



Global Imaging Online

DGscope

DICOM Conformance Statement

Revision 1

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1 Introduction

1.1 Purpose of this document

The purpose of this document is to describe how DGscope conforms to the DICOM standard. It describes what parts and definition it uses and in what way, in order to provide interoperability with other devices that claim same conformance.

1.2 Sources for this document

American College of Cardiology – National Manufactures Association (ACR-NEMA) Digital Imaging and Communications V2.0
ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) v3.0, Final Draft, May. 1998



1.3 Acronyms and abbreviation

The following symbols and abbreviations are used in this Part.

- ACR American College of Radiology
- ACSE Association Control Service Element
- AE Application Entity
- ANSI American National Standards Institute
- AP Application Profile
- API Application Programming Interface
- ASCII American Standard Code for Information Interchange
- CEN TC251 Comite Europeen de Normalisation - Technical Committee 251 – Medical Informatics

- 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
- FSC File-set Creator
- FSR File-set Reader
- FSU File-set Updater
- HISPP Healthcare Informatics Standards Planning Panel
- HL7 Health Level 7
- IE Information Entity
- IEEE Institute of Electrical and Electronics Engineers
- IOD Information Object Definition
- ISO International Standards Organization
- ISP International Standardized Profile
- JIRA Japanese Industry Radiology Apparatus
- MSDS Healthcare Message Standard Developers Sub-Committee

- NEMA National Electrical Manufacturers Association
- OSI Open Systems Interconnection
- PDU Protocol Data Unit
- RWA Real-World Activity
- SCP Service Class Provider
- SCU Service Class User
- SOP Service-Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

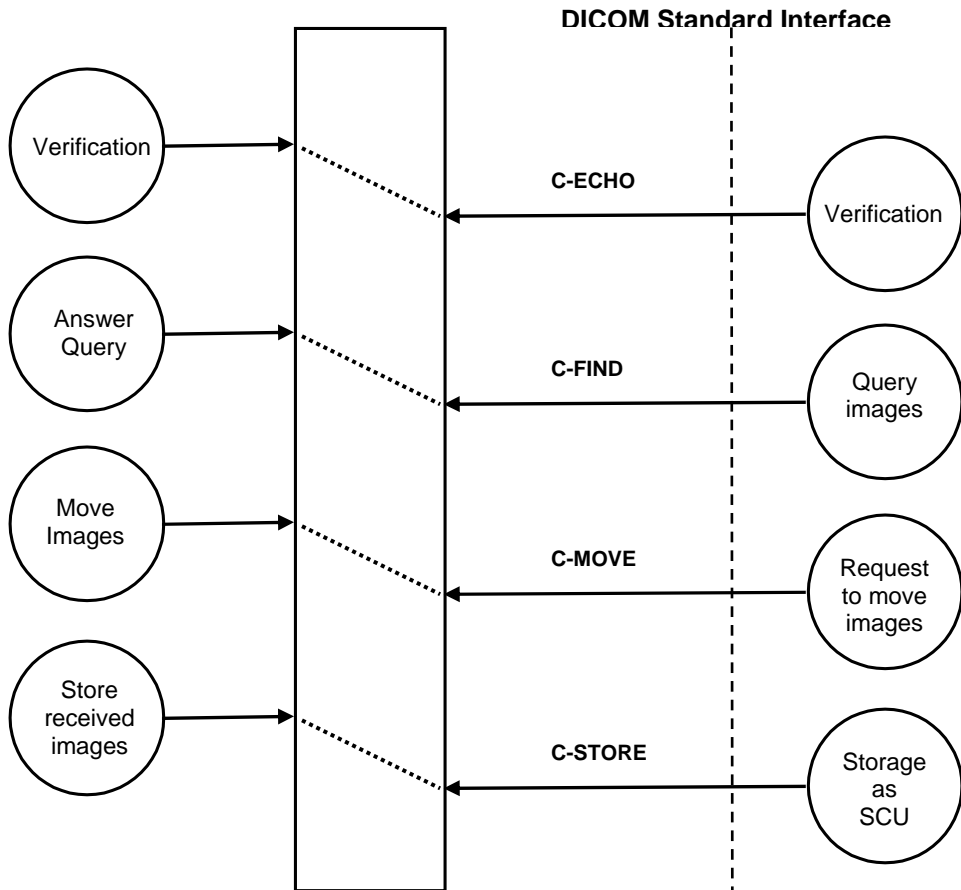
2 Implementation Model

DGscope is a web based workstation. DGscope stores images sent to it by service class users, takes responsibility for storage of the images, can respond to a storage commitment demand.



