



EASTMAN KODAK COMPANY
HEALTH IMAGING DIVISION

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VIPARCHIVE GRID DICOM CONFORMANCE STATEMENT

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1. INTRODUCTION

1.1. Scope and Field of Application

This document is the DICOM Conformance Statement for VIParchive Grid 1.0. The purpose of this document is to describe how VIParchive Grid Data collaborates in a DICOM network with other DICOM Systems.

 **Note** – VIParchive Grid is implemented on top of MERGE Technologies Corporation MergeCOM-3 Advanced Integrator's Tool Kit.

1.2. References

[DICOM-3]	NEMA. Digital Imaging and Communications in Medicine (DICOM).
[OGSA]	GFD_1.030. The Open Grid Services Architecture, Version 1.0.
[OAIS]	Consultative Committee for Space Data System. Reference Model for an Open Archival Information System (OAIS). CCSDS 650.0

1.3. Definitions

See [DICOM-3].

1.4. Symbols and Abbreviations

Symbols and abbreviations related to DICOM (see [DICOM-3]):

SCP	Storage Class Provider
SCU	Storage Class User
AE	Application Entity
SOP	Service-Object Pair
PDU	Protocol Data Units
DUL	DICOM Upper Layer
DIMSE	DICOM Message Service Element
IOD	Information Object Definition
IUD	Unique Identifier
VR	Value Representation
VM	Value Multiplicity

Symbols and abbreviations relate to VIParchive Grid:

VIPA	VIParchive
DAP	Data Access Point
DC	Data Center
AIP	Archive Information Package
MERGE-3	MergeCOM-3 Advanced Toolkit from Merge Technologies Inc.

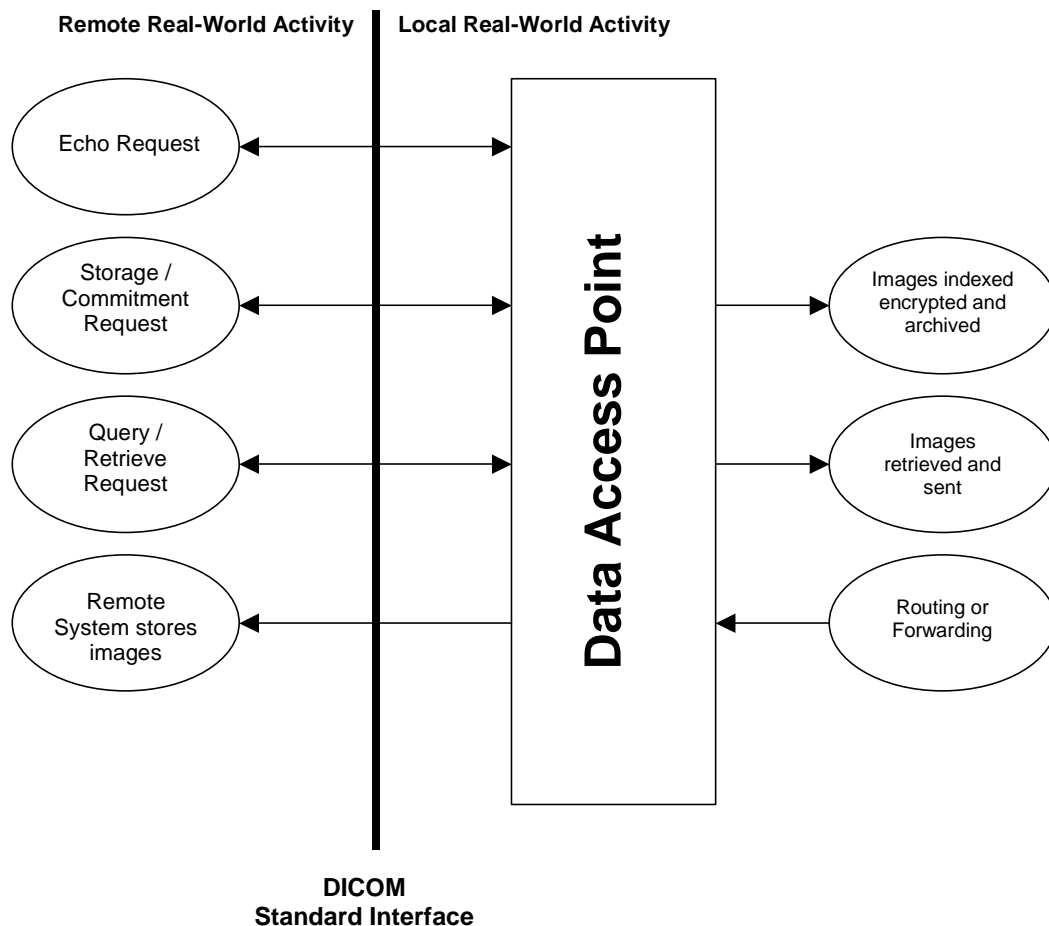
2. IMPLEMENTATION MODEL

VIParchive Grid is a Data Grid System ([OGSA]). Access to the Grid's services is available through Data Access Point (DAP).

DICOM services provided by a DAP are implemented as a set of separate processes sharing the same Application Entity Title. This document specifies the DICOM conformance of one DAP.

