DICOM
CONFORMANCE STATEMENT
FOR
MODEL TQA-7000 Series

QA Station™

(MIIMS0013EA)

TOSHIBA MEDICAL SYSTEMS CORPORATION

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1 CONFORMANCE STATEMENT OVERVIEW

Table 1-1 provides an overview of the network services supported by the TQA-7000 series.

Table 1-1
NETWORK SERVICES

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Transfer		
Computed Radiography Image Storage（CR）	Yes	Yes
Digital X-Ray Image Storage – For Presentation（DX）	Yes	Yes
Digital Mammography X-Ray Image Storage – For Presentation（MG）	Yes	Yes
CT Image Storage	Yes	Yes
MR Image Storage	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
X-Ray Angiographic Image Storage	Yes	Yes
X-Ray Radiofluoroscopic Image Storage	Yes	Yes
Nuclear Medicine Image Storage	Yes	Yes
VL Endoscopic Image Storage	Yes	Yes
VL Photographic Image Storage	Yes	Yes
Positron Emission Tomography Image Storage	Yes	Yes
Query/Retrieve		
Patient Root Information Model FIND	Yes	No
Patient Root Information Model MOVE	Yes	No
Study Root Information Model FIND	Yes	No
Study Root Information Model MOVE	Yes	No
Patient/Study Only Information Model FIND	Yes	No
Patient/Study Only Information Model MOVE	Yes	No

Note: Multiframe XA image data is not supported.

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3 INTRODUCTION

3.1 AUDIENCE

This document is intended for hospital staff, health system integrators, software designers, service staff, and implementers. It is assumed that the reader has a working understanding of DICOM.

3.2 REMARKS

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of the intended information.

The scope of this Conformance Statement is to facilitate communication between the QA Station and medical equipment manufactured by other vendors. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself, this Conformance Statement does not guarantee the desired interoperability and successful interconnectivity.

The user should be aware of the following important issues:

— Comparison of the different conformance statements is the first step towards assessing the interconnectivity between the QA Station and other equipment.
— Test procedures should be defined to validate the desired level of connectivity.
— The DICOM standard is evolving to meet the future requirements of users. Toshiba Medical Systems Corporation is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue them.

3.3 DEFINITIONS, TERMS, AND ABBREVIATIONS

AE	Application Entity
CR	Computed Radiography
CT	Computed Tomography
DICOM	Digital Imaging and Communications in Medicine
DS	Digital Subtraction Angiography
DX	Digital Radiography
ES	Endoscopy
IE	Information Entity
IOD	Information Object Definition
ISO	International Standards Organization
MG	Mammography

MR	Magnetic Resonance
NM	Nuclear Medicine
PDU	Protocol Data Unit
PET	Positron Emission Tomography
RF	X-Ray Radiofluoroscopy
RG	Radiographic Imaging
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
US	Ultrasound
VM	Value Multiplicity
VR	Value Representation
XA	X-Ray Angiography

