

PACS Broker 1.5.3

DICOM Conformance Statement

February 21, 2005



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Revision History

Revision	Date	Author	Reason for Change
1.0	1/29/95	Andrew	Initial release
2.0	3/28/95	Andrew	Major revision to reflect version 2.0 of HIS-SCP
2.1	4/4/95	Andrew	Modifications to describe the configuration abilities of HISSCP
2.2	9/5/95	Andrew	Added the Study Created Event message
2.3	10/30/95	Andrew	Made changes to remove private extensions, and fix inconsistencies.
3.0	1/30/96	Eric	Added new services for version 3
3.1	4/10/96	Andrew	Minor corrections
4.0	Mar 13/97	Rick	HIS-SCP has become Broker. Small modifications made throughout.
4.1	April 17, 1997	Rick	Dropped N-Set and N-Get of Study Component as SCP. Added C-Find for Modality Worklist and N-Create of Study Component as SCU.
4.2	11/21/97	Ray	Added several new attributes to various objects and remove others which were not being used. Added documentation for new C-Find-Report SOP class.
4.3	Dec 4, 1997	Dave S.	Added type 3 (optional) attributes to Modality Worklist object.
4.4	Dec 16, 1997	Dave S.	Updated Real World MWL, C-Find Report
4.5	April 23, 1998	Dave S.	Added requesting_service, patient_address to modality worklist. Current_patient_location set to it's proper DICOM tag
4.6	Aug 31, 1998	Dave S.	Added descriptions of Broker when SCU. Updated Study Component to reflect implementation. Provided explanation for usage of study status id in C-Find MWL.
4.7	Sept 30, 1998	Paul S.	Added descriptions of Broker as Query/ Retrieve SCU (to handle RIS-based prefetching). Added descriptions of Mitra Private Detached Management SOP classes
4.8	Feb 16, 2001	Ian Lim	Expanded descriptions of Mitra Private Detached Management SOP classes, and also added them as an SCU
4.9	Feb 21, 2001	Ian Lim	Added type information (1,2,3, C etc.) to the Mitra Private Detached Management SOP classes.

4.10	March 26, 2001	Ian Lim	Removed scheduled study location application entity title (0032,1021).
4.11	Feb. 8, 2005	Wallace Gaebel	Updated Doc. title for Broker 1.5.3. Changed 'repository' references to 'caching'.
4.12	Feb. 15, 2005	Wallace Gaebel	Updated Table of Contents and Tables. Finished paragraph in section 5.1.1.2.

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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.

Note: PACS Broker 1.5.3 is an AGFA product. References throughout the document to Mitra are for backwards compatibility. All references to Mitra should be considered synonymous with AGFA Healthcare.

1.2. Sources for this Document

- ACR-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 cache* that supports the ISIS model.
- There is 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. Event Notification/Data Requests

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 cache*. 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 cache* 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 cache* 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 cache* 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 cache 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.

2.2. 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.

* Although *Broker* does cache reports, it should be noted that *Broker* is not a report repository. *Broker* will automatically delete reports from its cache based on configuration settings. In the event that a report is requested that *Broker* can not retrieve from either its local cache or via a subsequent query to a RIS system, the person initiating the query will need to obtain the report directly from 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.

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
Study Component Management (N-CREATE, N-SET only)	1.2.840.10008.3.1.2.3.2
Modality Worklist Management	1.2.840.10008.5.1.4.31

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

3.1.1.2. 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.

3.1.1.3. 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.

3.1.1.4. Implementation Identifying Information

Broker will respond with the following implementation identifying parameters:

- Implementation Class UID 1.2.124.113532.3320
- Implementation Version Name BROKER971.0

The implementation version name policies are the following: product name “**BROKER**” followed by the year of the product “97”, and finally the version of the product, “1.0”.