2.1. Application Data Flow Diagram

Figure 1 - VIParchive Grid DICOM Data Flow Diagram



The Remote Storage SCU opens an association with the DAP and sends C-STORE requests. The DAP extracts metadata required by the Data Management function of VIPA ([OASIS]). Depending on the configuration, the DAP may encrypt both the metadata and the data before building the AIP transferred to the Data Center where are located VIPA Grid's archival storage resources.

The Remote SCU may also send a N-ACTION request for asking Storage Commitment. The DAP sends N-EVENT to report the storage completion through another association.

The Query/Retrieve SCU queries the DAP and sends C-MOVE requests. When data are encrypted, the DAP decrypts the data on the fly before sending them to the SCU (both metadata for responding

to C-FIND requests and images for C-MOVE requests). Therefore, encryption is transparent to the SCU.

The DAP sends images (Routing or Forwarding) as a Storage SCU to a Remote DICOM System acting as a Storage SCP. Routing is triggered when an image is received independently from the indexing process. Routing is performed without accessing Grid's resources located on the DC. Forwarding is performed when a study has been totally received and archived in the DC. Typically, forwarding is used for distributing images to DICOM systems located on remote site, while routing is used for distributing images to DICOM systems located on the same site as the DAP that receives the images.

2.2. Functional definition of Application Entities

The DAP acts as an SCP for the Verification, Storage, Storage Commitment and Query/Retrieve SOP Classes.

The DAP acts as an SCU for the Storage SOP Classes.

2.3. Sequencing of Real-World Activities

Not applicable

3. AE SPECIFICATIONS

3.1. VIParchive Grid services AE Specifications

The DAP provides Standard Conformance to the following SOP Classes as both a Storage SCU and SCP:

Tableau 1 - Storage SOP Classes as SCU and SCP

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.1.27	Stored Print Storage
1.2.840.10008.5.1.1.29	Hardcopy Grayscale Image Storage
1.2.840.10008.5.1.1.30	Hardcopy Color Image Storage
1.2.840.10008.5.1.4.1.1.1	Computed Radiography Image Storage
1.2.840.10008.5.1.4.1.1.1.1	Digital X-Ray Image Storage - For Presentation
1.2.840.10008.5.1.4.1.1.1.1.1	Digital X-Ray Image Storage - For Processing
1.2.840.10008.5.1.4.1.1.1.2	Digital Mammography X-Ray Image Storage - For Presentation
1.2.840.10008.5.1.4.1.1.1.2.1	Digital Mammography X-Ray Image Storage - For Processing
1.2.840.10008.5.1.4.1.1.1.3	Digital Intra-oral X-Ray Image Storage - For Presentation
1.2.840.10008.5.1.4.1.1.1.3.1	Digital Intra-oral X-Ray Image Storage - For Processing
1.2.840.10008.5.1.4.1.1.2	CT Image Storage
1.2.840.10008.5.1.4.1.1.2.1	Enhanced CT Image Storage
1.2.840.10008.5.1.4.1.1.3	Ultrasound Multi-frame Image Storage (retired)
1.2.840.10008.5.1.4.1.1.3.1	Ultrasound Multi-frame Image Storage
1.2.840.10008.5.1.4.1.1.4	MR Image Storage
1.2.840.10008.5.1.4.1.1.4.1	Enhance MR Image Storage
1.2.840.10008.5.1.4.1.1.4.2	MR Spectroscopy Storage
1.2.840.10008.5.1.4.1.1.5	Nuclear Medicine Image Storage (Retired)
1.2.840.10008.5.1.4.1.1.6	Ultrasound Image Storage (retired)
1.2.840.10008.5.1.4.1.1.6.1	Ultrasound Image Storage
1.2.840.10008.5.1.4.1.1.7	Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.1	Multi-frame Single Bit Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.2	Multi-frame Grayscale Byte Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.3	Multi-frame Grayscale Word Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.7.4	Multi-frame True Color Secondary Capture Image Storage
1.2.840.10008.5.1.4.1.1.8	Standalone Overlay Storage
1.2.840.10008.5.1.4.1.1.9	Standalone Curve Storage
1.2.840.10008.5.1.4.1.1.9.1.1	12-lead ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.1.2	General ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.1.3	Ambulatory ECG Waveform Storage
1.2.840.10008.5.1.4.1.1.9.2.1	Hemodynamic Waveform Storage
1.2.840.10008.5.1.4.1.1.9.3.1	Cardiac Electrophysiology Waveform Storage
1.2.840.10008.5.1.4.1.1.9.4.1	Basic Voice Audio Waveform Storage
1.2.840.10008.5.1.4.1.1.10	Standalone Modality LUT Storage
1.2.840.10008.5.1.4.1.1.11	Standalone VOI LUT Storage
1.2.840.10008.5.1.4.1.1.11.1	Grayscale Softcopy Presentation State Storage
1.2.840.10008.5.1.4.1.1.12.1	X-Ray Angiographic Image Storage
1.2.840.10008.5.1.4.1.1.12.2	X-Ray Radiofluoroscopic Image Storage
1.2.840.10008.5.1.4.1.1.12.3	X-Ray Angiographic Bi-Plane Image Storage
1.2.840.10008.5.1.4.1.1.20	Nuclear Medicine Image Storage
1.2.840.10008.5.1.4.1.1.66	Raw Data Storage
1.2.840.10008.5.1.4.1.1.66.1	Spatial Registration Storage
1.2.840.10008.5.1.4.1.1.66.2	Spatial Fiducials Storage
1.2.840.10008.5.1.4.1.1.77.1.1	VL Endoscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.1.1	Video Endoscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.2	VL Microscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.2.1	Video Microscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.3	VL Slide-Coordinates Microscopic Image Storage
1.2.840.10008.5.1.4.1.1.77.1.4	VL Photographic Image Storage

