will receive DIMSE-N EVENT-REPORTs to indicate that a change in the status of interpretation information has occurred. The following events are supported:

- Interpretation Created - to signal the creation of the interpretation
- Interpretation Recorded - to signal that the results have been dictated
- Interpretation Transcribed - to signal that the preliminary results are ready
- Interpretation Approved - to signal that the final results are ready
- Interpretation Updated - to signal that the interpretation information has changed

3.1.3.6.2. Presentation Context Table - Detached Interpretation Management

Broker supports the transfer syntaxes listed in Table 52.

Table 52: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 53: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Detached Patient Management	1.2.840.10008.3.1.2.6.1	all from Table 52	SCP	None

3.1.3.6.3. SOP Specific Conformance - Detached Interpretation Management

Broker provides standard conformance to the DICOM **Detached Interpretation Management** Service Class.

Broker supports the following elements for this SOP class:

Table 54: Detached Interpretation Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Interpretation ID	(4008,0200)
Interpretation ID Issuer	(4008,0202)
Interpretation Type ID	(4008,0210)
Interpretation Status ID	(4008,0212)
Interpretation Recorded Date	(4008,0100)
Interpretation Recorded Time	(4008,0101)
Interpretation Recorder	(4008,0102)
Interpretation Transcription Date	(4008,0108)
Interpretation Transcription Time	(4008,0109)
Interpretation Transcriber	(4008,010A)
Interpretation Author	(4008,010C)
Interpretation Text	(4008,010B)
Referenced Results Sequence	(0008,1100)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)
Interpretation Approver Sequence	(4008,0111)
>Interpretation Approval Date	(4008,0112)
>Interpretation Approval Time	(4008,0113)
>Physicians Approving Interpretation	(4008,0114)

Broker returns one of the following status codes:

Table 55: Detached Interpretation Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.6.4. Presentation Context Acceptance Criterion - Detached Interpretation Management

Broker will always accept a Presentation Context for the Detached Interpretation Management SOP Class.

3.1.3.6.5. Transfer Syntax Selection Policies - Detached Interpretation Management

Broker supports only the Little Endian Implicit Transfer Syntax.

3.1.3.7. Real World Activity - Study Component Management

3.1.3.7.1. Associated Real World Activity - Study Component Management

3.1.3.7.1.1. Activity as SCP

Broker will receive DIMSE-N CREATE, and DIMSE-N SET of Study Component to indicate that a Study Component object has been created.

Broker does not support the DIMSE-N GET for Study Components as an SCP.

3.1.3.7.1.2. Activity as SCU

Broker will send DIMSE-N CREATE of Study Component to indicate that a Study Component object has been created.

3.1.3.7.2. Presentation Context Table - Study Component Management

Broker supports the transfer syntaxes listed in Table 56.

Table 56: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 57: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Study Component Management	1.2.840.10008.3.1.2.3.2	all from Table 56	SCP	None

3.1.3.7.3. SOP Specific Conformance - Study Component Management

Broker provides standard conformance to the DICOM Study Component Management Service Class.

Broker supports the following elements for this SOP class:

Table 58: Study Component Management Object N-Create Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Retrieve Application Entity Title	(0008,0054)
Modality	(0008,0060)
Study Description	(0008,1030)
Acquisition In Study	(0020,1004)
Study Status ID	(0032,000a)

3.1.3.8. Real World Activity - Modality Worklist Management

3.1.3.8.1. Associated Real World Activity - Modality Worklist Management

3.1.3.8.1.1. Extensions

Broker makes use of either the Study Status Id attribute from the Imaging Service Request module (or for some legacy systems, the private element Scheduled Procedure Step Status from the Scheduled Procedure Step module). This has been added so that the SCU may obtain the status of the study using the Modality Worklist response.

Removal of these elements is a configurable option.

3.1.3.8.1.2. Activity as SCP

Broker can be configured to respond to DICOM C-Find requests in response to an external device querying *Broker* for Worklist.

3.1.3.8.2. Presentation Context Table - Modality Worklist Management

Broker supports the transfer syntaxes listed in Table 59.