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2.1 Application Data flow diagram





2.2 Functional Definition of Application Entities

2.2.1 Verification

DGscope will respond to a **C-ECHO** verification.
DGscope will also ask for a **C-ECHO** verification.

2.2.2 Receive Images

DGscope stores a received image in its entirety, without change, in its internal data store. DGscope stores each image with the File Meta Information attached to it.

DGscope extracts the query information with respect to the patient, study, series and image, and stores this information within its internal database.

2.2.3 Transmit Images

DGscope acts a Service Class User of C-Store to transmit images to other compatible devices.

2.2.4 Query to Other Devices

DGscope can query other compatible devices.

2.2.5 Retrieve from Other Devices

DGscope can retrieve images from other compatible devices.

2.2.6 Send Films

DGscope can send films to other compatible devices.

2.2.7 Presentation state

DGscope can receive Grayscale Softcopy Presentation State objects from other DICOM devices. It stores these in its database and applies them when the display of related objects is performed.

DGscope can't create Grayscale Softcopy Presentation State objects.



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2.3 Sequencing of real world activity

Not applicable.



3 AE Specifications

3.1 DGscope specification

DGscope provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCU.

Table 1 : Verification SOP Class as SCU

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1

Table 2 : Query/Retrieve SOP Classes as SCU

SOP Class Name	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

Table 3 : Storage SOP Classes as SCU

SOP Class Name	SOP Class UID
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6
RETIRED Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Stored Print Storage	1.2.840.10008.5.1.1.27
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2



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Table 4 : Print SOP Class as SCU

SOP Class Name	SOP Class UID
BasicFilmSession	1.2.840.10008.5.1.1.1
BasicFilmBox	1.2.840.10008.5.1.1.2
BasicGrayscaleImageBox	1.2.840.10008.5.1.1.4
BasicColorImageBox	1.2.840.10008.5.1.1.4.1
Printer	1.2.840.10008.5.1.1.16

DGscope provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCP.

Table 5 : Verification SOP Class as SCP

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1

Table 6 : Storage SOP Classes as SCP

SOP Class Name	SOP Class UID
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6
RETIRED Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
Stored Print Storage	1.2.840.10008.5.1.1.27
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2



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3.1.1 Association establishment Policies

3.1.1.1 General

The following Application Context Name will be proposed and recognized by DGscope.

- DICOM 3.0 Application Context 1.2.840.10008.3.1.1.1

3.1.1.2 Number of Associations

The maximum number of association accepted or maintained by DGscope is limited only by the physical memory of the machine on which it runs. Typically it can be up to 20.

3.1.1.3 Asynchronous nature

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

3.1.1.4 Implementation Identifying Information

Dgscope will respond with the following implementation identifying parameters:

Implementation Class UID 1.2.826.0.1.3680043.2.406.0001

The last number of the implementation class UID is the machine serial number.

Implementation Version Name GIOL_DIAM_400

The implementation version name policies are the following: product name "GIOL_DIAM_" followed by the version of the product, "400" (meaning "version 4.0.0").



3.1.2 Association Initiation by Real World Activity

3.1.2.1 Real World Activity – Verification

3.1.2.1.1 Associated Real World Activity – Verification

DGscope will issue a verification request when a user of DGscope wishes to test a remote DICOM SCP.

3.1.2.1.2 Presentation Context Table – Verification

Dgscope supports the transfer syntaxes listed in Table 7. For a verification request, Dgscope supports the Presentation Contexts listed in Table 8.

Table 7 : Verification Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2

Table 8 : Verification Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Verification	1.2.840.10008.1.1	all from Table 7	SCU	None

3.1.2.1.3 SOP Specific Conformance – Verification



3.1.2.2 Real World Activity – Find

3.1.2.2.1 Associated Real World Activity – Find

Dgscope will issue a FIND request when a user of Dgscope wishes to view patient and study information from a remote DICOM SCP.

3.1.2.2.2 Presentation context Table – Find

Dgscope supports the transfer syntaxes listed in Table 9. For a QUERY request, Dgscope supports the Presentation Contexts listed in Table 10.

Table 9 : Query Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2

Table 10 : Query Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class Study Root Query/Retrieve IM Find	SOP Class UID 1.2.840.10008.5.1.4. 1.2.2.1	all from Table 9	SCU	None

3.1.2.2.3 SOP Specific conformance – Find

Dgscope supports the following search keys.