1.2.840.10008.5.1.4.1.1.77.1.4.1	Video Photographic Image Storage
1.2.840.10008.5.1.4.1.1.88.11	Basic Text Structured Reporting Storage
1.2.840.10008.5.1.4.1.1.88.22	Enhanced Structured Reporting Storage
1.2.840.10008.5.1.4.1.1.88.33	Comprehensive Structured Reporting Storage
1.2.840.10008.5.1.4.1.1.88.40	Procedure Log Storage
1.2.840.10008.5.1.4.1.1.88.50	Mammography CAD SR
1.2.840.10008.5.1.4.1.1.88.59	Key Object Selection Document
1.2.840.10008.5.1.4.1.1.88.65	Chest CAD SR Storage
1.2.840.10008.5.1.4.1.1.128	Positron Emission Tomography Image Storage
1.2.840.10008.5.1.4.1.1.129	Positron Emission Tomography Curve Storage
1.2.840.10008.5.1.4.1.1.481.1	RT Image Storage
1.2.840.10008.5.1.4.1.1.481.2	RT Dose Storage
1.2.840.10008.5.1.4.1.1.481.3	RT Structure Set Storage
1.2.840.10008.5.1.4.1.1.481.4	RT Beams Treatment Record Storage
1.2.840.10008.5.1.4.1.1.481.5	RT Plan Storage
1.2.840.10008.5.1.4.1.1.481.6	RT Brachy Treatment Record Storage
1.2.840.10008.5.1.4.1.1.481.7	RT Treatment Summary Record Storage

The DAP provides Standard Conformance to the Verification and Storage Commitment Push Model SOP Classes as a SCP:


Tableau 2 - Verification and Storage Commitment SOP Classes as SCP

SOP Class UID	SOP Class Name
1.2.840.10008.1.1	Verification SOP Class
1.2.840.10008.1.20.1	Storage Commitment Push Model

The DAP provides Standard Conformance to the following SOP Classes as both SCU and SCP.

Tableau 3 - Query/Retrieve SOP Classes as SCU and SCP

SOP Class UID	SOP Class Name
1.2.840.10008.5.1.4.1.2.1.1	Patient Root Query / Retrieve Information Model – FIND
1.2.840.10008.5.1.4.1.2.1.2	Patient Root Query / Retrieve Information Model – MOVE
1.2.840.10008.5.1.4.1.2.2.1	Study Root Query / Retrieve Information Model – FIND
1.2.840.10008.5.1.4.1.2.2.2	Study Root Query / Retrieve Information Model – MOVE
1.2.840.10008.5.1.4.1.2.3.1	Patient / Study Only Root Query / Retrieve Information Model – FIND
1.2.840.10008.5.1.4.1.2.3.2	Patient / Study Only Root Query / Retrieve Information Model – MOVE

 **Note** – These SOP Classes are supported by default. By altering the configuration, it is possible to support fewer, more or non-standard SOP Classes.

3.1.1. Association Establishment Policies

3.1.1.1. General

The DAP accepts association from remote DICOM Systems to provide Storage, Storage Commitment, and Query/Retrieve Services.

The DAP initiates new associations:

- To send a N-EVENT-REPORT (Storage Commitment)
- To send images to Remote DICOM destinations (Routing / Forwarding Task)

The maximum PDU size is configurable, and by default is 56 Kbytes.

3.1.1.2. Number of Associations

As an SCP, the DAP allows multiple simultaneous associations for association acceptance.

A configuration parameter specifies the maximum number of parallel association the DAP can handle. This number is actually limited only by physical resources.

3.1.1.3. Asynchronous Nature

The DAP does not support asynchronous communication (multiple outstanding transactions over a single association).

3.1.1.4. Implementation Identifying Information

Implementation Class UID	1.2.840.113564.7.2
Implementation Version Name	VIPAGRID

3.1.2. Association Initiation Policy

The DAP initiates associations for the following activities:

- Sending N-EVENT-REPORT for answering to Storage Commitment requests
- Sending images (Routing / Forwarding)

3.1.2.1. Real-World Activity – Sending Images

3.1.2.1.1. Associated Real-World Activity

The DAP provides two functions to send images to remote DICOM Systems:

- Forwarding: Forwarding is performed when a study has been totally received and archived in the DC for transferring to another site.
- Routing: Routing is triggered as soon as an image is received with no use of DC's resources. Although granularity is the image, the DAP tries to send as much as possible images from the same Study in a single association.