Table 59: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 60: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Modality Worklist Info Model –FIND	1.2.840.10008.5.1.4.31	all from Table 59	SCP	None

3.1.3.8.3. SOP Specific Conformance - Modality Worklist Management

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

Broker supports all required matching key types:

Matching Key Types	
SV	single valued match
WC	wild card match
SQ	sequence match
DR	date range match

Subject to availability from the HIS, *Broker* supports all required return keys.

Broker supports a 'NOT' operator (!) for all attributes with a single valued match (SV) type.

Broker supports the following elements for this SOP class:

Table 61: Modality Worklist Information Model Attributes

Module	Attribute Name	Tag	Match	Return
SOP Common	Specific Character Set	(0008,0005)		1C
Scheduled Procedure Step	Scheduled Procedure Step Sequence	(0040,0100)	SQ	1
	>Scheduled Station AE Title	(0040,0001)	SV	1
	>Scheduled Procedure Step Start Date	(0040,0002)	DR	1
	>Scheduled Procedure Step Start Time	(0040,0003)	DR	1
	>Scheduled Procedure Stop End Date	(0040,0004)		1
	>Scheduled Procedure Stop End Time	(0040,0005)		1
	>Modality	(0008,0060)	SV	1
	>Scheduled Performing Physician	(0040,0006)	WC	2
	>Scheduled Procedure Step Desc.	(0040,0007)		1C
	>Scheduled Station Name	(0040,0010)	SV	2
	>Scheduled Procedure Step Location	(0040,0011)		2

Module	Attribute Name	Tag	Match	Return	
Requested Procedure	>Scheduled Action Item Code Seq.	(0040,0008)		1C	
	>>Code Value	(0008,0100)		1C	
	>>Coding Scheme Designator	(0008,0102)		1C	
	>Pre-Medication	(0040,0012)		2C	
	>Scheduled Procedure Step ID	(0040,0009)		1	
	>Scheduled Procedure Step Status	(0040,0020)	SV	3	
	>Requested Contrast Agent	(0032,1070)		2C	
	>Comments on the Scheduled Procedure Step	(0040,0400)		3	
	Requested Procedure ID	(0040,1001)		1	
	Requested Procedure Description	(0032,1060)		1C	
	Reason for Requested Procedure	(0040,1002)		3	
	Requested Procedure Code Sequence	(0032,1064)		1C	
	>Code Value	(0008,0100)		1C	
	>Coding Scheme Designator	(0008,0102)		1C	
	Study Instance UID	(0020,000D)	SV	1	
	Imaging Service Request	Referenced Study Sequence	(0008,1110)		2
		>Referenced SOP Class UID	(0008,1150)		1C
>Referenced SOP Instance UID		(0008,1155)	SV	1C	
Requested Procedure Priority		(0040,1003)		2	
Patient Transport Arrangements		(0040,1004)		2	
Procedure Location		(0040,1005)		3	
Procedure Placer Order		(0040,1006)		3	
Procedure Filler Order		(0040,1007)		3	
Requested Procedure Comments		(0040,1400)		3	
Accession Number		(0008,0050)	SV	2	
Requesting Physician		(0032,1032)		2	
Requesting Service		(0032,1033)		3	
Referring Physician Name		(0008,0090)		2	
Reason for Imaging Service Request		(0040,2001)		3	
Study Status ID		(0032,000a)	SV	3	
Study Priority ID		(0032,000c)		3	
Visit Identification		Admission ID	(0038,0010)	SV	2
Visit Status	Current Patient Location	(0038,0300)		2	
Visit Relationship	Referenced Patient Sequence	(0008,1120)		2	

Module	Attribute Name	Tag	Match	Return
Patient Identification	>Referenced SOP Class UID	(0008,1150)		2
	>Referenced SOP Instance UID	(0008,1155)		2
	Patient Name	(0010,0010)	WC	1
	Patient ID	(0010,0020)	SV	1
	Other Patient ID	(0010,1000)		3
	Other Patient Name	(0010,1001)		3
	Patient Address	(0010,1040)		3
Patient Demographic	Patient Telephone Numbers	(0010,2154)		3
	Patient Birth Date	(0010,0030)		2
	Patient Sex	(0010,0040)		2
	Patient Weight	(0010,1030)		2
	Confidentiality Constraint	(0040,3001)		2
Patient Medical	Patient State	(0038,0500)		2
	Pregnancy Status	(0010,21C0)		2
	Medical Alerts	(0010,2000)		2
	Contrast Allergies	(0010,2110)		2
	Special Needs	(0038,0050)		2