3.4 REFERENCES

[DICOM] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.18, 2004

4 NETWORKING

4.1 IMPLEMENTATION MODEL

4.1.1 Application Data Flow

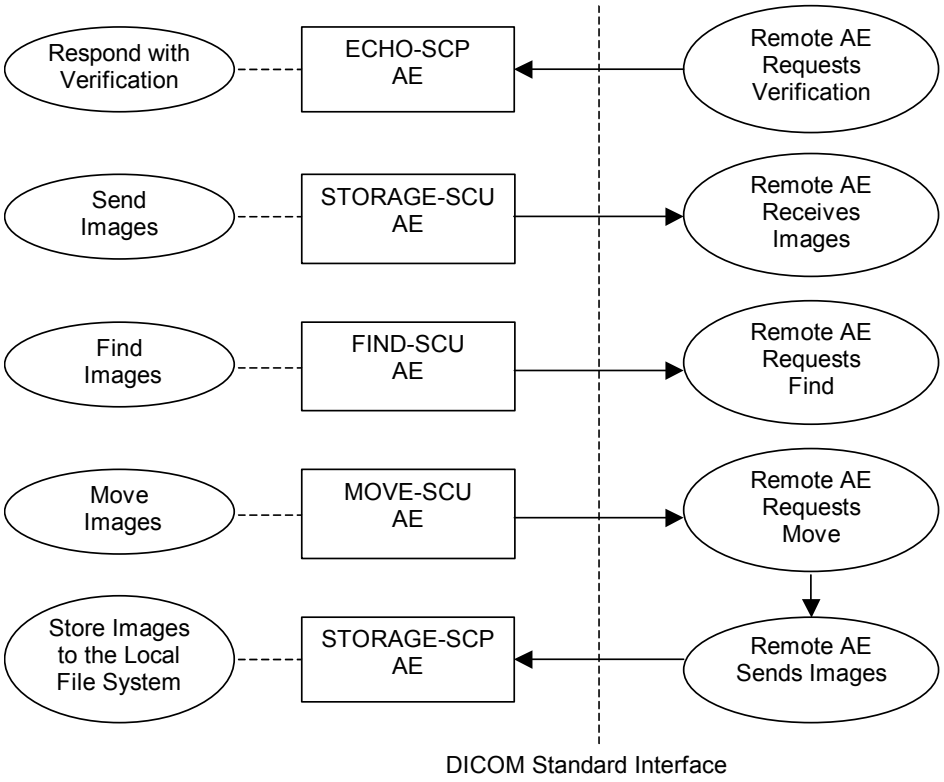

Figure 4.1-1
IMPLEMENTATION MODEL

QA Station is an application that provides a user interface, an internal database, a network listener that spawns additional threads as necessary to handle incoming connections, and media support.

Conceptually, the network services may be modeled as the following separate AEs, though in fact all the AEs share a single (configurable) AE Title:

— ECHO-SCP, which responds to verification requests
— STORAGE-SCU, which sends outbound images and other composite instances
— STORAGE-SCP, which receives incoming images and other composite instances
— FIND-SCU, which queries remote AEs for lists of studies, series, and instances
— MOVE-SCU, which retrieves selected studies, series, and instances

4.1.2 Functional Definitions of AEs

4.1.2.1 Functional Definition of ECHO-SCP

ECHO-SCP waits in the background for connections, will accept associations with Presentation Contexts for SOP Classes of the Verification Service Class, and will respond successfully to echo requests.

4.1.2.2 Functional Definition of STORAGE-SCP

STORAGE-SCP waits in the background for connections, will accept associations with Presentation Contexts for SOP Classes of the Storage Service Class, and will store the received instances to the local database where they may subsequently be listed and viewed through the user interface.

4.1.2.3 Functional Definition of STORAGE-SCU

STORAGE-SCU is activated through the user interface when a user selects instances from the local database or the currently displayed instance and requests that they be sent to a remote AE (selected from a preconfigured list).

4.1.2.4 Functional Definition of FIND-SCU

FIND-SCU is activated through the user interface when a user selects a remote AE to query (from a preconfigured list) and then initiates a query. Queries are performed recursively from the study through the series and instance levels until all matching instances have been listed.

4.1.2.5 Functional Definition of MOVE-SCU

MOVE-SCU is activated through the user interface when a user selects a study, series, or instance for retrieval. A connection to the remote AE is established to initiate and monitor the retrieval, and the STORAGE-SCP AE receives the retrieved instances.

4.1.3 Sequencing of Real-World Activities

All SCP activities are performed asynchronously in the background and are not dependent on any sequencing.

All SCU activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity is completed.

4.2 AE SPECIFICATIONS

4.2.1 ECHO-SCP

4.2.1.1 SOP Classes

ECHO-SCP provides Standard Conformance to the following SOP Class(es):

Table 4.2-1
SOP CLASSES SUPPORTED BY ECHO-SCP

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes

4.2.1.2 Association Policies

4.2.1.2.1 General

ECHO-SCP accepts but never initiates associations.

Table 4.2-2
MAXIMUM PDU SIZE RECEIVED FOR ECHO-SCP

Maximum PDU size received	64 Kbytes

4.2.1.2.2 Number of Associations

Table 4.2-3
NUMBER OF ASSOCIATIONS FOR ECHO-SCP

Maximum number of simultaneous associations	10

4.2.1.2.3 Asynchronous Nature

ECHO-SCP will only allow a single outstanding operation on an Association. Therefore, ECHO-SCP will not perform asynchronous operation window negotiation.

4.2.1.2.4 Implementation Identifying Information

Table 4.2-4
DICOM IMPLEMENTATION CLASS AND VERSION FOR ECHO-SCP

Implementation Class UID	1.2.392.200036.9116.7.24.10
Implementation Version Name	TM_OT_TQA_1.0

4.2.1.3 Association Initiation Policy

ECHO-SCP does not initiate associations.

4.2.1.4 Association Acceptance Policy

When ECHO-SCP accepts an association, it will respond to echo requests. If the Called AE Title does not match the preconfigured AE Title shared by all the SCPs of the application, the association will be rejected.