3.1.1.5. 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
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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)
	>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)
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	Instance Creation Date	(0008,0012)
	Instance Creation Time	(0008,0013)
	Instance Creator UID	(0008,0014)
Study Updated / Deleted / Scheduled / Started / Completed / Verified / Read, Patient Arrived	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)
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)
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)
	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	(4008,0050)
	> Referenced SOP Class UID	(0008,1150)
	> 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

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)
> 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 does not support the DIMSE-N GET Study Component service class as an SCP.

3.1.2.7.2. Presentation Context Table - Study Component Management

Broker supports the transfer syntaxes listed in Table 56.

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
	>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	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
	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
Imaging Service Request	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
	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)	SV	2
Visit Relationship	Referenced Patient Sequence	(0008,1120)		2
	>Referenced SOP Class UID	(0008,1150)		2
	>Referenced SOP Instance UID	(0008,1155)	SV	2
Patient Identification	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 Telephone Numbers	(0010,2154)		3
Patient Demographic	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 list 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 3.1.2.9) 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 list 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)
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)
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.
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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)
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)
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)
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	(4008,0050)
> 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 may be queried by the SCU for existing Study Components using the DIMSE-N GET Study Component service class.

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
	>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

Requested Procedure	>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	
	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	
	Imaging Service Request	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
		Current Patient Location	(0038,0300)		2
Visit Status	Referenced Patient Sequence	(0008,1120)		2	
	>Referenced SOP Class UID	(0008,1150)		2	
Visit Relationship	>Referenced SOP Instance UID	(0008,1155)		2	
	Patient Identification	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 Telephone Numbers		(0010,2154)		3	

Patient Demographic	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

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 62: 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

5.1.1.1.1.1. 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.

5.1.1.1.1.2. 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.

5.1.1.1.2. Presentation Context Table – Mitra Report Management

Broker supports the transfer syntaxes listed in Table 63.

Table 63: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 64: 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 63	SCP	None
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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 65: 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)		
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)		
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. Mitra Detached Management N-EVENT REPORT Parameters

Each Mitra Detached Management N-EVENT REPORT must contain N-EVENT REPORT parameters that specify what SOP Class is being used, as well as, the SOP instance being affected by this event.

Table 66: Mitra Detached Management N-EVENT REPORT Parameters

Attribute Name	Tag	Req. Type
Message ID	(0000,0110)	1
Affected SOP Class UID	(0000,0002)	1
Affected SOP Instance UID	(0000,1000)	1
Event Type	(0000,1002)	1

Broker uses the affected SOP instance UID as the UID for the event in question. For example, a patient event (SOP Class 1.2.840.113532.3500.10) would use the affected SOP instance UID as the patient UID within *Broker*, and a results event (SOP Class 1.2.840.113532.3500.15) uses the SOP instance as a results UID. Subsequent events can then use this UID in the required Referenced Patient/Visit/Study etc. sequences to refer to this particular instance.

5.1.1.2.1. Real World Activity – Mitra Detached Patient Management

5.1.1.2.2. Associated Real World Activity – Mitra Detached Patient Management

5.1.1.2.2.1. Activity as SCU

Broker will receive DIMSE N-EVENT REPORT requests to set patient demographic information. *Broker* does not support any other DIMSE-N command as an SCU with this presentation context.

5.1.1.2.2.2. Activity as SCP

Broker will send DIMSE N-EVENT REPORT for patient demographic information. *Broker* does not support any other DIMSE-N command as an SCP with this presentation context.

5.1.1.2.3. Presentation Context Table – Mitra Detached Patient Management

Broker supports the transfer syntaxes listed in Table 67.