3.1.3.9. Real World Activity - Modality Performed Procedure Step

3.1.3.9.1. Associated Real World Activity - Modality Performed Procedure Step

3.1.3.9.1.1. Activity as SCP

Broker can be configured to accept DICOM N-CREATE, or N-SET requests in response to an external device sending *Broker* a Modality Performed Procedure step.

3.1.3.9.2. Presentation Context Table – Modality Performed Procedure Step

Broker supports the transfer syntaxes listed in Table 62.

Table 62: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 63: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	all from Table 62	SCP	None

3.1.3.9.3. SOP Specific Conformance - Modality Performed Procedure Step

Broker provides standard conformance to the DICOM Modality Performed Procedure Step Service Class.

Broker support the following elements for this SOP class:

Table 64: Modality Performed Procedure Step Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
Schedule Step Attribute Sequence	(0040,0270)
>Study Instance UID	(0020,000d)
>Referenced Study Sequence	(0008,1110)
>>Reference SOP Class UID	(0008,1150)
>>Reference SOP Instance UID	(0008,1155)
>Accession Number	(0008,0050)
>Placer Order Number/Imaging Service Request	(0040,2016)
>Filler Order Number/Imaging Service Request	(0040,2017)
>Requested Procedure ID	(0040,1001)
>Requested Procedure Description	(0032,1060)
>Scheduled Procedure Step ID	(0040,0009)
>Scheduled Procedure Step Description	(0040,0007)
>Scheduled Action Item Code Sequence	(0040,0008)
>>Code Value	(0008,0100)
>>Code Scheme Designator	(0008,0102)
>>Code Meaning	(0008,0104)
Patient ID	(0010,0020)
Patient Name	(0010,0010)
Patient Birth Date	(0010,0030)
Patient Sex	(0010,0040)

Attribute Name	Tag
Referenced Patient Sequence	(0008,1120)
>Reference SOP Class UID	(0008,1150)
>Reference SOP Instance UID	(0008,1155)
Performed Procedure Step ID	(0040,0253)
Performed Station AE Title	(0040,0241)
Performed Station Name	(0040,0242)
Performed Location	(0040,0243)
Performed Procedure Step Start Date	(0040,0244)
Performed Procedure Step Start Time	(0040,0245)
Performed Procedure Step Status	(0040,0252)
Performed Procedure Step Description	(0040,0254)
Performed Procedure Type Description	(0040,0255)
Procedure Code Sequence	(0008,1032)
>Code Value	(0008,0100)
>Code Scheme Designator	(0008,0102)
>Code Meaning	(0008,0104)
Performed Procedure Step End Date	(0040,0250)
Performed Procedure Step End Time	(0040,0251)
Modality	(0008,0060)
Study ID	(0020,0010)
Performed Action Item Code Sequence	(0040,0260)
>Code Value	(0008,0100)
>Code Scheme Designator	(0008,0102)
>Code Meaning	(0008,0104)
Performed Series Sequence	(0040,0340)
>Performing Physician's Name	(0008,1050)
>Protocol Name	(0018,1030)
>Operator Name	(0008,1070)
>Series Instance UID	(0020,000e)
>Series Description	(0008,103e)
>Retrieve AE Title	(0008,0054)
>Referenced Image Sequence	(0008,1140)
>>Reference SOP Class UID	(0008,1150)
>>Reference SOP Instance UID	(0008,1155)

Attribute Name	Tag
>Referenced Stand-Alone SOP Instance Sequence	(0040,0220)
>>Reference SOP Class UID	(0008,1150)
>>Reference SOP Instance UID	(0008,1155)

4. Communications Profiles

Broker provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.1. TCP/IP Stack

Broker inherits its TCP/IP stack from the computer system upon which it executes.