4.2.1.4.1 Activity – Receive Echo Request

4.2.1.4.1.1 Description and Sequencing of Activities

4.2.1.4.1.2 Accepted Presentation Contexts

Table 4.2-5
ACCEPTABLE PRESENTATION CONTEXTS FOR ECHO-SCP

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
Verification	1.2.840.10008.1.1	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

4.2.1.4.1.2.1 Extended Negotiation

No extended negotiation is performed.

4.2.1.4.1.3 SOP Specific Conformance

4.2.1.4.1.3.1 SOP Specific Conformance to Verification SOP Class

ECHO-SCP provides standard conformance to the Verification Service Class.

4.2.1.4.1.3.2 Presentation Context Acceptance Criteria

ECHO-SCP will always accept any Presentation Context for the supported SOP Classes with the supported Transfer Syntaxes. More than one proposed Presentation Context will be accepted for the same Abstract Syntax if the Transfer Syntax is supported, whether or not it is the same as another Presentation Context.

4.2.1.4.1.3.3 Transfer Syntax Selection Policies

ECHO-SCP prefers explicit Transfer Syntaxes. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priority to the choice of Transfer Syntax:

a. first encountered explicit Transfer Syntax,

b. default Transfer Syntax.

ECHO-SCP will accept duplicate Presentation Contexts, that is, if it is offered multiple Presentation Contexts, each of which offers acceptable Transfer Syntaxes, it will accept all Presentation Contexts, applying the same priority for selecting the Transfer Syntax to each.

4.2.2 STORAGE-SCP

4.2.2.1 SOP Classes

STORAGE-SCP provides Standard Conformance to the following SOP Class(es):

Table 4.2-6
SOP CLASSES SUPPORTED BY STORAGE-SCP

SOP Class Name	SOP Class UID	SCU	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	No	Yes
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	Yes
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	No	Yes
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	No	Yes
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.4	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	Yes

Note: Multiframe XA image data is not supported.

4.2.2.2 Association Policies

4.2.2.2.1 General

STORAGE-SCP accepts but never initiates associations.

Table 4.2-7
MAXIMUM PDU SIZE RECEIVED

Maximum PDU size received	64 Kbytes

4.2.2.2.2 Number of Associations

Table 4.2-8
NUMBER OF ASSOCIATIONS

Maximum number of simultaneous associations	10

4.2.2.2.3 Asynchronous Nature

STORAGE-SCP will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCP will not perform asynchronous operation window negotiation.

4.2.2.2.4 Implementation Identifying Information

Table 4.2-9
DICOM IMPLEMENTATION CLASS AND VERSION FOR STORAGE-SCP

Implementation Class UID	1.2.392.200036.9116.7.24.10
Implementation Version Name	TM_OT_TQA_1.0

4.2.2.3 Association Initiation Policy

STORAGE-SCP does not initiate associations.

4.2.2.4 Association Acceptance Policy

When STORAGE-SCP accepts an association, it will respond to storage requests. If the Called AE Title does not match the preconfigured AE Title shared by all the SCPs of the application, the association will be rejected.

4.2.2.4.1 Activity – Receive Storage Request

4.2.2.4.1.1 Description and Sequencing of Activities

As instances are received, they are copied to the local file system and a record is inserted into the local database. If the received instance is a duplicate of a previously received instance, QA Station returns the error status "0xA702" to the remote storage SCU.

4.2.2.4.1.2 Accepted Presentation Contexts

Table 4.2-10
ACCEPTABLE PRESENTATION CONTEXTS FOR STORAGE-SCP

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
See Table 4.2-6.	See Table 4.2-6.	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

4.2.2.4.1.2.1 Extended Negotiation

No extended negotiation is performed, though STORAGE-SCP is a:

— Level 2 Storage SCP (Full – does not discard any data elements)

4.2.2.4.1.3 SOP Specific Conformance

4.2.2.4.1.3.1 SOP Specific Conformance to Storage SOP Classes

STORAGE-SCP provides standard conformance to the Storage Service Class.

4.2.2.4.1.3.2 Presentation Context Acceptance Criteria

STORAGE-SCP will always accept any Presentation Context for the supported SOP Classes with the supported Transfer Syntaxes. More than one proposed Presentation Context will be accepted for the

same Abstract Syntax if the Transfer Syntax is supported, whether or not it is the same as another Presentation Context.

4.2.2.4.1.3.3 Transfer Syntax Selection Policies

STORAGE-SCP prefers explicit Transfer Syntaxes. If offered a choice of Transfer Syntaxes in a Presentation Context, it will apply the following priority to the choice of Transfer Syntax:

a. first encountered explicit Transfer Syntax,

b. default Transfer Syntax.

