DICOM CONFORMANCE STATEMENT FOR ZIOBASE 3.9

0 DICOM CONFORMANCE STATEMENT OVERVIEW

This document is the DICOM Conformance Statement for ZIOBASE 3.9.

ZIOBASE 3.9 supports the following DICOM services:

- Verification Service Class User (SCU)
- Verification Service Class Provider (SCP)
- Storage Service Class User (SCU)
- Storage Service Class Provider (SCP)
- Query/Retrieve Service Class User (SCU)
- Query/Retrieve Service Class Provider (SCP)

1 IMPLEMENTATION MODEL

1.1 Application Data Flow

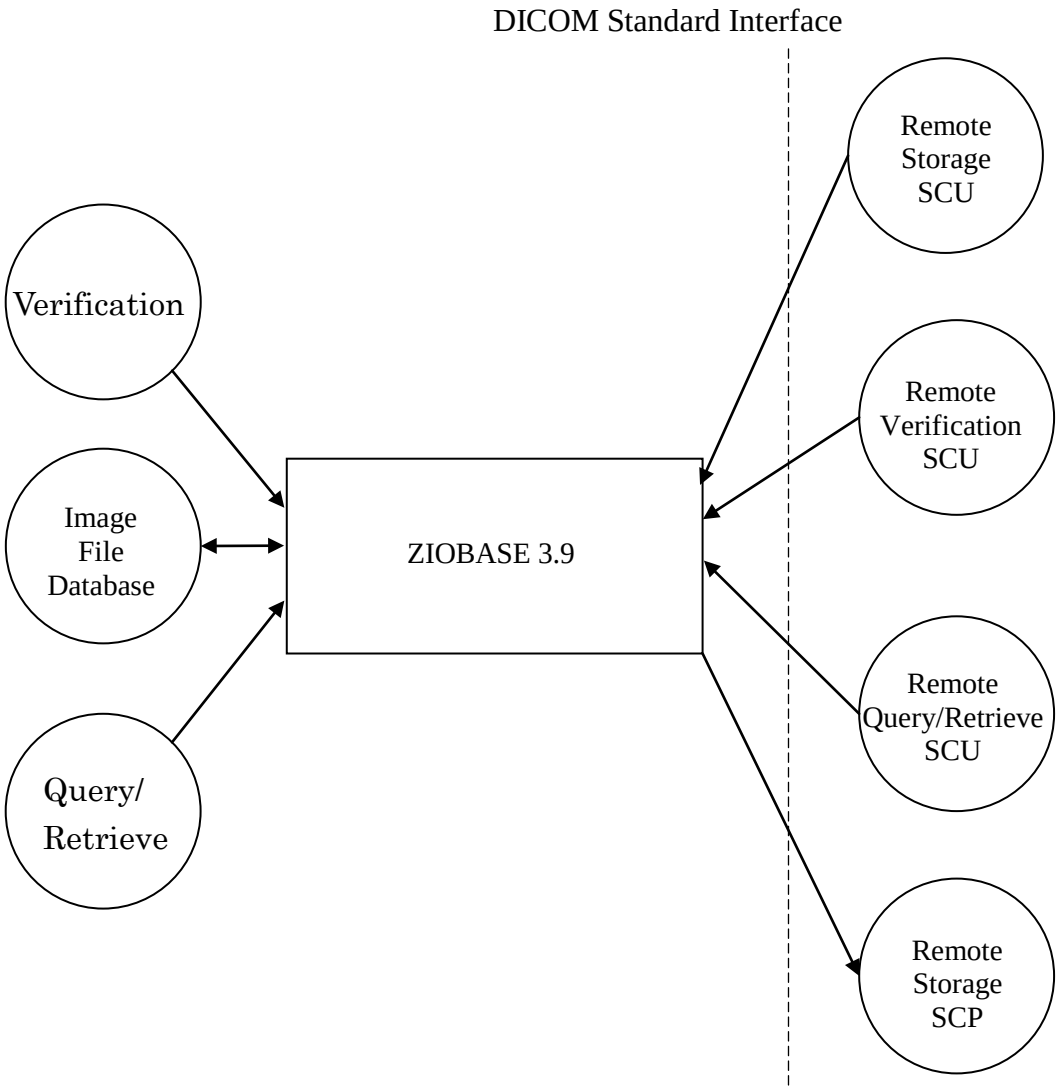

Figure 1: Application Data Flow Diagram

ZIOBASE 3.9 implementation model is shown in Figure 1.
The remote DICOM Application Entities (AE), which are associated with ZIOBASE 3.9, should have been configured by the support engineers beforehand.
The remote DICOM AE can request Image Storage Service (C-STORE), Verification Service (C-ECHO) or Query/Retrieve Service (C-FIND/C-MOVE) to ZIOBASE 3.9.
ZIOBASE 3.9 send request for the Verification service to the remote AE.
ZIOBASE 3.9 starts up the association for Query/Retrieve service requests to remote AE.

1.2 Functional Definition of AE's

ZIOBASE 3.9 supports the following functions:

- Receive and accept associations from remote AE
- Initiate associations
- Send DICOM image data (SCU)
- Receive DICOM image data (SCP)
- Send request for Verification service to remote AE (SCU)
- Respond to Verification service from remote AE (SCP)
- Send request for Query/Retrieve service to remote AE (SCU)
- Respond to Query/Retrieve service from remote AE (SCP)
- Manage image files by using database

1.3 Sequencing of Real-World Activities

Sequencing of Real-World Activities is not applied.

2 AE SPECIFICATIONS

ZIOBASE 3.9 provides Standard Conformance to the following SOP Classes.

Table 1 : SOP Classes for ZIOBASE 3.9

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	Yes
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Yes	Yes
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Yes	Yes
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes

2.1 Association Policies

2.1.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed.

Table 2 : DICOM Application Context

DICOM Application Context Name	1.2.840.10008.3.1.1.1

Max PDU size is configurable by settings. The default is 65536 (64K).

2.1.2 Number of Associations

The number of simultaneous associations is 64 as default. This value is configurable.