4.2. Physical Medium Supported

Broker is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

5. Extensions / Specializations

5.1. *Broker* Extended Specifications

Broker provides conformance to the following private SOP Classes as an SCP:

Table 65: Extended SOP Classes

SOP Class	SOP Class UID
Mitra Report Management	1.2.840.113532.3500.8
Mitra Detached Patient Management	1.2.840.113532.3500.10
Mitra Detached Visit Management	1.2.840.113532.3500.11
Mitra Detached Study Management	1.2.840.113532.3500.13
Mitra Detached Results Management	1.2.840.113532.3500.15
Mitra Detached Interpretation Management	1.2.840.113532.3500.16
Mitra Detached Study Component Management	1.2.840.113532.3500.14

5.1.1. Association Acceptance Policy

5.1.1.1. Real World Activity – Mitra Report Management

5.1.1.1.1. Associated Real World Activity – Mitra Report Management

5.1.1.1.1. Activity as SCP

Broker can be configured to respond to DICOM C-FIND requests in response to an external device querying *Broker* for a Report.

5.1.1.1.2. Activity as SCU

Broker can be configured to request Reports via DICOM C-FIND in response to an external device querying *Broker* for a Report.

5.1.1.2. Presentation Context Table – Mitra Report Management

Broker supports the transfer syntaxes listed in Table 66.

Table 66: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 67: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Report Info Model –FIND	1.2.840.113532.3500.8	all from Table 66	SCP	None

5.1.1.1.3. SOP Specific Conformance – Mitra Report Management

Broker provides conformance to a Mitra Private SOP class used to fetch report information. Unlike the modality worklist query, all supported attributes are included in each response independent of which attributes are included in the query.

Subject to availability from the HIS, *Broker* supports the following elements for this SOP class:

Table 68: Mitra Report Information Model Attributes

Attribute Name	Tag	Match	Remark
Specific Character Set	(0008,0005)		
Patient Name	(0010,0010)		
Patient ID	(0010,0020)	SV	Required for some HISs
Issuer of Patient ID	(0010,0021)		
Other Patient Ids	(0010,1000)		
Other Patient Names	(0010,1001)		
Patient Telephone Numbers	(0010,2154)		
Patient Address	(0010,1040)		
Patient Birth Date	(0010,0030)		

Attribute Name	Tag	Match	Remark
Patient Sex	(0010,0040)		
Patient Weight	(0010,1030)		
Ethnic Group	(0010,2160)		
Patient Religious Preference	(0010,21F0)		
Patient Data Confidentiality Constraint Desc.	(0040,3001)		
Patient State	(0038,0500)		
Pregnancy Status	(0010,21C0)		
Medical Alerts	(0010,2000)		
Contrast Allergies	(0010,2110)		
Special Needs	(0038,0050)		
Study ID	(0020,0010)		
Study ID Issuer	(0032,0012)		
Accession Number	(0008,0050)	SV	One or more of the accession number, study instance uid, or patient id are required
Study Instance UID	(0020,000D)	SV	
Study Status ID	(0032,000A)		
Study Priority ID	(0032,000C)		
Requesting Service	(0032,1033)		
Requesting Physician	(0032,1032)		
Requested Procedure Description	(0032,1060)		
Requested Procedure Code Sequence	(0032,1064)		
>Code Value	(0008,0100)		
>Coding Scheme Designator	(0008,0102)		
>Code Meaning	(0008,0104)		
Study Arrival Date	(0032,1040)		
Study Arrival Time	(0032,1041)		
Study Date	(0008,0020)		
Study Time	(0008,0030)		
Study Completed Date	(0032,1050)		
Study Completed Time	(0032,1051)		
Study Verified Date	(0032,0032)		
Study Verified Time	(0032,0033)		
Study Read Date	(0032,0034)		
Study Read Time	(0032,0035)		
Name of Physician(s) Reading Study	(0008,1060)		