Table 11 : Patient level attributes

Description	Tag
Patient name	(0x0010, 0x0010)
Patient id	(0x0010, 0x0020)

Table 12 : Study level attributes

Description	Tag
Study id	(0x0020, 0x0010)
Study date	(0x0008, 0x0020)
Study time	(0x0008, 0x0010)
Accession number	(0x0008, 0x0050)
Modalities in Study	(0x0008, 0x0061)
Referring Physician's Name	(0x0008, 0x0090)
Study Description	(0x0008, 0x1030)
Study Instance UID	(0x0020, 0x000D)



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Table 13 : Series level attributes

Description	Tag
Series instance UID	(0x0020, 0x000E)
Series number	(0x0020, 0x0011)
Modality	(0x0008, 0x0060)
Series Description	(0x0008, 0x103e)
Request Attribute Sequence	(0x0040, 0x0275)
> Requested Procedure ID	(0x0040, 0x1001)
> Scheduled Procedure Step ID	(0x0040, 0x0009)
Performed Procedure Step Start Date	(0x0040, 0x0244)
Performed Procedure Step Start Time	(0x0040, 0x0245)

Table 14 : Composite Object Instance Level attributes

Description	Tag
SOP instance UID	(0x0008, 0x0018)
Instance Number	(0x0020, 0x0013)

Table 15 : SR Document Specific Level attributes

Description	Tag
Completion Flag	(0x0040, 0xA491)
Verification Flag	(0x0040, 0xA493)
Verifying Observer Sequence	(0x0040, 0xA073)
> Verification DateTime	(0x0040, 0xA030)
> Verifying Observer Name	(0x0040, 0xA075)
Concept Name Code Sequence	(0x0040, 0xA043)
> Code Value	(0x0008, 0x0100)
> Coding Scheme Designator	(0x0008, 0x0102)

Table 16 : Key Object Document Specific Level attributes

Description	Tag
Concept Name Code Sequence	(0x0040, 0xA043)
> Code Value	(0x0008, 0x0100)
> Coding Scheme Designator	(0x0008, 0x0102)

Table 17 : Presentation State Specific Level attributes

Description	Tag
Content Label	(0x0070, 0x0080)
Content Description	(0x0070, 0x0081)
Presentation Creation Date	(0x0070, 0x0082)
Presentation Creation time	(0x0070, 0x0083)
Presentation Creator's Name	(0x0070, 0x0084)
Referenced Series Sequence	(0x0008, 0x1115)
> Series Instance UID	(0x0020, 0x000E)
> Referenced Image Sequence	(0x0008, 0x1140)
>>Referenced SOP Class UID	(0x0008, 0x1150)
>>Referenced SOP Instance UID	(0x0008, 0x1155)



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3.1.2.3 Real World Activity - Move Images

3.1.2.3.1 Associated Real World Activity – Move Images

Dgscope will issue a MOVE request when a user of Dgscope wishes to move one or more studies / series from a remote DICOM SCP back to Dgscope (retrieve) or another remote DICOM SCP.

3.1.2.3.2 Presentation context Table – Move

Dgscope supports the transfer syntaxes listed in Table 18. For a MOVE request, Dgscope supports the Presentation Contexts listed in Table 19.

Table 18 : Move Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2

Table 19 Move 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 18	SCU	None

3.1.2.3.3 SOP Specific Conformance – Move

3.1.2.4 Real World Activity - Storage as SCU

3.1.2.4.1 Associated Real World Activity – Storage as SCU

Dgscope will issue a Storage request when a user of Dgscope wishes to send a study of images to a remote DICOM SCP.

3.1.2.4.2 Presentation context Table – Storage as SCU

Dgscope supports the transfer syntaxes listed in Table 20. For a Storage request, Dgscope supports the Presentation Contexts listed in Table 21.