2.1.3 Asynchronous Nature

ZIOBASE 3.9 does not support asynchronous operations (or sub-operations) window negotiation.

2.1.4 Implementation Identifying Information

The implementation information for this Application Entity is.

Table 3 : DICOM Implementation Class and Version for AE Storage

Implementation Class UID	1.2.392.200080.100.200
Implementation Version Name	ZIO_DCM_SVR_200

2.2 Association Initiation Policy

ZIOBASE 3.9 initiates the association C-STORE between the remote AE by C-MOVE sub-operation. The remote AE has to be registered on ZIOBASE 3.9 beforehand.
ZIOBASE 3.9 also initiates the association between the remote AE at:

- Verification
- Manual Transfer
- Query/Retrieve

by operator's interaction.

2.2.1 Real-World Activities

Each activities listed on 2.2 initiates the DICOM association.

2.2.1.1 Description and Sequencing of Activities

ZIOBASE 3.9 initiates the association C-STORE to remote AE which are specified by the C-MOVE service.
At Verification, it sends C-ECHO request to remote AE.
At Manual Transfer, it sends DICOM image data to remote AE.
At Query/Retrieve, it queries about remote AE DICOM image data information, and it receives necessary data.

2.2.1.2 Proposed Presentation Contexts

ZIOBASE 3.9 is capable of proposing the Presentation Contexts shown in the following table.

Table 4 : Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Ext. Neg**
Name	**UID**	**Name List**	**UID List**		
Verification SOP Class	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order	1.2.840.10008.1.2.4.70	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		Prediction			
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCU	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCU	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCU	None
		RLE Lossless	1.2.840.10008.1.2.5	SCU	None
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.2.1.3 SOP Specific Conformance

2.2.1.3.1 SOP Specific Conformance for Verification SOP Class

ZIOBASE 3.9 provides standard conformance as SCU of Verification SOP Class.

2.2.1.3.2 SOP Specific Conformance for Storage SOP Class

ZIOBASE 3.9 can execute multiple C-STORE as storage service user with a single association.

2.2.1.3.3 SOP Specific Conformance for Query/Retrieve Information Model - FIND

ZIOBASE 3.9 does not support relational queries. No extended negotiation is performed. The following table shows available keys for queries.