Table 67: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 68: 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 67	SCP	None

5.1.1.2.4. SOP Specific Conformance – Mitra Detached Patient Management

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

If an SCU negotiates the Mitra Detached Patient Management SOP with *Broker* 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 69: Mitra Detached Patient Management Object Attributes

Attribute Name	Tag	Req. Type
Specific Character Set	(0008,0005)	1C
Patient Name	(0010,0010)	2
Patient ID	(0010,0020)	1
Issuer of Patient ID	(0010,0021)	3
Other Patient Ids	(0010,1000)	3
Other Patient Names	(0010,1001)	3
Patient Telephone Numbers	(0010,2154)	3
Patient Address	(0010,1040)	3
Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Patient Weight	(0010,1030)	3
Ethnic Group	(0010,2160)	3
Patient Religious Preference	(0010,21F0)	3
Patient Data Confidentiality Constraint Desc.	(0040,3001)	3
Patient State	(0038,0500)	3
Pregnancy Status	(0010,21C0)	3
Medical Alerts	(0010,2000)	3
Contrast Allergies	(0010,2110)	3

Special Needs	(0038,0050)	3
Referenced Study Sequence	(0008,1110)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Visit Sequence	(0008,1125)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Alias Sequence	(0038,0004)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
All updated attributes		1C(All updated attributes when event is patient updated)

Broker returns one of the following status codes.

Table 70: 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 SCU

Broker will receive a composite DIMSE N-EVENT REPORT request to set visit, and patient information. Broker does not support any other DIMSE-N command as an SCU with this presentation context.

5.1.1.3.1.2. Activity as SCP

Broker will send a composite DIMSE N-EVENT REPORT request for visit, and patient 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 71.

Table 71: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 72: 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 71	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 send and receive composite 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 (ie: 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 with *Broker* 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 73: Mitra Detached Visit Management Object Attributes

Attribute Name	Tag	Req. Type
Specific Character Set	(0008,0005)	1C
Patient Name	(0010,0010)	2
Patient ID	(0010,0020)	1
Issuer of Patient ID	(0010,0021)	3
Other Patient Ids	(0010,1000)	3
Other Patient Names	(0010,1001)	3
Patient Telephone Numbers	(0010,2154)	3
Patient Address	(0010,1040)	3

Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Patient Weight	(0010,1030)	3
Ethnic Group	(0010,2160)	3
Patient Religious Preference	(0010,21F0)	3
Patient Data Confidentiality Constraint Desc.	(0040,3001)	3
Patient State	(0038,0500)	3
Pregnancy Status	(0010,21C0)	3
Medical Alerts	(0010,2000)	3
Contrast Allergies	(0010,2110)	3
Special Needs	(0038,0050)	3
Referenced Study Sequence	(0008,1110)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Visit Sequence	(0008,1125)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Alias Sequence	(0038,0004)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Patient Sequence	(0008,1120)	1
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Institution Name	(0008,0080)	3
Institution Address	(0008,0081)	3
Admission ID	(0038,0010)	1
Issuer of Admission ID	(0038,0011)	3
Visit Status ID	(0038,0008)	1
Current Patient Location	(0038,0300)	1C (required for patient transferred event)
Patient's Institution Residence	(0038,0400)	1C (required for patient

		transferred event)
Admitting Date	(0038,0020)	1C (required for patient admitted event)
Admitting Time	(0038,0021)	1C (when patient admitted event)
Admitting Diagnosis Description	(0008,1080)	3
Discharge Date	(0038,0030)	1C(when patient discharged event)
Discharge Time	(0038,0032)	1C (when patient discharged event)
Discharge Diagnosis Description	(0038,0040)	3
Route of Admissions	(0038,0016)	1C(when patient admitted event)
Referring Physician's Name	(0008,0090)	1C(when patient admitted event)
Referring Physician's Address	(0008,0092)	3
Scheduled Admission Date	(0038,001A)	1C (required for visit scheduled event)
Scheduled Admission Time	(0038,001B)	1C (when visit scheduled event)
Scheduled Patient Institution Residence	(0038,001E)	1C (when visit scheduled event)
Scheduled Discharge Date	(0038,001C)	3
Scheduled Discharge Time	(0038,001D)	3
All updated attributes		1C (any attribute updated for a visit updated event)

Broker returns one of the following status codes.