3.1.2.1.2. Proposed Presentation Contexts

Tableau 4 - Proposed Contexts to Send Images to a Remote DICOM System

Presentation contexts Table				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Stored Print Storage	1.2.840.10008.5.1.1.27	See below	SCU	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	See below	SCU	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	See below	SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	See below	SCU	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	See below	SCU	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	See below	SCU	None
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	See below	SCU	None
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	See below	SCU	None
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	See below	SCU	None
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	See below	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	See below	SCU	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	See below	SCU	None
Ultrasound Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3	See below	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	See below	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	See below	SCU	None
Enhance MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	See below	SCU	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	See below	SCU	None
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	See below	SCU	None
Ultrasound Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6	See below	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	See below	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	See below	SCU	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	See below	SCU	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	See below	SCU	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	See below	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	See below	SCU	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	See below	SCU	None

Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	See below	SCU	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	See below	SCU	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	See below	SCU	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	See below	SCU	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	See below	SCU	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	See below	SCU	None
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	See below	SCU	None
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	See below	SCU	None
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	See below	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	See below	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	See below	SCU	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	See below	SCU	None
X-Ray Angiographic Bi-Plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	See below	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	See below	SCU	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	See below	SCU	None
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	See below	SCU	None
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	See below	SCU	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	See below	SCU	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	See below	SCU	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	See below	SCU	None
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	See below	SCU	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	See below	SCU	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	See below	SCU	None
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	See below	SCU	None
Basic Text Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.11	See below	SCU	None
Enhanced Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.22	See below	SCU	None
Comprehensive Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.33	See below	SCU	None
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	See below	SCU	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	See below	SCU	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	See below	SCU	None
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65	See below	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	See below	SCU	None
Positron Emission Tomography Curve Storage	1.2.840.10008.5.1.4.1.1.129	See below	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	See below	SCU	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	See below	SCU	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	See below	SCU	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	See below	SCU	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	See below	SCU	None

RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	See below	SCU	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	See below	SCU	None

The DAP supports the following Transfer Syntaxes:

Tableau 5 - Transfer Syntaxes for Sending Images

Transfer Syntaxes	
Name List	UID List
Implicit VR, Little Endian	1.2.840.10008.1.2
Explicit VR, Little Endian	1.2.840.10008.1.2.1
Explicit VR, Big Endian	1.2.840.10008.1.2.2
JPEG baseline	1.2.840.10008.1.2.4.50
JPEG extended (2,4)	1.2.840.10008.1.2.4.51
JPEG extended (3,5)	1.2.840.10008.1.2.4.52
JPEG spectral selection, non-hierarchical (6,8)	1.2.840.10008.1.2.4.53
JPEG spectral selection, non-hierarchical (7,9)	1.2.840.10008.1.2.4.54
JPEG full progression, non-hierarchical (10,12)	1.2.840.10008.1.2.4.55
JPEG full progression, non-hierarchical (11,13)	1.2.840.10008.1.2.4.56
JPEG lossless, non-hierarchical (14)	1.2.840.10008.1.2.4.57
JPEG lossless, non-hierarchical (15)	1.2.840.10008.1.2.4.58
JPEG extended, hierarchical (16,18)	1.2.840.10008.1.2.4.59
JPEG extended, hierarchical (17,19)	1.2.840.10008.1.2.4.60
JPEG spectral selection, hierarchical (20,22)	1.2.840.10008.1.2.4.61
JPEG spectral selection, hierarchical (21,23)	1.2.840.10008.1.2.4.62
JPEG full progression, hierarchical (24,26)	1.2.840.10008.1.2.4.63
JPEG full progression, hierarchical (25,27)	1.2.840.10008.1.2.4.64
JPEG lossless, hierarchical (28)	1.2.840.10008.1.2.4.65
JPEG lossless, hierarchical (29)	1.2.840.10008.1.2.4.66
JPEG lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2.4.70
RLE compression	1.2.840.10008.1.2.5

3.1.2.1.2.1. SOP Specific Conformance Statement - Storage SOP Class

The DAP sends images as long as the SCP sends successful C-STORE responses.

In case of errors, the DAP will automatically retry to send unsuccessful images.

3.1.3. Association Acceptance Policy

The DAP accepts associations for the following activities:

- Verification of the DICOM communication between a Remote DICOM System and VIParchive
- Storage of images
- Storage Commitment request
- Initiation of a transfer of images to a remote DICOM system when a retrieve request is received

3.1.3.1. Real-World Activity - Verification

3.1.3.1.1. Associated Real-World Activity

The DAP responds to verification request made by a Remote DICOM System.

3.1.3.1.2. Accepted Presentation Contexts

Tableau 6- Accepted Context for Verification

Presentation contexts Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.100008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.100008.1.2.1		
		Explicit VR Big Endian	1.2.840.100008.1.2.2		

3.1.3.1.2.1. SOP Specific Conformance Statement – Verification SOP Class

The DAP provides standard conformance.

3.1.3.1.3. Presentation Contexts Acceptance Criterion

There are no specific rules for acceptance and prioritization of Presentation contexts. The DAP will accept the first proposed Presentation contexts that match any of its accepted Presentation contexts.

3.1.3.2. Real-World Activity: Storage of Images

3.1.3.2.1. Associated Real-World Activity

A Remote DICOM System sends images to the DAP. Received images are kept in cache until they are indexed. As soon an image is indexed, it is available by issuing Query/Retrieve to any DAP (the availability is not limited to the DAP that has indexed the image).

Images already indexed are discarded. An image is considered as already indexed when the couple (Study Instance UID, SOP Instance UID already) is already referenced in the VIPA Grid database.

A Study is eligible for archiving (i.e. build of the AIP) when it is considered as totally received, that means no new images for this Study have been restored for an amount of time called archive latency. Alternatively, a Study is considered as totally received when a Storage Commitment specifying a "Referenced Study Component Sequence Attribute" for this study has been issued.

