Image Stream Medical

nStream,
nStream+, nStream+ HD
nStream G3, nStream HD G3

Version 4.5
DICOM Conformance Statement

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1. Introduction

This document describes the Image Stream Medical (ISM) nStream's conformance to the ACR-NEMA DICOM (Digital Imaging and Communications in Medicine) standard and satisfies the DICOM requirement for a vendor conformance specification. The ISM nStream is a medical digital recording and image management device. The ISM nStream DICOM option provides a means to query a DICOM Modality Worklist (MWL) Application Entity SCP and to export images to DICOM storage. This Conformance Statement is intended for:

- Potential customers
- Software designer(s) & system integrator(s) of nStream
- Marketing staff interested in nStream functionality

It is assumed that the reader is familiar with the DICOM standard.

1.1 DICOM Background

The DICOM information exchange specification provides a definitive structure of commands and information that allow for the inter-communication of medical imaging devices. Developed by the American College of Radiology (ACR) and the National Electrical Manufacturers Association (NEMA), the DICOM standard strives to promote communication of image information through the use of a standardized set of command classes and information semantics.

The DICOM standard defines classes of information that are common to many modalities of medical imaging. However, to meet the specific needs of information content for such a diverse range of information, the DICOM specification defines structures for a multitude of medical data. To alleviate the need for applications to implement every aspect of the DICOM specification, a list of conformance tables for every modality was created to define the minimum set of information necessary for data exchanges. A requirement of the DICOM specification is to maintain a compliance document that outlines a subset of DICOM services and data classes that are supported by an application. The purpose of this document is to define a subset of DICOM for the exchange of information with the nStream via its DICOM feature. This document is written with respect to the ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) version number 3.0.

1.2 References

ACR-NEMA Digital Imaging and Communications in Medicine, DICOM V3.0. Digital Imaging and Communications in Medicine (DICOM) standard by the National Electrical Manufacturers Association (NEMA).

1.3 Definitions

- **Association Establishment** - An Association Establishment is the first phase of communication between two DICOM Application Entities (AE). The AEs use the

Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.

- **Called Application Entity Title** - The Called AE Title defines the intended receiver of an Association.
- **Calling Application Entity Title** - The Calling AE Title defines the requestor of an Association.
- **DICOM Message Service Element (DIMSE)** - A DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.
- **Information Object Definition (IOD)** - An IOD is a data model which is an abstraction of real-world information. This data model defines the nature and attributes relevant to the class of real-world objects represented.
- **Service Class Provider (SCP)** - A Service Class Provider plays the "server" role to perform operations and invoke notifications during an Association. An example of a Storage Service Class Provider would be an image storage device. In this case, the image storage device is storing the image that was sent by a Service Class User.
- **Service Class User (SCU)** - A Service Class User plays the "client" role to invoke operations and perform notifications during an Association. An example of a Storage Service Class User would be an image acquisition device. In this case, the image acquisition device will create and send a DICOM image by requesting that a Service Class Provider store that image.
- **Service/Object Pair (SOP) Class** - A SOP Class is defined by the union of an Information Object Definition and a set of DIMSE Services. A DICOM Application Entity may support one or more SOP Classes. Each SOP Class is uniquely identified by a SOP Class UID.
- **SOP Instance** - A specific occurrence of an Information Object.
- **Transfer Syntax** - The Transfer Syntax is a set of encoding rules that allow DICOM Application Entities to negotiate the encoding techniques (e.g. data element structure, byte ordering, compression) they are able to support. The Transfer Syntax is negotiated during Association Negotiation.
- **Unique Identifier (UID)** - A Unique Identifier is a globally unique, ISO compliant, ASCII-numeric string. It guarantees uniqueness across multiple countries, sites, vendors and equipment

1.4 Acronyms, Abbreviations and Symbols

ACC	American College of Cardiology
ACR	American College of Radiology
ASCII	American Standard Code for Information Interchange
AE	Application Entity
ANSI	American National Standards Institute
CEN TC251	Committee European de Normalization - 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
HIS	Hospital Information System
HL7	Health Level 7
IE	Information Entity
IOD	Information Object Definition
ISO	International Standards Organization
JIRA	Japan Industries Association of Radiological Systems
NEMA	National Electrical Manufacturers Association
OSI	Open Systems Interconnection
PDU	Protocol Data Unit
RIS	Radiology Information System
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier

1.5 Important Note

The fact that equipment is compatible according to this Conformance Statement, does not in itself guarantee interoperability. Though compatibility with the DICOM standard has been tested, interoperability conflicts may arise when trying to use the ISM nStream with other devices. Interoperability does not lie within the scope of the DICOM standard.