Table 74: 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 SCU

Broker will receive a composite DIMSE N-EVENT REPORT request to set study, visit, and patient information. *Broker* does not support any other DIMSE-N command as an SCU with this presentation context.

5.1.1.4.1.2. Activity as SCP

Broker will send a composite DIMSE N-EVENT REPORT request for study, visit, and patient 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 75.

Table 75: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 76: 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 75	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 send and receive composite 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 (ie: 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 with *Broker* 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 77: Mitra Detached Study Management Object Attributes

Attribute Name	Tag	Req. Type
Specific Character Set	(0008,0005)	1C
Patient Name	(0010,0010)	2
Patient ID	(0010,0020)	1
Issuer of Patient ID	(0010,0021)	3
Other Patient Ids	(0010,1000)	3
Other Patient Names	(0010,1001)	3
Patient Telephone Numbers	(0010,2154)	3
Patient Address	(0010,1040)	3
Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Patient Weight	(0010,1030)	3
Ethnic Group	(0010,2160)	3
Patient Religious Preference	(0010,21F0)	3
Patient Data Confidentiality Constraint Desc.	(0040,3001)	3
Patient State	(0038,0500)	3
Pregnancy Status	(0010,21C0)	3
Medical Alerts	(0010,2000)	3
Contrast Allergies	(0010,2110)	3
Special Needs	(0038,0050)	3
Referenced Study Sequence	(0008,1110)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Visit Sequence	(0008,1125)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Alias Sequence	(0038,0004)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Sequence	(0038,0004)	1

>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Institution Name	(0008,0080)	3
Institution Address	(0008,0081)	3
Admission ID	(0038,0010)	3
Issuer of Admission ID	(0038,0011)	3
Visit Status ID	(0038,0008)	3
Current Patient Location	(0038,0300)	3
Patient's Institution Residence	(0038,0400)	3
Admitting Date	(0038,0020)	3
Admitting Time	(0038,0021)	3
Admitting Diagnosis Description	(0008,1080)	3
Discharge Date	(0038,0030)	3
Discharge Time	(0038,0032)	3
Discharge Diagnosis Description	(0038,0040)	3
Route of Admissions	(0038,0016)	3
Referring Physician's Name	(0008,0090)	3
Referring Physician's Address	(0008,0092)	3
Scheduled Admission Date	(0038,001A)	3
Scheduled Admission Time	(0038,001B)	3
Scheduled Patient Institution Residence	(0038,001E)	3
Scheduled Discharge Date	(0038,001C)	3
Scheduled Discharge Time	(0038,001D)	3
Study ID	(0020,0010)	1
Study ID Issuer	(0032,0012)	3
Accession Number	(0008,0050)	1
Study Instance UID	(0020,000D)	1
Modality	(0008, 0060)	3
Study Status ID	(0032,000A)	1C (when study scheduled event)
Study Priority ID	(0032,000C)	3
Scheduled Study Start Date	(0032,1000)	1C (required for study scheduled event)

Scheduled Study Start Time	(0032,1001)	1C (required for study scheduled event)
Scheduled Study Stop Date	(0032,1010)	3
Scheduled Study Stop Time	(0032,1011)	3
Scheduled Study Location	(0032,1020)	1C (when study scheduled event)
Requesting Service	(0032,1033)	3
Requesting Physician	(0032,1032)	3
Requested Procedure Description	(0032,1060)	1C (when study scheduled event)
Requested Procedure Code Sequence	(0032,1064)	1C (when study scheduled event)
>Code Value	(0008,0100)	1C (if sequence present)
>Coding Scheme Designator	(0008,0102)	1C (if sequence present)
>Code Meaning	(0008,0104)	1C (if sequence present)
Study Arrival Date	(0032,1040)	1C (required for patient arrived event)
Study Arrival Time	(0032,1041)	1C (required for patient arrived event)
Study Date	(0008,0020)	1C (required for study started event)
Study Time	(0008,0030)	1C (required for study started event)
Study Completed Date	(0032,1050)	1C (required for study completed event)
Study Completed Time	(0032,1051)	1C (required for study completed event)
Study Verified Date	(0032,0032)	1C (required for study