3.1.3.2.2. Accepted Presentation Contexts

Tableau 7 - Accepted Presentation Contexts for Storage of Images

Presentation contexts Table				
Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
Name	UID			
Stored Print Storage	1.2.840.10008.5.1.1.27	See below	SCP	None

Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	See below	SCP	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	See below	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	See below	SCP	None
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	See below	SCP	None
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	See below	SCP	None
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	See below	SCP	None
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	See below	SCP	None
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	See below	SCP	None
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	See below	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	See below	SCP	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	See below	SCP	None
Ultrasound Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3	See below	SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	See below	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	See below	SCP	None
Enhance MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	See below	SCP	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	See below	SCP	None
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	See below	SCP	None
Ultrasound Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6	See below	SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	See below	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	See below	SCP	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	See below	SCP	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	See below	SCP	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	See below	SCP	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	See below	SCP	None
Standalone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	See below	SCP	None
Standalone Curve Storage	1.2.840.10008.5.1.4.1.1.9	See below	SCP	None
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	See below	SCP	None
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	See below	SCP	None
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	See below	SCP	None
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	See below	SCP	None
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	See below	SCP	None

Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	See below	SCP	None
Standalone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	See below	SCP	None
Standalone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	See below	SCP	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	See below	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	See below	SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	See below	SCP	None
X-Ray Angiographic Bi-Plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3	See below	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	See below	SCP	None
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	See below	SCP	None
Spatial Registration Storage	1.2.840.10008.5.1.4.1.1.66.1	See below	SCP	None
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2	See below	SCP	None
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	See below	SCP	None
Video Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1.1	See below	SCP	None
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	See below	SCP	None
Video Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2.1	See below	SCP	None
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	See below	SCP	None
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	See below	SCP	None
Video Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4.1	See below	SCP	None
Basic Text Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.11	See below	SCP	None
Enhanced Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.22	See below	SCP	None
Comprehensive Structured Reporting Storage	1.2.840.10008.5.1.4.1.1.88.33	See below	SCP	None
Procedure Log Storage	1.2.840.10008.5.1.4.1.1.88.40	See below	SCP	None
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	See below	SCP	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	See below	SCP	None
Chest CAD SR Storage	1.2.840.10008.5.1.4.1.1.88.65	See below	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	See below	SCP	None
Positron Emission Tomography Curve Storage	1.2.840.10008.5.1.4.1.1.129	See below	SCP	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	See below	SCP	None
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	See below	SCP	None
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	See below	SCP	None
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	See below	SCP	None
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	See below	SCP	None
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	See below	SCP	None
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	See below	SCP	None

The DAP supports the following transfer syntaxes:

Tableau 8 - Transfer Syntaxes supported for Storage of Images

Transfer Syntax	
Name List	UID List
Implicit VR, Little Endian	1.2.840.10008.1.2
Explicit VR, Little Endian	1.2.840.10008.1.2.1
Explicit VR, Big Endian	1.2.840.10008.1.2.2
JPEG baseline	1.2.840.10008.1.2.4.50
JPEG extended (2,4)	1.2.840.10008.1.2.4.51
JPEG extended (3,5)	1.2.840.10008.1.2.4.52
JPEG spectral selection, non-hierarchical (6,8)	1.2.840.10008.1.2.4.53
JPEG spectral selection, non-hierarchical (7,9)	1.2.840.10008.1.2.4.54
JPEG full progression, non-hierarchical (10,12)	1.2.840.10008.1.2.4.55
JPEG full progression, non-hierarchical (11,13)	1.2.840.10008.1.2.4.56
JPEG lossless, non-hierarchical (14)	1.2.840.10008.1.2.4.57
JPEG lossless, non-hierarchical (15)	1.2.840.10008.1.2.4.58
JPEG extended, hierarchical (16,18)	1.2.840.10008.1.2.4.59
JPEG extended, hierarchical (17,19)	1.2.840.10008.1.2.4.60
JPEG spectral selection, hierarchical (20,22)	1.2.840.10008.1.2.4.61
JPEG spectral selection, hierarchical (21,23)	1.2.840.10008.1.2.4.62
JPEG full progression, hierarchical (24,26)	1.2.840.10008.1.2.4.63
JPEG full progression, hierarchical (25,27)	1.2.840.10008.1.2.4.64
JPEG lossless, hierarchical (28)	1.2.840.10008.1.2.4.65
JPEG lossless, hierarchical (29)	1.2.840.10008.1.2.4.66
JPEG lossless, non-hierarchical, first-order prediction	1.2.840.10008.1.2.4.70
RLE compression	1.2.840.10008.1.2.5

3.1.3.2.2.1. SOP Specific Conformance Statement – Storage SOP Class

VIPA Grid provides full level 2 conformance as a Storage SCP, even when encryption is activated.

Type 1, Type 2, and Type 3 attributes defined in the IOD associated with the SOP Class will be stored and may be accessed.

This means that upon sending images to a DICOM Remote System VIParchive sends out all the attributes it received, unless VIParchive DICOM database has been updated (e.g. HL7 messages).

In addition, no private attributes are added.