Table 20 : Storage Transfer Syntaxes

Transfer Syntax	UID
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2
DICOM Lossy JPEG 8 Bit – JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50
DICOM JPEG Lossless, hierarchical, first order prediction (Process 14)	1.2.840.10008.1.2.4.70
RLE Lossless Transfer Syntax	1.2.840.10008.1.2.5



Table 21 : Storage Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	all from Table20	SCU	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	all from Table20	SCU	None
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	all from Table20	SCU	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	all from Table20	SCU	None
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	all from Table20	SCU	None
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	all from Table20	SCU	None
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2	all from Table20	SCU	None
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	all from Table20	SCU	None
Digital X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	all from Table20	SCU	None
Digital X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	all from Table20	SCU	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	all from Table20	SCU	None
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	all from Table20	SCU	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	all from Table20	SCU	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	all from Table20	SCU	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	all from Table20	SCU	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	all from Table20	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	all from Table20	SCU	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	all from Table20	SCU	None
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	all from Table20	SCU	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	all from Table20	SCU	None
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	all from Table20	SCU	None
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	all from Table20	SCU	None
RETIRED Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3	all from Table20	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	all from Table20	SCU	None
Stored Print Storage	1.2.840.10008.5.1.1.27	all from Table20	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	all from Table20	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	all from Table20	SCU	None
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	all from Table20	SCU	None
X-ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	all from Table20	SCU	None
Raw data	1.2.840.10008.5.1.4.1.1.66	all from Table20	SCU	None
VL photographic	1.2.840.10008.5.1.4.1.1.77.1.4	all from Table20	SCU	None

3.1.2.4.3 SOP Specific Conformance – Storage as SCU



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3.1.2.5 Real World Activity – Print as SCU

3.1.2.5.1 Associated Real World Activity – Print as SCU

DGscope will issue a Print request when a user of DGscope wishes to send images to a remote DICOM Printer SCP.

3.1.2.5.2 Presentation context Table – Print as SCU

DGscope supports the transfer syntaxes listed in Table 22 for a Print request; DGscope supports the Presentation contexts listed in Table 23.

Table 22 : Print Transfer Syntaxes

Transfer Syntax	UID
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1

Table 23 : Print Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
BasicFilmSession	1.2.840.10008.5.1.1.1	all from Table 22	SCU	None
BasicFilmBox	1.2.840.10008.5.1.1.2	all from Table 22	SCU	None
BasicGrayscaleImageBox	1.2.840.10008.5.1.1.4	all from Table 22	SCU	None
BasicColorImageBox	1.2.840.10008.5.1.1.4	all from Table 22	SCU	None
	.1			
Printer	1.2.840.10008.5.1.1.1	all from Table 22	SCU	None
	6			

3.1.2.5.3 SOP specific Conformance – Print as SCU



3.1.3 Association Acceptance Policy

3.1.3.1 Real World Activity – Verification

3.1.3.1.1 Associated Real World Activity – Verification

DGscope will respond to Verification requests provided by SCU with the ability to determine if DGscope can receive DICOM requests.

3.1.3.1.2 Presentation Context Table – Verification

DGscope supports the transfer syntaxes listed in Table 24. DGscope will accept any of the Presentation Contexts listed in Table 25 for Verification.

Table 24 : Verification Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2

Table 25 : Verification Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Verification	1.2.840.10008.1.1	all from Table 24	SCP	None

3.1.3.1.3 SOP Specific Conformance – Verification

DGscope provides standard conformance to the DICOM Verification Service Class. DGscope returns one of the following status codes.

Table 26 : Verification status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Error	Failed	C000		The operation was not successful.
Success	Success	0000		Operation performed properly.

3.1.3.1.4 Presentation Context Acceptance Criterion – Verification

DGscope will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax listed in Table 29.

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.



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3.1.3.2 Real World Activity - Storage as SCP

3.1.3.2.1 Associated Real World Activity – Storage as SCP

DGscope will archive images that are sent to it from an SCU.

3.1.3.2.2 Presentation Context Table – Storage as SCP

DGscope supports the following transfer syntaxes listed in Table 27. DGscope supports any of the Presentation Contexts listed in Table 28 for Storage.

Table 27 : Storage Transfer Syntaxes

Transfer Syntax	UID
DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2
DICOM Explicit VR Big Endian Transfer Syntax	1.2.840.10008.1.2.2
DICOM Lossy JPEG 8 Bit – JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50
DICOM JPEG Lossless, hierarchical, first order prediction (Process 14)	1.2.840.10008.1.2.4.70
RLE Lossless Transfer Syntax	1.2.840.10008.1.2.5