		verified event)
Study Verified Time	(0032,0033)	1C (required for study verified event)
Study Read Date	(0032,0034)	1C (required for study read event)
Study Read Time	(0032,0035)	1C (required for study read event)
Name of Physician(s) Reading Study	(0008,1060)	3
Reason For Study	(0032,1030)	3
Referenced Results Sequence	(0008,1100)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Study Component Sequence	(0008,1111)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
All updated attributes		1C (any attribute updated for a study updated event)

Broker returns one of the following status codes.

Table 78: 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 SCU

Broker will receive a composite DIMSE N-EVENT REPORT request for results, study, visit, and patient information. *Broker* does not support any other DIMSE-N command as an SCU with this presentation context.

5.1.1.5.1.2. Activity as SCP

Broker will send a composite DIMSE N-EVENT REPORT request for results, study, visit, and patient 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 79.

Table 79: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 80: 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 79	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 send and receive composite 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 (ie: 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 with *Broker* 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 81: Mitra Detached Results Management Object Attributes

Attribute Name	Tag	Req. Type
Specific Character Set	(0008,0005)	1C
Patient Name	(0010,0010)	2

Patient ID	(0010,0020)	1
Issuer of Patient ID	(0010,0021)	3
Other Patient Ids	(0010,1000)	3
Other Patient Names	(0010,1001)	3
Patient Telephone Numbers	(0010,2154)	3
Patient Address	(0010,1040)	3
Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Patient Weight	(0010,1030)	3
Ethnic Group	(0010,2160)	3
Patient Religious Preference	(0010,21F0)	3
Patient Data Confidentiality Constraint Desc.	(0040,3001)	3
Patient State	(0038,0500)	3
Pregnancy Status	(0010,21C0)	3
Medical Alerts	(0010,2000)	3
Contrast Allergies	(0010,2110)	3
Special Needs	(0038,0050)	3
Referenced Study Sequence	(0008,1110)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Visit Sequence	(0008,1125)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Alias Sequence	(0038,0004)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Sequence	(0008,1120)	1
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if

		sequence is present)
Institution Name	(0008,0080)	3
Institution Address	(0008,0081)	3
Admission ID	(0038,0010)	3
Issuer of Admission ID	(0038,0011)	3
Visit Status ID	(0038,0008)	3
Current Patient Location	(0038,0300)	3
Patient's Institution Residence	(0038,0400)	3
Admitting Date	(0038,0020)	3
Admitting Time	(0038,0021)	3
Admitting Diagnosis Description	(0008,1080)	3
Discharge Date	(0038,0030)	3
Discharge Time	(0038,0032)	3
Discharge Diagnosis Description	(0038,0040)	3
Route of Admissions	(0038,0016)	3
Referring Physician's Name	(0008,0090)	3
Referring Physician's Address	(0008,0092)	3
Scheduled Admission Date	(0038,001A)	3
Scheduled Admission Time	(0038,001B)	3
Scheduled Patient Institution Residence	(0038,001E)	3
Scheduled Discharge Date	(0038,001C)	3
Scheduled Discharge Time	(0038,001D)	3
Study ID	(0020,0010)	1
Study ID Issuer	(0032,0012)	3
Accession Number	(0008,0050)	1
Study Instance UID	(0020,000D)	1
Modality	(0008,0060)	3
Study Status ID	(0032,000A)	3
Study Priority ID	(0032,000C)	3
Scheduled Study Start Date	(0032,1000)	3
Scheduled Study Start Time	(0032,1001)	3
Scheduled Study Stop Date	(0032,1010)	3
Scheduled Study Stop Time	(0032,1011)	3
Scheduled Study Location	(0032,1020)	3
Requesting Service	(0032,1033)	3
Requesting Physician	(0032,1032)	3
Requested Procedure Description	(0032,1060)	3