The DAP responds to a C-STORE request with one of these respond codes:

Tableau 9 - Status Code for Storage of Images

Service status	Further Meaning	Status Code (0000,0900)	DICOM Definition
Refused	Out of Resources - There were insufficient resources to process the request. The request was not processed	A700H	PS 3.4, B.2.3
Error	Data Set does not match SOP Class – a required attribute is not present in the message. The request was not processed	A900H	PS 3.4, B.2.3
	Cannot understand – the message was not properly DICOM-encoded. The request was not processed	C000H	PS 3.4, B.2.3
	Processing failure – A condition arose which prevented the processing of the request	0110H	PS 3.7, C.5.21
Success		0000H	PS 3.4, B.2.3


3.1.3.2.3. Presentation Contexts Acceptance Criterion

There are no specific rules for acceptance and prioritization of Presentation contexts. The DAP will accept the first proposed Presentation contexts that match any of its accepted Presentation contexts.

3.1.3.2.4. Transfer Syntax Selection Policies

The default behavior of the DAP is to support the Implicit Little Endian transfer syntax for all associations. Some explicit JPEG lossy and lossless compression syntaxes are supported as defined in table 10.

The DAP can be configured to accept a subset of those syntaxes. In addition, depending of the DAP Compression Rules, images can be archived into JPEG lossless transfer syntax. When sending images to a Remote DICOM System, VIPArchive tries to propose the transfer syntax used for storage. When this transfer syntax does not match the association negotiation result, the DAP converts the image to a transfer syntax that has been successfully negotiated.

 **Note** – VIPA Grid compression algorithms are implemented using the Pegasus Imaging Corporation's Medical Image Toolkit.

3.1.3.3. Real-World Activity: Storage Commitment

3.1.3.3.1. Associated Real-World Activity

The DAP can commit the archiving of images. Depending on VIPA Grid configuration, the commitment is issued when

- The Study is archived in the Data Center
- The Study is archived in the Data Center and the Study is synchronized on its storage plan (all copies are made)
- The Study is synchronized on its storage plan and has been mirrored on another Data Center (applicable only when VIPA Grid spread over multiple Data Centers).

3.1.3.3.2. Accepted Presentation Contexts

Tableau 10 - Accepted Contexts for Storage Commitment

Presentation Contexts Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.100008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.100008.1.2.1		
		Explicit VR Big Endian	1.2.840.100008.1.2.2		

3.1.3.3.2.1. SOP Specific Conformance Statement – Storage Commitment Push Model SOP Class

The DAP opens a new association for sending the N-EVENT-REPORT message back to the Remote DICOM System that requested the Storage Commitment. The N-EVENT-REPORT message is sent on a different association than the N-ACTION operation.

The DAP may receive Storage Commitment requests related to image already archived. In this case, the N-EVENT-REPORT message is sent immediately.

The DAP may receive Storage Commitment requests before receiving related images. In this case, N-EVENT-REPORT messages are sent as soon as images are received and archived.

The DAP supports the Referenced Study Component Sequence Attribute by treating it as a Study Instance UID (0020,000D). This attribute is used to activate the archiving of the study. Otherwise, the

DAP waits a certain amount of time called “archive latency” in order to archive the study as a whole (collocation at the study level).

3.1.3.3.3. Presentation contexts acceptance criterion

There are no specific rules for acceptance and prioritization of Presentation contexts. The DAP will accept the first proposed Presentation contexts that match any of its accepted Presentation contexts.

3.1.3.4. Real-world activity: Querying VIPArchive Grid

3.1.3.4.1. Associated real-world activity

A remote DICOM System connects to the DAP to query VIPArchive Grid.

3.1.3.4.2. Accepted Presentation Contexts

Tableau 11 - Accepted Contexts for Querying VIPArchive Grid

Presentation Contexts Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.2.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
Patient/Study Only Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

3.1.3.4.2.1. SOP Specific Conformance Statement – Query SOP Class

The DAP supports by default relational-queries (no need for extended negotiation), even when encryption is activated.

The following tables specify which keys are supported for each level. Because the DAP supports relational-queries, any combination of those keys is allowed regardless of the query level. All the keys can be queried, except those related to the number of information related to the query. In addition, depending on the VR/VM of the key, different types of matching are supported.

Tableau 12 - Keys supported at the Patient Level

Name	Tag	Type	VR	VM
Patient's Name	(0010,0010)	R	PN	1
Patient ID	(0010,0020)	U	LO	1
Patient's Birth Date	(0010,0030)	O	DA	1
Patient's Sex	(0010,0040)	O	CS	1
Number of Patient Related Studies	(0020,1200)	O	IS	1
Number of Patient Related Series	(0020,1202)	O	IS	1
Number of Patient Related Instances	(0020,1204)	O	IS	1

Tableau 13 - Keys supported at the Study Level

Description	Tag	Type	VR	VM
-------------	-----	------	----	----

Study Date	(0008,0020)	R	DA	1
Study Time	(0008,0030)	R	TM	1
Accession Number	(0008,0050)	R	CS	1
Study ID	(0020,0010)	R	SH	1
Study Instance UID	(0020,000D)	U	UI	1
Modalities in Study	(0008,0061)	O	CS	1-n
Referring Physician's Name	(0008,0090)	O	PN	1
Study Description	(0008,1030)	O	LO	1
Reading Physician's Name	(0008,1060)	O	PN	1
Number of Study related Series	(0020,1206)	O	IS	1
Number of Study related Images	(0020,1208)	O	IS	1
Study Reading Date	(0032,0034)	O	DA	1
Study Reading Time	(0032,0035)	O	TM	1