STORAGE-SCP will accept duplicate Presentation Contexts, that is, if it is offered multiple Presentation Contexts, each of which offers acceptable Transfer Syntaxes, it will accept all Presentation Contexts, applying the same priority for selecting the Transfer Syntax to each.

4.2.2.4.1.3.4 Response Status

STORAGE-SCP will behave as described in the table below when generating the C-STORE response command message.

Table 4.2-11
RESPONSE STATUS FOR STORAGE-SCP

Service Status	Further Meaning	Status Codes	Reason
Refused	Out of resources	A700	Local resources are insufficient.
	Disk or DB full	A701	Disk full or DB full.
	Instance UID duplicate	A702	Instance(s) received before.
Error	Data set does not match SOP Class	A900	SOP Class UID does not match.
	Cannot understand	C000	Invalid data set or unsupported extended character sets. Multiframe images were received. The Photometric Interpretation target was not "MONOCHROME1", "MONOCHROME2", or "RGB". Tag (0010,0020) does not exist.
Success		0000	Operation was performed properly.

4.2.3 STORAGE-SCU

4.2.3.1 SOP Classes

STORAGE-SCU provides Standard Conformance to the following SOP Class(es):

Table 4.2-12
SOP CLASSES SUPPORTED BY STORAGE-SCU

SOP Class Name	SOP Class UID	SCU	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	No
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	No
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	No
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	No
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	No
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	No
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	No
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.4	Yes	No
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	No

4.2.3.2 Association Policies

4.2.3.2.1 General

STORAGE-SCU initiates but never accepts associations.

Table 4.2-13
MAXIMUM PDU SIZE RECEIVED FOR STORAGE-SCU

Maximum PDU size received	64 Kbytes

4.2.3.2.2 Number of Associations

Table 4.2-14
NUMBER OF ASSOCIATIONS FOR STORAGE-SCU

Maximum number of simultaneous associations	1

4.2.3.2.3 Asynchronous Nature

STORAGE-SCU will only allow a single outstanding operation on an Association. Therefore, STORAGE-SCU will not perform asynchronous operation window negotiation.

4.2.3.2.4 Implementation Identifying Information

Table 4.2-15
DICOM IMPLEMENTATION CLASS AND VERSION FOR STORAGE-SCU

Implementation Class UID	1.2.392.200036.9116.7.24.10
Implementation Version Name	TM_OT_TQA_1.0

4.2.3.3 Association Initiation Policy

STORAGE-SCU attempts to initiate a new association for each instance it attempts to transfer.

4.2.3.3.1 Activity – Send Storage Request

4.2.3.3.1.1 Description and Sequencing of Activities

For each instance selected from the user interface to be transferred, a single attempt will be made to transmit it to the selected remote AE. If the send fails, for whatever reason, no retry will be performed, and an attempt will be made to send the next instance.

4.2.3.3.1.2 Proposed Presentation Contexts

Table 4.2-16
PROPOSED PRESENTATION CONTEXTS FOR STORAGE-SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
See Table 4.2-12.	See Table 4.2-12.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

STORAGE-SCU will propose Presentation Contexts only for the SOP Class of the instance that is to be transferred.

4.2.3.3.1.2.1 Extended Negotiation

No extended negotiation is performed.

4.2.3.3.1.3 SOP Specific Conformance

4.2.3.3.1.3.1 SOP Specific Conformance to Storage SOP Classes

STORAGE-SCU provides standard conformance to the Storage Service Class.

4.2.3.3.1.3.2 Presentation Context Acceptance Criteria

STORAGE-SCU does not accept associations.

4.2.3.3.1.3.3 Response Status

STORAGE-SCU will behave as described in the table below in response to the status returned in the C-STORE response command message.

Table 4.2-17
STORAGE C-STORE RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Codes	Behavior
Success	Success	0000	The SCU assumes that the SCP has successfully stored the SOP Instance.
*	*	Any other status code.	The Association is aborted using A-RELEASE-RQ.

4.2.3.4 Association Acceptance Policy

STORAGE-SCU does not accept associations.

4.2.4 FIND-SCU

4.2.4.1 SOP Classes

FIND-SCU provides Standard Conformance to the following SOP Class(es):

Table 4.2-18
SOP CLASSES SUPPORTED BY FIND-SCU

SOP Class Name	SOP Class UID	SCU	SCP
Patient Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Study Root Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Patient/Study Only Query/Retrieve Information Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	Yes	No

4.2.4.2 Association Policies

4.2.4.2.1 General

FIND-SCU initiates but never accepts associations.