Attribute Name	Tag	Match	Remark
Reason For Study	(0032,1030)		
Results ID	(4008,0040)		
Results ID Issuer	(4008,0042)		
Impressions	(4008,0300)		
Interpretation ID	(4008,0200)		
Interpretation ID Issuer	(4008,0202)		
Interpretation Type ID	(4008,0210)		
Interpretation Status ID	(4008,0212)		
Interpretation Recorded Date	(4008,0100)		
Interpretation Recorded Time	(4008,0101)		
Interpretation Recorder	(4008,0102)		
Interpretation Transcription Date	(4008,0108)		
Interpretation Transcription Time	(4008,0109)		
Interpretation Transcriber	(4008,010A)		
Interpretation Author	(4008,010C)		
Interpretation Text	(4008,010B)		
Interpretation Approver Sequence	(4008,0111)		
>Interpretation Approval Date	(4008,0112)		
>Interpretation Approval Time	(4008,0113)		
>Physicians Approving Interpretation	(4008,0114)		

5.1.1.2. Real World Activity – Mitra Detached Patient Management

5.1.1.2.1. Associated Real World Activity – Mitra Detached Patient Management

5.1.1.2.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve patient demographic information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.2.2. Presentation Context Table – Mitra Detached Patient Management

Broker supports the transfer syntaxes listed in Table 69.

Table 69: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 70: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Detached Patient Management	1.2.840.113532.3500.10	all from Table 69	SCP	None

5.1.1.2.3. SOP Specific Conformance – Mitra Detached Patient Management

Broker provides conformance to a Mitra Private SOP class used to fetch patient demographic information. The purpose for the private SOP class is to minimize the overhead that goes along with the normalized DICOM model (i.e.: you send something at the results level, and to obtain patient level info, the SCU has to perform 3 additional N-Gets).

If the SCU negotiates the Mitra Detached Patient Management SOP rather than, or in addition to, the standard DICOM Detached Patient Management, *Broker* will use the private SOP class which sends one response that also contains the info from the parent, all in the one DICOM object.

Broker supports the following elements for this SOP class:

Table 71: Mitra Detached Patient Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
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 Telephone Numbers	(0010,2154)
Patient Address	(0010,1040)
Patient Birth Date	(0010,0030)
Patient Sex	(0010,0040)
Patient Weight	(0010,1030)
Ethnic Group	(0010,2160)
Patient Religious Preference	(0010,21F0)
Patient Data Confidentiality Constraint Desc.	(0040,3001)

Attribute Name	Tag
Patient State	(0038,0500)
Pregnancy Status	(0010,21C0)
Medical Alerts	(0010,2000)
Contrast Allergies	(0010,2110)
Special Needs	(0038,0050)
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)
Reference Patient Alias Sequence	(0038,0004)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 72: Mitra Detached Patient Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

5.1.1.3. Real World Activity – Mitra Detached Visit Management

5.1.1.3.1. Associated Real World Activity – Mitra Detached Visit Management

5.1.1.3.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve visit information. Broker does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.3.2. Presentation Context Table – Mitra Detached Visit Management

Broker supports the transfer syntaxes listed in Table 73.

Table 73: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 74: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Detached Visit Management	1.2.840.113532.3500.11	all from Table 73	SCP	None

5.1.1.3.3. SOP Specific Conformance – Mitra Detached Visit Management

Broker provides conformance to a Mitra Private SOP class used to fetch visit and patient demographic information. The purpose for the private SOP class is to minimize the overhead that goes along with the normalized DICOM model (i.e.: you send something at the results level, and to obtain patient level info, the SCU has to perform 3 additional N-Gets).

If the SCU negotiates the Mitra Detached Visit Management SOP rather than, or in addition to, the standard DICOM Detached Visit Management, *Broker* will use the private SOP class which sends one response that also contains the info from the parent, all in the one DICOM object.