Tableau 14 - Keys supported at the Series Level

Description	Tag	Type	VR	VM
Modality	(0008,0060)	R	CS	1
Series Number	(0020,0011)	R	IS	1
Series Instance UID	(0020,000E)	U	UI	1
Number of Series Related Instances	(0020,1209)	O	IS	1
Institution Name	(0008,0080)	O	LO	1
Station Name	(0008,1010)	O	SH	1
Body Part Examined	(0018,0015)	O	CS	1
Series Description	(0008,103E)	O	LO	1
Performing Physician's Name	(0008,1050)	O	PN	1
Operator's Name	(0008,1070)	O	PN	1

Tableau 15 - Keys supported at the Composite Object Instance Level

Description	Tag	Type	VR	VM
Instance Number	(0020,0013)	R	IS	1
SOP Instance UID	(0008,0018)	U	UI	1
Acquisition Date	(0008,0022)	O	DA	1

The following types of matching defined in PS 3.4, C.2.2.2 are supported:

- Single Value Matching
- List of UID Matching
- Universal Matching
- Wild Card Matching (“*” and “?”)
- Range Matching (Date and Time)

In addition, a new type of matching is also supported:

- Phonetic Matching (“sounds-like”): this mode of matching can be applied only on the patient's last name when encryption is not activated. It consists in comparing the sound of the words instead of the letters. The algorithm used is the well-known SOUNDEX algorithm.

This type of matching may be useful for querying name:

"! Nitché"	matches	"Nietzsche"
"! tchkovki"	Matches	"Tchekovsky"
"! shakespeare"	Matches	"Shakespeare"

By convention, the special character "!" is used to indicate that a Phonetic Matching is required. The use of this character is similar to the use of special characters for Wild Card Wild Matching.

Table 18 shows the type of matching depending on the VR.

Tableau 16 - Types of Matching according to VR

VR Name	Matching
UI - Unique Identifier (UID)	Single Value / List / Universal / Wild Card
PN - Person Name*	Single Value / Universal / Wild Card / Phonetic
SH - Short String	Single Value / Universal / Wild Card
LO - Long String	Single Value / Universal / Wild Card
IS - Integer String	Single Value / Universal / Wild Card
CS - Code String	Single Value / Universal / Wild Card
AS - Age String	Single Value / Universal / Extended Range
DS - Decimal String	Single Value / Universal / Extended Range
DA - Date	Single Value / Universal / Range
TM - Time	Single Value / Universal / Range


 **Note** – Only the two first component groups of the PN VR are matched. If a matching is required on one of the three other component groups, VIParchive issues a warning (Service Status FF01).

Tableau 17 - Status codes for C-FIND response

Service Status	Further Meaning	Status Code (0000,0900)
Refused	Out of Resources	A700
Failed	Identifier does not match SOP Class	A900
	Unable to process	C000
Cancel	Matching terminated due to Cancel request	FE00
Success	Matching is complete – No final identifier is supplied	0000
Pending	Matches are continuing – Current match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00
	Matches are continuing – Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01


3.1.3.4.3. Presentation Contexts Acceptance Criterion

There are no specific rules for acceptance and prioritization of Presentation contexts. VIParchive will accept the first proposed Presentation contexts that match any of its accepted Presentation contexts.

3.1.3.4.4. Transfer Syntax Selection Policies

When executing on a Little Endian machine, Transfer Syntaxes are selected in the following order: Explicit VR Little Endian, Implicit VR Little Endian, and Explicit VR Big Endian.

When executing on a Big Endian machine, Transfer Syntaxes are selected in the following order: Explicit VR Big Endian, Explicit VR Little Endian, and Implicit VR Little Endian.

 **Note** – This order of preference can be configured in the file mergecom.app.

3.1.3.5. Real-World Activity: Retrieving from VIParchive Grid

3.1.3.5.1. Associated Real-World Activity

A remote DICOM System connects to the DAP to retrieve images.

3.1.3.5.2. Accepted Presentation Contexts

Tableau 18 - Accepted Contexts for Retrieving from VIParchive Grid

Presentation Contexts Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.2.1.2.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
Patient/Study Only Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.3.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

3.1.3.5.2.1. SOP Specific Conformance Statement

The DAP provides standard conformance.

Tableau 19 - Status codes for C-MOVE response

Service Status	Further Meaning	Status Code (0000,0900)
Refused	Out of Resources – Unable to calculate number of matches	A701
	Out of Resources – Unable to perform sub-operations	A702
	Move Destination unknown	A801
Failed	Identifier does not match SOP Class	A900
	Unable to process	C000
Cancel	Sub-operations terminated due to Cancel request	FE00
Warning	Sub-operations Complete – One or more Failures	B000


3.1.3.5.3. Presentation contexts acceptance criterion

There are no specific rules for acceptance and prioritization of Presentation contexts. The DAP will accept the first proposed Presentation contexts that match any of its accepted Presentation contexts.

3.1.3.5.4. Transfer Syntax Selection Policies

When executing on a Little Endian machine, Transfer Syntaxes are selected in the following order: Explicit VR Little Endian, Implicit VR Little Endian, and Explicit VR Big Endian.

When executing on a Big Endian machine, Transfer Syntaxes are selected in the following order: Explicit VR Big Endian, Explicit VR Little Endian, and Implicit VR Little Endian.