Table 4.2-19
MAXIMUM PDU SIZE RECEIVED FOR FIND-SCU

Maximum PDU size received	64 Kbytes

4.2.4.2.2 Number of Associations

Table 4.2-20
NUMBER OF ASSOCIATIONS FOR FIND-SCU

Maximum number of simultaneous associations	1

4.2.4.2.3 Asynchronous Nature

FIND-SCU will only allow a single outstanding operation on an Association. Therefore, FIND-SCU will not perform asynchronous operation window negotiation.

4.2.4.2.4 Implementation Identifying Information

Table 4.2-21
DICOM IMPLEMENTATION CLASS AND VERSION FOR FIND-SCU

Implementation Class UID	1.2.392.200036.9116.7.24.10
Implementation Version Name	TM_OT_TQA_1.0

4.2.4.3 Association Initiation Policy

FIND-SCU attempts to initiate a new association when the user performs the query action from the user interface. If this involves recursive queries for lower query levels in the hierarchy, these will be performed on the same association.

4.2.4.3.1 Activity – Query Remote AE

4.2.4.3.1.1 Description and Sequencing of Activities

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

4.2.4.3.1.2 Proposed Presentation Contexts

Table 4.2-22
PROPOSED PRESENTATION CONTEXTS FOR FIND-SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
See Table 4.2-18.	See Table 4.2-18.	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

4.2.4.3.1.2.1 Extended Negotiation

No extended negotiation is performed.

In particular, relational queries are not supported.

4.2.4.3.1.3 SOP Specific Conformance

4.2.4.3.1.3.1 SOP Specific Conformance to C-FIND SOP Classes

FIND-SCU provides standard conformance to the supported C-FIND SOP Classes.

Three information models, Patient Root, Study Root and Patient/Study Only are supported.

All queries are initiated at the highest level of the information model and are then recursively repeated at the next lower level (the STUDY level, the SERIES level, and then the IMAGE level) for each response received in order to completely elucidate the “tree” of instances available on the remote AE (from which the user may subsequently request a retrieval at any level).

No CANCEL requests are ever issued.

Requested return attributes not returned by the SCP are ignored.

Table 4.2-23
PATIENT ROOT REQUEST IDENTIFIER FOR FIND-SCU

Name	Tag	Types of Matching
PATIENT Level		
Patient ID	(0010,0020)	S,*,U/UNIQUE
Patient's Name	(0010,0010)	S,*,U
STUDY Level		
Study ID	(0020,0010)	S,*,U
Study Date	(0008,0020)	S,*,U,R
Study Time	(0008,0030)	S,*,U,R
Accession Number	(0008,0050)	S,*,U
Study Instance UID	(0020,000D)	UNIQUE
SERIES Level		
Series Number	(0020,0011)	S,*,U
Modality	(0008,0060)	S,*,U
Series Instance UID	(0020,000E)	UNIQUE
IMAGE Level		
Instance Number	(0020,0013)	S,*,U
SOP Instance UID	(0008,0018)	UNIQUE

Table 4.2-24
STUDY ROOT REQUEST IDENTIFIER FOR FIND-SCU

Name	Tag	Types of Matching
STUDY Level		
Patient ID	(0010,0020)	S,*,U
Patient's Name	(0010,0010)	S,*,U
Study ID	(0020,0010)	S,*,U
Study Date	(0008,0020)	S,*,U,R
Study Time	(0008,0030)	S,*,U,R
Accession Number	(0008,0050)	S,*,U
Study Instance UID	(0020,000D)	UNIQUE
SERIES Level		
Series Number	(0020,0011)	S,*,U
Modality	(0008,0060)	S,*,U
Series Instance UID	(0020,000E)	UNIQUE
IMAGE Level		
Instance Number	(0020,0013)	S,*,U
SOP Instance UID	(0008,0018)	UNIQUE

Table 4.2-25
PATIENT/STUDY ONLY REQUEST IDENTIFIER FOR FIND-SCU

Name	Tag	Types of Matching
PATIENT Level		
Patient ID	(0010,0020)	S,*,U/UNIQUE
Patient's Name	(0010,0010)	S,*,U
STUDY Level		
Study ID	(0020,0010)	S,*,U
Study Date	(0008,0020)	S,*,U,R
Study Time	(0008,0030)	S,*,U,R
Accession Number	(0008,0050)	S,*,U
Study Instance UID	(0020,000D)	UNIQUE

Types of Matching:

The types of matching supported by the C-FIND SCU are as follows. An "S" indicates that the identifier attribute uses Single Value Matching, an "R" indicates Range Matching, an "*" indicates wildcard matching, and a 'U' indicates Universal Matching. "UNIQUE" indicates the Unique Key for the query level; in this case, Universal Matching or Single Value Matching is used, depending on the query level.