Broker supports the following elements for this SOP class:

Table 75: Mitra Detached Visit Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
ALL Attributes from Table 71	
Institution Name	(0008,0080)
Institution Address	(0008,0081)
Admission ID	(0038,0010)
Issuer of Admission ID	(0038,0011)
Visit Status ID	(0038,0008)
Current Patient Location	(0038,0300)
Patient’s Institution Residence	(0038,0400)
Admitting Date	(0038,0020)
Admitting Time	(0038,0021)
Admitting Diagnosis Description	(0008,1080)
Discharge Date	(0038,0030)
Discharge Time	(0038,0032)

Attribute Name	Tag
Discharge Diagnosis Description	(0038,0040)
Route of Admissions	(0038,0016)
Referring Physician's Name	(0008,0090)
Referring Physician's Address	(0008,0092)
Scheduled Admission Date	(0038,001A)
Scheduled Admission Time	(0038,001B)
Scheduled Patient Institution Residence	(0038,001E)
Scheduled Discharge Date	(0038,001C)
Scheduled Discharge Time	(0038,001D)
Referenced Patient Sequence	(0008,1120)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Study Sequence	(0008,1110)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 76: Mitra Detached Visit Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

5.1.1.4. Real World Activity – Mitra Detached Study Management

5.1.1.4.1. Associated Real World Activity – Mitra Detached Study Management

5.1.1.4.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve study information. Broker does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.4.2. Presentation Context Table – Mitra Detached Study Management

Broker supports the transfer syntaxes listed in Table 77.

Table 77: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 78: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Detached Study Management	1.2.840.113532.3500.13	all from Table 77	SCP	None

5.1.1.4.3. SOP Specific Conformance – Mitra Detached Study Management

Broker provides conformance to a Mitra Private SOP class used to fetch study, visit and patient demographic information. The purpose for the private SOP class is to minimize the overhead that goes along with the normalized DICOM model (i.e.: you send something at the results level, and to obtain patient level info, the SCU has to perform 3 additional N-Gets).

If the SCU negotiates the Mitra Detached Study Management SOP rather than, or in addition to, the standard DICOM Detached Study Management, *Broker* will use the private SOP class which sends one response that also contains the info from the parent, all in the one DICOM object.

Broker supports the following elements for this SOP class:

Table 79: Mitra Detached Study Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
ALL Attributes from Table 75	
Study ID	(0020,0010)
Study ID Issuer	(0032,0012)
Accession Number	(0008,0050)
Study Instance UID	(0020,000D)
Study Status ID	(0032,000A)
Study Priority ID	(0032,000C)
Scheduled Study Start Date	(0032,1000)
Scheduled Study Start Time	(0032,1001)
Scheduled Study Stop Date	(0032,1010)
Scheduled Study Stop Time	(0032,1011)
Scheduled Study Location	(0032,1020)
Scheduled Study Location Application Entity Title	(0032,1021)
Requesting Service	(0032,1033)

Attribute Name	Tag
Requesting Physician	(0032,1032)
Requested Procedure Description	(0032,1060)
Requested Procedure Code Sequence	(0032,1064)
>Code Value	(0008,0100)
>Coding Scheme Designator	(0008,0102)
>Code Meaning	(0008,0104)
Study Arrival Date	(0032,1040)
Study Arrival Time	(0032,1041)
Study Date	(0008,0020)
Study Time	(0008,0030)
Study Completed Date	(0032,1050)
Study Completed Time	(0032,1051)
Study Verified Date	(0032,0032)
Study Verified Time	(0032,0033)
Study Read Date	(0032,0034)
Study Read Time	(0032,0035)
Name of Physician(s) Reading Study	(0008,1060)
Reason For Study	(0032,1030)
Referenced Patient Sequence	(0008,1120)
>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)
Referenced Results Sequence	(0008,1100)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)
Referenced Study Component Sequence	(0008,1111)
>Referenced SOP Class UID	(0008,1150)
>Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 80: Mitra Detached Study Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

5.1.1.5. Real World Activity – Mitra Detached Results Management

5.1.1.5.1. Associated Real World Activity – Mitra Detached Results Management

5.1.1.5.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve results information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.5.2. Presentation Context Table – Mitra Detached Results Management

Broker supports the transfer syntaxes listed in Table 81.

Table 81: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 82: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Detached Results Management	1.2.840.113532.3500.15	all from Table 81	SCP	None

5.1.1.5.3. SOP Specific Conformance – Mitra Detached Results Management

Broker provides conformance to a Mitra Private SOP class used to fetch results, study, visit and patient demographic information. The purpose for the private SOP class is to minimize the overhead that goes along with the normalized DICOM model (i.e.: you send something at the results level, and to obtain patient level info, the SCU has to perform 3 additional N-Gets).