Table 5 : Study Level Request Attributes for Study Root Query/Retrieve Information Model

Attribute Name	Tag	Type
Study Date	(0008,0020)	R
Study Time	(0008,0030)	R
Accession Number	(0008,0050)	R
Patient's Name	(0010,0010)	R
Patient ID	(0010,0020)	R
Study ID	(0020,0010)	R
Study Instance UID	(0020,000d)	U
Number of Study Related Series	(0020,1206)	O
Number of Study Related Instances	(0020,1208)	O
Modalities in Study	(0008,0061)	O
Referring Physician’s Name	(0008,0090)	O
Study Description	(0008,1030)	O

Table 6 : Series Level Request Attributes for Study Root Query/Retrieve Information Model

Attribute Name	Tag	Type
Modality	(0008,0060)	R
Series Number	(0020,0011)	R
Series Instance UID	(0020,000e)	U
Study Instance UID	(0020,000d)	U(*)
Number of Series Related Instances	(0020,1209)	O
Series Description	(0008,103e)	O
Body Part Examined	(0018,0015)	O
Protocol Name	(0018,1030)	O

(*): Higher level unique key

2.2.1.3.4 SOP Specific Conformance for Query/Retrieve Information Model - MOVE

ZIOBASE 3.9 does not support relational retrievals. No extended negotiation is performed.

2.3 Association Acceptance Policy

ZIOBASE 3.9 accepts the remote AE's associations when all the following condition are met:

- AE which has established associations is registered in ZIOBASE 3.9
- Associations for verification, storage or query/retrieve service
- ZIOBASE 3.9 is in the association acceptable state

2.3.1 Real-World Activities

2.3.1.1 Description and Sequencing of Real-World Activities

ZIOBASE 3.9 awaits the associations for Storage, Verification and Query/Retrieve services. If the association proposed from registered AE, it is accepted.

2.3.1.2 Proposed Presentation Contexts

ZIOBASE 3.9 is capable of proposing the Presentation Contexts shown in the following table.

Table 7 : Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		JPEG Baseline	1.2.840.10008.1.2.4.50	SCP	None
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	None
		JPEG Lossless, Non-Hierarchical, First-Order Prediction	1.2.840.10008.1.2.4.70	SCP	None
		RLE Lossless	1.2.840.10008.1.2.5	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Ext. Neg.
Name	UID	Name List	UID List		
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1	SCP	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

2.3.1.3 SOP Specific Conformance

2.3.1.3.1 SOP Specific Conformance for Verification SOP Class

ZIOBASE 3.9 provides Standard Conformance as SCP of Verification SOP Class.

2.3.1.3.2 SOP Specific Conformance for Storage SOP Class

ZIOBASE 3.9 can execute multiple C-STORE as Storage Service provider with a single association. ZIOBASE 3.9 is Level 2 (Full) conformant as a Storage Service provider. No attributes are overridden and modified. If C-STORE is successful, ZIOBASE 3.9 stores the DICOM image data to hard disk. The data stored in a hard disk is enabled to access through the user of the OS service or ZIOBASE 3.9.
ZIOBASE 3.9 returns C-STORE response statuses shown in the following table.

Table 8 : Storage C-STORE Response Status

Error Code	Service Status	Reason
0x0000	Success	Success
0xA700	Refused	Out of Resources
0xA900	Error	Data Set does not match SOP Class
0xB000	Warning	Coercion of Data Elements
0xB006	Warning	Elements Discarded
0xB007	Warning	Data Set does not match SOP Class
0xCxxx	Error	Any other error

2.3.1.3.3 SOP Specific Conformance for Query/Retrieve Information Model – FIND

ZIOBASE 3.9 does not support relational queries. No extended negotiation is performed. ZIOBASE 3.9 provides Standard Conformance as the Query SOP Class SCP. ZIOBASE 3.9 returns C-FIND response statuses shown in the following tables.