4.2.4.3.1.3.2 Presentation Context Acceptance Criteria

FIND-SCU does not accept associations.

4.2.4.3.1.3.3 Response Status

FIND-SCU will behave as described in Table 4.2-26 in response to the status returned in the C-FIND response command message(s).

Table 4.2-26
FIND-SCU RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Codes	Behavior
Cancel	Matching terminated due to Cancel request.	FE00	Ignored (should never occur, since cancels are never issued).
Success	Matching is complete - No final Identifier is supplied.	0000	Current query is terminated; remaining queries continue.
Pending	Matching is continuing - Current Match is supplied and Optional Keys are supported in the same manner as Required Keys.	FF00	Identifier used to populate the browser and trigger recursive lower level queries.

	Matching is continuing - Warning that one or more Optional Keys is not supported for existence and/or matching for this Identifier.	FF01	Identifier used to populate the browser and trigger recursive lower level queries.
*	*	Any other status code.	The Association is aborted using A-RELEASE-RQ.

4.2.4.4 Association Acceptance Policy

FIND-SCU does not accept associations.

4.2.5 MOVE-SCU

4.2.5.1 SOP Classes

MOVE-SCU provides Standard Conformance to the following SOP Class(es):

Table 4.2-27
SOP CLASSES SUPPORTED BY MOVE-SCU

SOP Class Name	SOP Class UID	SCU	SCP
Patient Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No
Patient/Study Only Query/Retrieve Information Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2	Yes	No

4.2.5.2 Association Policies

4.2.5.2.1 General

MOVE-SCU initiates but never accepts associations.

Table 4.2-28
MAXIMUM PDU SIZE RECEIVED AS AN SCP FOR MOVE-SCU

Maximum PDU size received	64 Kbytes

4.2.5.2.2 Number of Associations

Table 4.2-29
NUMBER OF ASSOCIATIONS AS AN SCP FOR MOVE-SCU

Maximum number of simultaneous associations	1

4.2.5.2.3 Asynchronous Nature

MOVE-SCU will only allow a single outstanding operation on an Association. Therefore, MOVE-SCU will not perform asynchronous operation window negotiation.

4.2.5.2.4 Implementation Identifying Information

Table 4.2-30
DICOM IMPLEMENTATION CLASS AND VERSION FOR MOVE-SCU

Implementation Class UID	1.2.392.200036.9116.7.24.10
Implementation Version Name	TM_OT_TQA_1.0

4.2.5.3 Association Initiation Policy

MOVE-SCU attempts to initiate a new association when the user performs the retrieve action from the user interface.

4.2.5.3.1 Activity – Retrieve From Remote AE

4.2.5.3.1.1 Description and Sequencing of Activities

For the entity (study, series, or instance) selected from the user interface to be retrieved, a single attempt will be made to retrieve it from the selected remote AE. If the retrieve fails, for whatever reason, no retry will be performed.

4.2.5.3.1.2 Proposed Presentation Contexts

Table 4.2-31
PROPOSED PRESENTATION CONTEXTS FOR MOVE-SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name**	**UID**		
See Table 4.2-27.	See Table 4.2-27.	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

4.2.5.3.1.2.1 Extended Negotiation

No extended negotiation is performed.

In particular, relational retrievals are not supported.

4.2.5.3.1.3 SOP-Specific Conformance

4.2.5.3.1.3.1 SOP-Specific Conformance to C-MOVE SOP Classes

MOVE-SCU provides standard conformance to the supported C-MOVE SOP Classes.

No CANCEL requests are ever issued.

The retrieval is performed from the AE that was specified in the Retrieve AE attribute returned from the query performed by FIND-SCU. The instances are retrieved to the current application's local database by specifying the destination as the AE Title of the STORE-SCP AE of the local application. This implies that the remote C-MOVE SCP must be preconfigured to determine the presentation address corresponding to the STORE-SCP AE. The STORE-SCP AE will accept storage requests addressed to it from anywhere; therefore, no preconfiguration of the local application is required to accept requests from the remote AE (except appropriate configuration of FIND-SCU).