If the SCU negotiates the Mitra Detached Results Management SOP rather than, or in addition to, the standard DICOM Detached Results Management, *Broker* will use the private SOP class which sends one response that also contains the info from the parent, all in the one DICOM object.

Broker supports the following elements for this SOP class:

Table 83: Mitra Detached Results Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
ALL Attributes from Table 79	
Results ID	(4008,0040)
Results ID Issuer	(4008,0042)
Impressions	(4008,0300)
Referenced Study Sequence	(0008,1110)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)
Referenced Interpretation Sequence	(4008,0005)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)

Broker returns one of the following status codes:

Table 84: Mitra Detached Results Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

5.1.1.6. Real World Activity – Mitra Detached Interpretation Management

5.1.1.6.1. Associated Real World Activity – Mitra Detached Interpretation Management

5.1.1.6.1.1. Activity as SCP

Broker will respond to DIMSE N-GET requests to retrieve interpretation information. Broker does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.6.2. Presentation Context Table – Mitra Detached Interpretation Management

Broker supports the transfer syntaxes listed in Table 85.

Table 85: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 86: Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Mitra Detached Interpretation Management	1.2.840.113532.3500.16	all from Table 85	SCP	None

5.1.1.6.3. SOP Specific Conformance – Mitra Detached Interpretation Management

Broker provides conformance to a Mitra Private SOP class used to fetch interpretation, results, study, visit and patient demographic information. The purpose for the private SOP class is to minimize the overhead that goes along with the normalized DICOM model (i.e.: you send something at the results level, and to obtain patient level info, the SCU has to perform 3 additional N-Gets).

If the SCU negotiates the Mitra Detached Interpretation Management SOP rather than, or in addition to, the standard DICOM Detached Interpretation Management, *Broker* will use the private SOP class which sends one response that also contains the info from the parent, all in the one DICOM object.

Broker supports the following elements for this SOP class:

Table 87: Mitra Detached Interpretation Management Object N-Get Attributes

Attribute Name	Tag
Specific Character Set	(0008,0005)
ALL Attributes from Table 83	
Interpretation ID	(4008,0200)
Interpretation ID Issuer	(4008,0202)
Interpretation Type ID	(4008,0210)
Interpretation Status ID	(4008,0212)
Interpretation Recorded Date	(4008,0100)
Interpretation Recorded Time	(4008,0101)
Interpretation Recorder	(4008,0102)
Interpretation Transcription Date	(4008,0108)
Interpretation Transcription Time	(4008,0109)
Interpretation Transcriber	(4008,010A)
Interpretation Author	(4008,010C)
Interpretation Text	(4008,010B)
Referenced Results Sequence	(0008,1100)
> Referenced SOP Class UID	(0008,1150)
> Referenced SOP Instance UID	(0008,1155)

Attribute Name	Tag
Interpretation Approver Sequence	(4008,0111)
>Interpretation Approval Date	(4008,0112)
>Interpretation Approval Time	(4008,0113)
>Physicians Approving Interpretation	(4008,0114)

Broker returns one of the following status codes:

Table 88: Mitra Detached Interpretation Management Status Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	0110		The operation was not successful.
Success	Success	0000		Operation performed properly.

6. Support for Extended Character Sets

Broker supports the following character sets:

- ISO-IR 6 (default) Basic G0 Set
- ISO-IR 100 Latin Alphabet No. 1
- ISO 2022 JP Japanese

Broker has full support for the ISO-IR 6 and ISO-IR 100 character sets. Support for the Japanese character sets is qualified by the following:

- The Specific Character Set (0008,0005) attribute is not examined.
- Handling of extended character sets is done on a per attribute basis. You specify the conversion to or from a character set by a mapping that is fixed for that AE title. The data must conform to the ISO 2022 encoding standard. Once that mapping is set, all data sent to Broker from that AE title must continue to use that character set on those attributes.
- Modality Worklist query keys may only be in the ISO-IR 100 character set. There is no support for querying using non-ASCII data. Returned data may be mapped to other character sets as described above.

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