 **Note** – This order of preference can be configured in the file mergecom.app.

4. COMMUNICATION PROFILES

4.1. Supported Communication Stacks

VIParchive in conjunction with [MERGE-3] provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2. TCP/IP Stack

VIParchive uses [MERGE-3] to communicate over the TCP/IP protocol stack on any physical interconnection media supporting the TCP/IP stack. [MERGE-3] inherits the TCP/IP stack from the host operating system upon which it executes.

4.2.1. Physical Media Support

VIParchive is indifferent to the physical medium over which TCP/IP executes; it inherits this from the operating system on which it exists.

5. EXTENSIONS/SPECIALIZATIONS/PRIVATIZATIONS

5.1. Standard Extended/Specialized/Private SOP Classes

5.1.1. Kodak DirectView PACS Private Series Root Query/Retrieve Information Model SOP Class Group

Support of this private SOP Class intends to supports Query/Retrieve from a KODAK DirectView PACS.

In the Kodak DirectView PACS Private Series Root Query/Retrieve Information Model, the information is arranged into two levels, which correspond to one of the following two values in element (0008, 0052):

Tableau 20 - Kodak DirectView PACS Private Series Root Query/Retrieve Levels

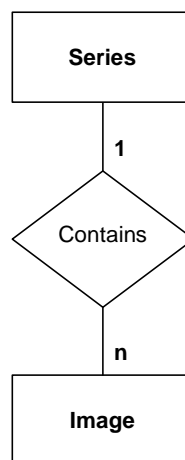
Query/Retrieve Level	Value in (0008, 0052)
Series Information	SERIES
Composite object instance Information	IMAGE

5.1.1.1. Series Root Query/Retrieve Information Model

5.1.1.1.1. E/R Model

The Series Root Query / Retrieve Information Model may be presented by the entity relationship diagram shown in figure 2.

Figure 2 - Series Root Query/Retrieve Information Model E/R Diagram



5.1.1.1.2. Series Level

The following table defines the keys at the series information level of the Series Root Query/Retrieve Information Model:

Tableau 21 - Series Level Keys for the Series Root Query/Retrieve Information Model

Description	Tag	Type	VR	VM
Patient's Name	(0010,0010)	R	PN	1
Patient ID	(0010,0020)	U	LO	1
Patient's Birth Date	(0010,0030)	O	DA	1
Patient's Sex	(0010,0040)	O	CS	1
Study Date	(0008,0020)	R	DA	1
Study Time	(0008,0030)	R	TM	1
Accession Number	(0008,0050)	R	CS	1
Study ID	(0020,0010)	R	SH	1
Study Instance UID	(0020,000D)	U	UI	1
Modalities in Study	(0008,0061)	O	CS	1-n
Referring Physician's Name	(0008,0090)	O	PN	1
Study Description	(0008,1030)	O	LO	1
Modality	(0008,0060)	R	CS	1
Series Number	(0020,0011)	R	IS	1
Series Instance UID	(0020,000E)	U	UI	1
Institution Name	(0008,0080)	O	LO	1
Body Part Examined	(0018,0015)	O	CS	1
Study Reading Date	(0032,0034)	O	DA	1
Study Reading Time	(0032,0035)	O	TM	1

5.1.1.1.3. Image Level

Attributes for the Composite object instance Level of the Kodak DirectView PACS Private Series Root Query/Retrieve Information Model are the same as the Attributes for the Composite object instance Level of the Study Root Query/Retrieve Information Model.

Scope of the C-MOVE Commands and Sub-Operations

A C-MOVE request may be performed to any level of its Query/Retrieve Model. However, the transfer of stored SOP instances takes always place at the image level. A C-MOVE where the Query/Retrieve level is the:

- SERIES level indicates that all images related to a series shall be transferred
- IMAGE level indicates that selected individual images shall be transferred

5.1.1.2. SOP Classes

The SOP Classes in the Kodak DirectView PACS Private Series Root SOP Class Group of the Query/Retrieve Service Class identify the Kodak DirectView PACS Private Series Root Query/Retrieve Information Model, and the DIMSE-C operations supported. The following Kodak DirectView PACS Private SOP Classes are identified:

Tableau 22 - Series Root Query/Retrieve SOP Classes

SOP Class UID	SOP Class Name
1.2.840.113674.5.1.4.1.2.4.1	Series Root Query/Retrieve Information Model - FIND
1.2.840.113674.5.1.4.1.2.4.2	Series Root Query/Retrieve Information Model - MOVE

5.2. Private transfer syntaxes

Not applicable

6. CONFIGURATION

6.1. AE Title/Presentation address mapping


The mapping from AE Title to TCP/IP addresses and ports is configurable and set at the installation time by KODAK integration engineers.

6.2. Configurable parameters

The DAP parameters related to DICOM are specified in three files:

There are three parameters files:

File Name	Type of Parameters
uma.conf	General SCP parameters, e.g. AE Title, port, Max. Number of concurrent association
Mergecom.app	Association negotiation specification, i.e. Services Lists and Transfer Syntaxes Lists
Mergecom.pro	Low levels protocol parameters, e.g. DUL parameters, PDU size, DIMSE parameters.

 **Warning – Most parameters in these files should NEVER be changed.** Doing so could break the DICOM conformance. Therefore, only KODAK integration engineers must modify these files.

7. SUPPORT OF EXTENDED CHARACTER SETS

By default, VIParchive supports the ISO-IR 100 Latin-1 supplementary character set.