Table 4.2-32
PATIENT ROOT REQUEST IDENTIFIER FOR MOVE-SCU

Name	Tag	Unique, Matching or Return Key
PATIENT Level		
Patient ID	(0010,0020)	UNIQUE
STUDY Level		
Study Instance UID	(0020,000D)	UNIQUE
SERIES Level		
Series Instance UID	(0020,000E)	UNIQUE
IMAGE Level		
SOP Instance UID	(0008,0016)	UNIQUE

Table 4.2-33
STUDY ROOT REQUEST IDENTIFIER FOR MOVE-SCU

Name	Tag	Unique, Matching or Return Key
STUDY Level		
Patient ID	(0010,0020)	MATCHING
Study Instance UID	(0020,000D)	UNIQUE
SERIES Level		
Series Instance UID	(0020,000E)	UNIQUE
IMAGE Level		
SOP Instance UID	(0008,0016)	UNIQUE

Table 4.2-34
PATIENT/STUDY ONLY REQUEST IDENTIFIER FOR MOVE-SCU

Name	Tag	Unique, Matching or Return Key
PATIENT Level		
Patient ID	(0010,0020)	UNIQUE
STUDY Level		
Study Instance UID	(0020,000D)	UNIQUE

4.2.5.3.1.3.2 Presentation Context Acceptance Criteria

MOVE-SCU does not accept associations.

4.2.5.3.1.3.3 Response Status

MOVE-SCU will behave as described in the table below in response to the status returned in the C-MOVE response command message(s).

Table 4.2-35
MOVE-SCU RESPONSE STATUS HANDLING BEHAVIOR

Service Status	Further Meaning	Status Codes	Reason
Success	Success	0000	Retrieval is terminated.
*	*	Any other status code.	The Association is aborted using A-RELEASE-RQ.

4.2.5.3.1.3.4 Suboperation-dependent behavior

Since the C-MOVE operation is dependent on completion of C-STORE suboperations that occur on a separate association, the effects of failure of operations on the other association(s) must be considered.

MOVE-SCU completely ignores the activities taking place in relation to the STORAGE-SCP AE that is receiving the retrieved instances. Once C-MOVE has been initiated, it runs to completion (or failure) as described in the C-MOVE response command message(s). There is no attempt by MOVE-SCU to confirm that instances have actually been successfully received or locally stored.

Whether or not completely or partially successful retrievals are made available in the local database is beyond the control of MOVE-SCU. The user is purely dependent on the success or failure of the C-STORE suboperations, not on any explicit action by MOVE-SCU.

Whether or not the remote AE attempts to retry any failed C-STORE suboperations is beyond the control of MOVE-SCU.

If the association on which the C-MOVE was issued is aborted for any reason, whether or not the C-STORE suboperations continue is dependent on the remote AE; the local STORAGE-SCP will continue to accept associations and storage operations regardless.

4.2.5.4 Association Acceptance Policy

MOVE-SCU does not accept associations.

4.3 NETWORK INTERFACES

4.3.1 Physical Network Interface

The application is indifferent to the physical medium over which TCP/IP executes, which is dependent on the underlying operating system and hardware.

4.3.2 Additional Protocols

When host names rather than IP addresses are used in the configuration properties to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system.

4.4 CONFIGURATION

All configuration is performed through the use of INI file(s) stored in predefined locations that are specific to the underlying operating system.

4.4.1 AE Title/Presentation Address Mapping

The Calling AE Title of the local application is configurable in the preferences file and is shared by all the AEs. The mapping of the logical name by which remote AEs are described in the user interface to Called AE Titles and of the presentation address (hostname or IP address and port number) is configurable in the preferences file.

4.4.2 Parameters

Table 4.4-1
CONFIGURATION PARAMETERS TABLE

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection response to an Association Open Request. (Application-level timeout)	Yes	60 msec
TCP/IP Port number.	Yes	15000
AE-Specific Parameters (all AEs)		
Maximum object size	No	33 Mbytes
Maximum PDU size that can be sent and received by the AE (see note 1)	Yes	64 Kbytes
AE-specific DIMSE-level time-out values	No	C-MOVE 900 sec Other 120 sec
Number of simultaneous Associations by Service and/or SOP Class	No	Unlimited
Association establishment request waiting time (see note 2)	Yes	60 sec
Association establishment response waiting time (see note 2)	Yes	60 sec
Service request waiting time (see note 2)	Yes	60 sec
Association release response waiting time (see note 2)	Yes	60 sec
SOP Class support	Yes	All supported SOP Classes always proposed and accepted
Transfer Syntax support	No	All supported Transfer Syntaxes always proposed and accepted

note 1 Parameter range: 16 to 64 Kbytes.
note 2 Parameter range: 1 to 32767 sec

5 SUPPORT OF CHARACTER SETS

QA Station applications support the character sets specified below.