Requested Procedure Code Sequence	(0032,1064)	3
>Code Value	(0008,0100)	1C (if sequence present)
>Coding Scheme Designator	(0008,0102)	1C (if sequence present)
>Code Meaning	(0008,0104)	1C (if sequence present)
Study Arrival Date	(0032,1040)	3
Study Arrival Time	(0032,1041)	3
Study Date	(0008,0020)	3
Study Time	(0008,0030)	3
Study Completed Date	(0032,1050)	3
Study Completed Time	(0032,1051)	3
Study Verified Date	(0032,0032)	3
Study Verified Time	(0032,0033)	3
Study Read Date	(0032,0034)	3
Study Read Time	(0032,0035)	3
Name of Physician(s) Reading Study	(0008,1060)	3
Reason For Study	(0032,1030)	3
Referenced Results Sequence	(0008,1100)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Study Component Sequence	(0008,1111)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Results ID	(4008,0040)	1
Results ID Issuer	(4008,0042)	3
Impressions	(4008,0300)	3
Referenced Interpretation Sequence	(4008,0050)	3
> Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
> Referenced SOP Instance UID	(0008,1155)	1C (if

		sequence is present)
All updated attributes		1C (any attribute updated for a results updated event)

Broker returns one of the following status codes.

Table 82: 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 SCU

Broker will receive a composite DIMSE N-EVENT REPORT request to set interpretation, results, study, visit, and patient information. Broker does not support any other DIMSE-N command as an SCU with this presentation context.

5.1.1.6.1.2. Activity as SCP

Broker will send a composite DIMSE N-EVENT REPORT request to send interpretation, results, study, visit, and patient 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 83.

Table 83: Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 84: 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 83	SCP	None
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5.1.1.6.3. SOP Specific Conformance – Mitra Detached Interpretation Management

Broker provides conformance to a Mitra Private SOP class used to send and receive composite 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 (ie: 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 with *Broker* 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 85: Mitra Detached Interpretation Management Object Attributes

Attribute Name	Tag	
Specific Character Set	(0008,0005)	1C
Patient Name	(0010,0010)	2
Patient ID	(0010,0020)	1
Issuer of Patient ID	(0010,0021)	3
Other Patient Ids	(0010,1000)	3
Other Patient Names	(0010,1001)	3
Patient Telephone Numbers	(0010,2154)	3
Patient Address	(0010,1040)	3
Patient Birth Date	(0010,0030)	2
Patient Sex	(0010,0040)	2
Patient Weight	(0010,1030)	3
Ethnic Group	(0010,2160)	3
Patient Religious Preference	(0010,21F0)	3
Patient Data Confidentiality Constraint Desc.	(0040,3001)	3
Patient State	(0038,0500)	3
Pregnancy Status	(0010,21C0)	3
Medical Alerts	(0010,2000)	3
Contrast Allergies	(0010,2110)	3
Special Needs	(0038,0050)	3
Referenced Study Sequence	(0008,1110)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is

		present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Visit Sequence	(0008,1125)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Alias Sequence	(0038,0004)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Reference Patient Sequence	(0008,1120)	1
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Institution Name	(0008,0080)	3
Institution Address	(0008,0081)	3
Admission ID	(0038,0010)	3
Issuer of Admission ID	(0038,0011)	3
Visit Status ID	(0038,0008)	3
Current Patient Location	(0038,0300)	3
Patient's Institution Residence	(0038,0400)	3
Admitting Date	(0038,0020)	3
Admitting Time	(0038,0021)	3
Admitting Diagnosis Description	(0008,1080)	3
Discharge Date	(0038,0030)	3
Discharge Time	(0038,0032)	3
Discharge Diagnosis Description	(0038,0040)	3
Route of Admissions	(0038,0016)	3
Referring Physician's Name	(0008,0090)	3
Referring Physician's Address	(0008,0092)	3
Scheduled Admission Date	(0038,001A)	3
Scheduled Admission Time	(0038,001B)	3