Table 9 : Study Level Request Attributes for Study Root Query/Retrieve Information Model

Attribute Name	Tag	Type	Available for Query key
Study Date	(0008,0020)	R	Yes
Study Time	(0008,0030)	R	No
Accession Number	(0008,0050)	R	Yes
Patient's Name	(0010,0010)	R	Yes
Patient ID	(0010,0020)	R	Yes
Study ID	(0020,0010)	R	Yes
Study Instance UID	(0020,000d)	U	Yes
Number of Study Related Series	(0020,1206)	O	No
Number of Study Related Instances	(0020,1208)	O	No
Modalities in Study	(0008,0061)	O	Yes
Referring Physician's Name	(0008,0090)	O	Yes
Study Description	(0008,1030)	O	Yes

Table 10 : Series Level Request Attributes for Study Root Query/Retrieve Information Model

Attribute Name	Tag	Type	Available for Query key
Modality	(0008,0060)	R	Yes
Series Number	(0020,0011)	R	Yes
Study Instance UID	(0020,000d)	U (*)	Yes
Series Instance UID	(0020,000e)	U	Yes
Series Description	(0008,103e)	O	Yes
Body Part Examined	(0018,0015)	O	Yes
Protocol Name	(0018,1030)	O	Yes
Study ID	(0020,0010)	O	Yes
Number of Series Related Instances	(0020,1209)	O	No

(*): Higher level unique key

Table 11 : Composite Object Instance Level Request Attributes for Study Root Query/Retrieve Information Model

Attribute Name	Tag	Type	Available for Query key
Instance Number	(0020,0013)	R	Yes
SOP Instance UID	(0008,0018)	U	Yes
Study Instance UID	(0020,000d)	U(*)	Yes
Series Instance UID	(0020,000e)	U(*)	Yes

(*): Higher level unique key

2.3.1.3.4 SOP Specific Conformance for Query/Retrieve Information Model – MOVE

ZIOBASE 3.9 does not support relational queries. No extended negotiation is performed. ZIOBASE 3.9 provides Standard Conformance as SCP of retrieve SOP Class.

2.3.1.4 Proposed Presentation Contexts

ZIOBASE 3.9 is capable of proposing multiple Presentation Contexts.
The specification is shown as follows:

(Abstract Syntax + (Transfer Syntax * Number of Syntax)) * Number of Syntax

In this case, number of syntax is equal to or greater than 1. This capability is configurable.

2.3.1.5 Transfer Syntax Selection Policy

ZIOBASE 3.9 supports various Transfer Syntax. The selection is decided as follows:

1. The priority list of Transfer Syntax is configured.
2. Propose the Transfer Syntax in order.
3. First conformed Transfer Syntax is selected.

3 Network Profile

3.1 Supported Protocol Stacks (PS 3.8, PS 3.9)

ZIOBASE 3.9 provides DICOM V3.0 TCP/IP Network Protocol Stacks support in which stacks are defined in DICOM Standards PS 3.8.

3.2 OSI Stack

OSI Stack is not supported.

3.3 TCP/IP Stack

ZIOBASE 3.9 inherits TCP/IP Stack from runtime environment OS.

3.4 API

APIs are not released.

3.5 Physical Device Support

ZIOBASE 3.9 inherits Physical Device Support from runtime environment OS.

3.6 Point-to-point stack

Point-to-point stack is not supported.

4 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

ZIOBASE 3.9 does not claim conformance to any Extended, Specialized or Private SOP Classes.

5 Configuration

5.1 AE Title/Presentation Address Mapping

AE Title/Presentation Address Mapping are set while in installation by the support engineer.

5.2 Parameters

The following parameters are available. These are configured during installation or maintenance by the support engineer.

- AE Title
- IP Address
- Port Number
- Max PDU size
- Priority of the acceptable Transfer Syntax

6 SUPPORT OF CHARACTER SETS

ZIOBASE 3.9 does not support extended character sets for Query service. Otherwise, the following character sets are supported:

- ISO-8859-1 (ISO-IR 100 Latin-1)
- JIS X 0201 (ISO-IR 13 Japanese katakana and ISO-IR 14 Japanese romaji)
- JIS X 0208 (ISO-IR 87 Japanese kanji, hiragana and katanaka)
- JIS X 0212 (ISO-IR 159 Supplementary Japanese kanji)