STORAGE-SCU, STORAGE-SCP, and FIND-SCU:

ISO-IR 6 (Basic G0 set)
ISO-IR 13 (Japanese katakana)
ISO-IR 14 (Japanese romaji)
ISO-IR 87 (Japanese kanji, hiragana, and katakana)

MOVE-SCU:

ISO-IR 6 (Basic G0 set)

Support extends to correctly decoding and displaying the correct symbol for all names received over the network and for all names in the local database.

6 SECURITY

6.1 SECURITY PROFILES

Not supported.

6.2 ASSOCIATION LEVEL SECURITY

QA Station checks the following items.

・Whether or not the SOP Class UID and Transfer Syntax UID are supported by QA Station

・Whether or not the Called AE Title conforms to specifications

・Whether or not the Protocol Version is 0X01

・Whether or not the Max PDU Size is less than 1024 bytes

・Whether or not the Application Context Name conforms to specifications

・Whether or not the Implementation Class UID exists

6.3 APPLICATION LEVEL SECURITY

Not supported.

7 ANNEXES

7.1 IOD CONTENTS

7.1.1 Created SOP Instances

QA Station issues the following numbers for each image confirmed by the operator:

・Study Instance UID
・Series Instance UID
・SOP Instance UID

7.1.2 Usage of Attributes from Received IODs

No SOP-Class-specific fields are required.

The local database and the remote query and directory browsers make use of conventional identification attributes to distinguish patients, studies, series, and instances. In particular, if two patients have the same value for the Patient ID, they will be treated as the same patient in the browser and the local database.

7.1.3 Attribute Mapping

Not applicable.

7.1.4 Coerced/Modified Fields

Modification of all tags is possible.

7.2 DATA DICTIONARY OF PRIVATE ATTRIBUTES

This product reserves private attribute values in group 7019.

The private attributes added to created SOP instances or directory records are listed in the following table.

Table 7.2-1
DATA DICTIONARY OF PRIVATE ATTRIBUTES

Tag	Private Owner Code	Attribute Name	VR	VM
(7019,xx71)	TOSHIBA_MEC_OT3	Indicator of creator	CS	1
(7019,xx72)	TOSHIBA_MEC_OT3	ID of quality assurance reviewer	LO	1
(7019,xx73)	TOSHIBA_MEC_OT3	Name of quality assurance reviewer	PN	1
(7019,xx74)	TOSHIBA_MEC_OT3	Date of completion of quality assurance	DA	1

(7019,xx75)	TOSHIBA_MEC_OT3	Time of completion of quality assurance	TM	1
(7019,xx76)	TOSHIBA_MEC_OT3	Host name of quality assurance station	LO	1
(7019,xx77)	TOSHIBA_MEC_OT3	Station name and version of quality assurance station	CS	1
(7019,xx78)	TOSHIBA_MEC_OT3	Flag of completion of quality assurance	CS	1
(7019,xx79)	TOSHIBA_MEC_OT3	Status of quality assurance review	CS	1
(7019,xx7A)	TOSHIBA_MEC_OT3	Original SOP Instance UID	UI	1
(7019,xx7B)	TOSHIBA_MEC_OT3	Original Series Instance UID	UI	1
(7019,xx7C)	TOSHIBA_MEC_OT3	Original Study Instance UID	UI	1
(7019,xx7D)	TOSHIBA_MEC_OT3	Rotation information for image display from original image	US	1
(7019,xx7E)	TOSHIBA_MEC_OT3	Sequence of LR mark	SQ	1
(7019,xx7F)	TOSHIBA_MEC_OT3	Rotation status at creation of LR mark	US	1
(7019,xx80)	TOSHIBA_MEC_OT3	Original image data on area of original LR mark	OW or OB	1
(7019,xx81)	TOSHIBA_MEC_OT3	X start position of LR mark	SS	1
(7019,xx82)	TOSHIBA_MEC_OT3	Y start position of LR mark	SS	1
(7019,xx83)	TOSHIBA_MEC_OT3	Size of LR mark in X direction	US	1
(7019,xx84)	TOSHIBA_MEC_OT3	Size of LR mark in Y direction	US	1
(7019,xx85)	TOSHIBA_MEC_OT3	Previous Patient ID	LO	1
(7019,xx86)	TOSHIBA_MEC_OT3	Previous modality	CS	1

7.3 CODED TERMINOLOGY AND TEMPLATES

The value for the Code Meaning will be displayed for all code sequences. No local lexicon is provided to look up alternative code meanings.

7.4 GRAYSCALE IMAGE CONSISTENCY

Not supported.

7.5 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

Not supported.

7.6 PRIVATE TRANSFER SYNTAXES

Not supported.