Table 28 : Storage Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Basic Text SR Storage	1.2.840.10008.5.1.4.1.1.88.11	all from Table 27	SCP	None
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	all from Table 27	SCP	None
Comprehensive SR Storage	1.2.840.10008.5.1.4.1.1.88.33	all from Table 27	SCP	None
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	all from Table 27	SCP	None
Digital Intra Oral X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.3	all from Table 27	SCP	None
Digital Intra Oral X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	all from Table 27	SCP	None
Digital Mammography X-ray Image Storage For Present.	1.2.840.10008.5.1.4.1.1.1.2	all from Table 27	SCP	None
Digital Mammography X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	all from Table 27	SCP	None
Digital X-ray Image Storage For Presentation	1.2.840.10008.5.1.4.1.1.1.1	all from Table 27	SCP	None
Digital X-ray Image Storage For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	all from Table 27	SCP	None
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	all from Table 27	SCP	None
Enhanced SR Storage	1.2.840.10008.5.1.4.1.1.88.22	all from Table 27	SCP	None
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	all from Table 27	SCP	None
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	all from Table 27	SCP	None
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	all from Table 27	SCP	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	all from Table 27	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	all from Table 27	SCP	None
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	all from Table 27	SCP	None
PET Image Storage	1.2.840.10008.5.1.4.1.1.128	all from Table 27	SCP	None
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	all from Table 27	SCP	None
RETIRED Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5	all from Table 27	SCP	None
RETIRED Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	all from Table 27	SCP	None
RETIRED Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3	all from Table 27	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	all from Table 27	SCP	None
Stored Print Storage	1.2.840.10008.5.1.1.27	all from Table 27	SCP	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	all from Table 23	SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	all from Table 27	SCP	None
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	all from Table 27	SCP	None
X-ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	all from Table 27	SCP	None



3.1.3.2.3 SOP Specific Conformance – Storage as SCP

DGscope conforms to the DICOM Storage Service Class at Level 2 (Full). No elements are discarded or coerced by DGscope. DGscope returns one of the following status codes (Table 29).

Table 29 : Storage status codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of resources	A700		Indicates that there was not enough storage space to store the image. Recovery from this condition is left to the administrative functions available in.
	SOP Class not supported	A800		Indicates that the SOP Class of the Image in the C-Store operation did not match the Abstract Syntax negotiated for the Presentation Context.
Error	Data set does not match SOP Class	A900		Indicates that the Data Set does not encode an instance of the SOP Class specified.
	Failed	C000		The operation was not successful.
	Cannot understand	C005		Indicates that the Data Set cannot be parsed into elements by
Warning	Coercion of data elements	B000		Data elements were modified before being stored.
	Data set does not match SOP Class	B007		Indicates that the Data Set does not match the SOP Class, but that the image was stored anyway.
	Elements Discarded	B006		Indicates that some of the elements of the Data Set were discarded.
	Duplicate SOP Instance UID	D000		Indicates that the SOP Instance UID of the specified image is already stored in the database.
Success	Success	0000		Operation performed properly.

3.1.3.2.4 Presentation Context Acceptance Criterion – Storage as SCP

DGscope will accept any number of Storage Presentation Contexts per association request. Any Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.



3.1.4 Presentation State Display

DGscope manages presentation states. It applies them to the related images when these images are displayed. The following specific presentation modules are supported:

Table 30 : Presentation State Module (C.11.10)

Attribute Name	Tag	Comments
Instance Number	(0020,0013)	
Content Label	(0070,0080)	
Content Description	(0070,0081)	
Presentation Creation Time	(0070,0083)	
Content Creator's Name	(0070,0084)	
>Series Instance UID	(0020,000E)	
>Referenced Image Sequence	(0008,1140)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>>Referenced Frame Number	(0008,1160)	
Shutter Presentation Value	(0018,1622)	

Table 31 : Display Shutter Module (C.7.6.11)

Attribute Name	Tag	Comments
Shutter Shape	(0018,1600)	
Shutter Left Vertical Edge	(0018,1602)	
Shutter Right Vertical Edge	(0018,1604)	
Shutter Upper Horizontal Edge	(0018,1606)	
Shutter Lower Horizontal Edge	(0018,1608)	
Center of Circular Shutter	(0018,1610)	
Radius of Circular Shutter	(0018,1612)	
Vertices of the Polygonal Shutter	(0018,1620)	
Shutter Presentation Value	(0018,1622)	

N.B.: the Bitmap Display Shutter Module is not supported



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Table 32 : Overlay Plane (C.9.2)

Attribute Name	Tag	Comments
Overlay Rows	(60xx,0010)	
Overlay Columns	(60xx,0011)	
Overlay Type	(60xx,0040)	Enumerated Values: G = Graphics R = ROI.
Overlay Origin	(60xx,0050)	
Overlay Bits Allocated	(60xx,0100)	
Overlay Bit Position	(60xx,0102)	
Overlay Data	(60xx,3000)	
Overlay Description	(60xx,0022)	
Overlay Label	(60xx,1500)	

Table 33 : Overlay/Curve Activation (C.11.7)

The activation of overlays is not supported: DGscope displays either all overlays of the image referenced, or none of them.