Scheduled Patient Institution Residence	(0038,001E)	3
Scheduled Discharge Date	(0038,001C)	3
Scheduled Discharge Time	(0038,001D)	3
Study ID	(0020,0010)	1
Study ID Issuer	(0032,0012)	3
Accession Number	(0008,0050)	1
Study Instance UID	(0020,000D)	1
Modality	(0008, 0060)	3
Study Status ID	(0032,000A)	3
Study Priority ID	(0032,000C)	3
Scheduled Study Start Date	(0032,1000)	3
Scheduled Study Start Time	(0032,1001)	3
Scheduled Study Stop Date	(0032,1010)	3
Scheduled Study Stop Time	(0032,1011)	3
Scheduled Study Location	(0032,1020)	3
Requesting Service	(0032,1033)	3
Requesting Physician	(0032,1032)	3
Requested Procedure Description	(0032,1060)	3
Requested Procedure Code Sequence	(0032,1064)	3
>Code Value	(0008,0100)	1C (if sequence present)
>Coding Scheme Designator	(0008,0102)	1C (if sequence present)
>Code Meaning	(0008,0104)	1C (if sequence present)
Study Arrival Date	(0032,1040)	3
Study Arrival Time	(0032,1041)	3
Study Date	(0008,0020)	3
Study Time	(0008,0030)	3
Study Completed Date	(0032,1050)	3
Study Completed Time	(0032,1051)	3
Study Verified Date	(0032,0032)	3
Study Verified Time	(0032,0033)	3
Study Read Date	(0032,0034)	3
Study Read Time	(0032,0035)	3
Name of Physician(s) Reading Study	(0008,1060)	3
Reason For Study	(0032,1030)	3

Referenced Results Sequence	(0008,1100)	1
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Referenced Study Component Sequence	(0008,1111)	3
>Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
>Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Results ID	(4008,0040)	1
Results ID Issuer	(4008,0042)	3
Impressions	(4008,0300)	3
Referenced Interpretation Sequence	(4008,0050)	3
> Referenced SOP Class UID	(0008,1150)	1C (if sequence is present)
> Referenced SOP Instance UID	(0008,1155)	1C (if sequence is present)
Interpretation ID	(4008,0200)	1
Interpretation ID Issuer	(4008,0202)	3
Interpretation Type ID	(4008,0210)	1C (when interpretation created event)
Interpretation Status ID	(4008,0212)	1C (when interpretation created event)
Interpretation Recorded Date	(4008,0100)	1C (required for interpretation recorded event)
Interpretation Recorded Time	(4008,0101)	1C (when interpretation recorded event)
Interpretation Recorder	(4008,0102)	1C (when interpretation recorded event)
Interpretation Transcription Date	(4008,0108)	1C (required for interpretation transcribed)

		event)
Interpretation Transcription Time	(4008,0109)	1C (when interpretation transcribed event)
Interpretation Transcriber	(4008,010A)	3
Interpretation Author	(4008,010C)	1C (required for interpretation transcribed event)
Interpretation Text	(4008,010B)	3
Interpretation Approver Sequence	(4008,0111)	1C (required for interpretation approved event)
>Interpretation Approval Date	(4008,0112)	1C (if sequence is present)
>Interpretation Approval Time	(4008,0113)	1C (if sequence is present)
>Physicians Approving Interpretation	(4008,0114)	1C (if sequence is present)
All updated attributes		1C (any attribute updated for an interpretation updated event)

Broker returns one of the following status codes.

Table 86: 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 is supports the following character sets:

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

This document was approved by:

Signatures

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