Table 34 : Displayed Area (C.10.4)

Attribute Name	Tag	Comments
Displayed Area Selection Sequence	(0070,005A)	
>Referenced Image Sequence	(0008,1140)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>>Referenced Frame Number	(0008,1160)	
>Displayed Area Top Left Hand Corner	(0070,0052)	
>Displayed Area Bottom Right Hand Corner	(0070,0053)	
>Presentation Size Mode	(0070,0100)	Enumerated Values: SCALE TO FIT TRUE SIZE MAGNIFY
>Presentation Pixel Spacing	(0070,0101)	
>Presentation Pixel Aspect Ratio	(0070,0102)	
>Presentation Pixel Magnification Ratio	(0070,0103)	



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Table 35 : Graphic Annotation (C.10.5)

Attribute Name	Tag	Comments
Graphic Annotation Sequence	(0070,0001)	
>Referenced Image Sequence	(0008,1140)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>>Referenced Frame Number	(0008,1160)	
>Graphic Layer	(0070,0002)	
>Text Object Sequence	(0070,0008)	
>>Bounding Box Annotation Units	(0070,0003)	
>>Anchor Point Annotation Units	(0070,0004)	
>>Unformatted Text Value	(0070,0006)	
>>Bounding Box Top Left Hand Corner	(0070,0010)	
>>Bounding Box Bottom Right Hand Corner	(0070,0011)	
>>Bounding Box Text Horizontal Justification	(0070,0012)	
>>Anchor Point	(0070,0014)	
>>Anchor Point Visibility (0070,0015)	(0070,0015)	
>Graphic Object Sequence	(0070,0009)	
>>Graphic Annotation Units	(0070,0005)	
>>Graphic Dimensions	(0070,0020)	
>>Number of Graphic Points	(0070,0021)	
>> Graphic Data	(0070,0022)	
>>Graphic Type	(0070,0023)	Type INTERPOLATED is not supported.
>>Graphic Filled	(0070,0024)	

Table 36 : Spatial Transformation (C.10.6)

Attribute Name	Tag	Comments
Image Rotation	(0070,0041)	
Image Horizontal Flip	(0070,0041)	



Table 37 : Modality LUT (C.11.1)

Attribute Name	Tag	Comments
Modality LUT Sequence	(0028,3000)	
>LUT Descriptor	(0028,3002)	
>LUT Explanation	(0028,3003)	
>Modality LUT Type	(0028,3004)	
>LUT Data	(0028,3006)	
Rescale Intercept	(0028,1052)	
Rescale Slope	(0028,1053)	
Rescale Type	(0028,1054)	

Table 38 : Softcopy VOI LUT (C.11.8)

Attribute Name	Tag	Comments
Softcopy VOI LUT Sequence	(0028,3110)	
>Referenced Image Sequence	(0008,1140)	
>>Referenced SOP Class UID	(0008,1150)	
>>Referenced SOP Instance UID	(0008,1155)	
>>Referenced Frame Number	(0008,1160)	
>VOI LUT Sequence	(0028,3010)	
>>LUT Descriptor	(0028,3002)	
>>LUT Explanation	(0028,3003)	
>>LUT Data	(0028,3006)	
>Window Center	(0028,1050)	
>Window Width	(0028,1051)	
>Window Center & Width Explanation	(0028,1055)	

Table 39 : Softcopy Presentation LUT (C.11.6)

Attribute Name	Tag	Comments
Presentation LUT Sequence	(2050,0010)	
>LUT Descriptor	(0028,3002)	
>LUT Explanation	(0028,3003)	
>LUT Data	(0028,3006)	
Presentation LUT Shape	(2050,0020)	



4 Communications Profiles

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

4.1 TCP/IP Stack

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

4.1.1 Physical Media Support

DGscope 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/Privatizations

6 Configuration

DGscope obtains configuration information from the following sources:

Mapping from Application Entity Title to Presentation Address is provided by the database. Along with this mapping, the database stores those AE titles that are allowed to communicate with DGscope.

7 Support for Extended Character Sets

DGscope is known to support the following character sets:

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