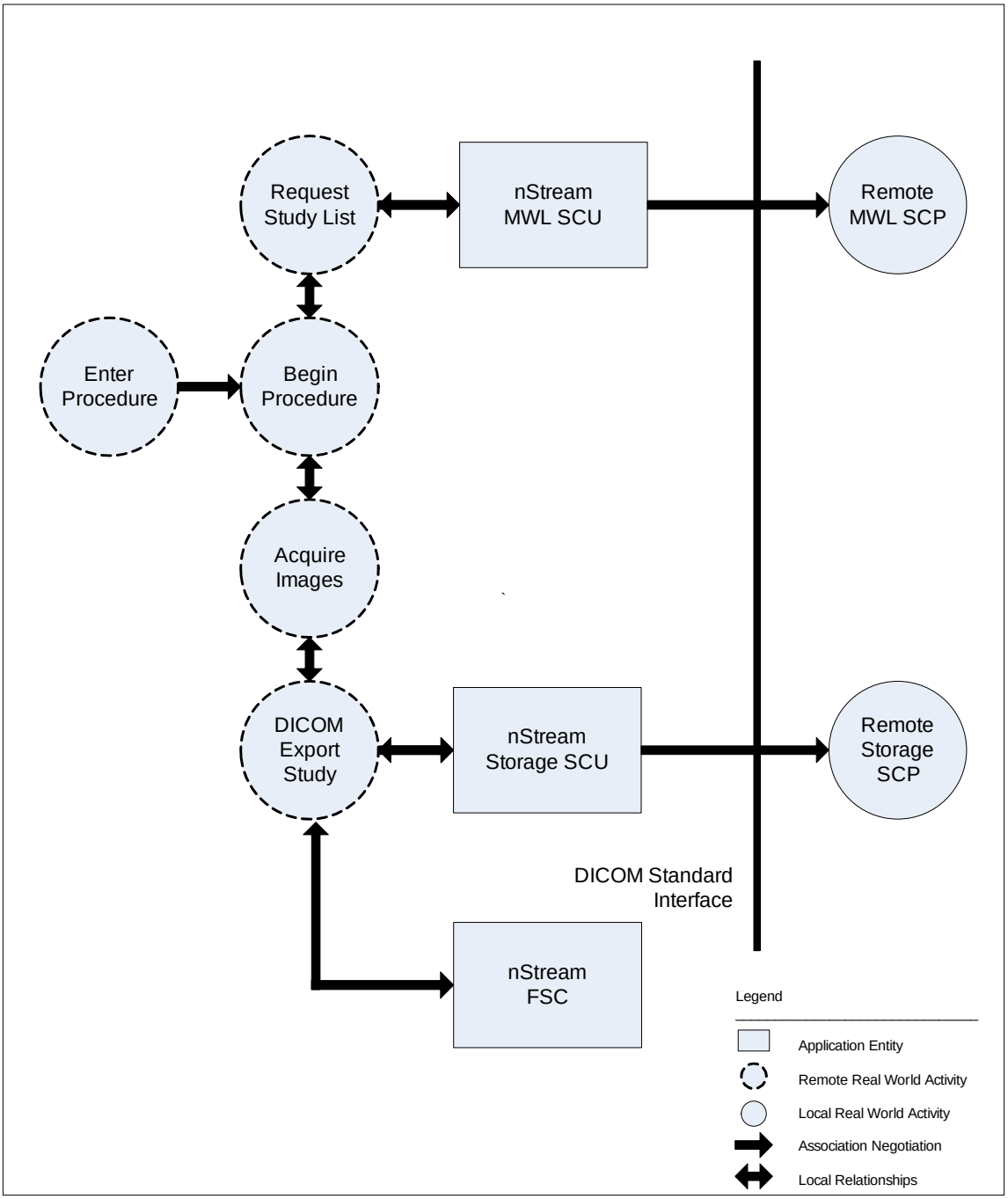
1.6 Implementation Model

The ISM nStream DICOM feature incorporates the DICOM 3.0 standard for networked image store and Modality Worklist query functions. Exam requests are returned from the Modality Worklist server that allows the operator to select which exam request to perform. The data returned from the query includes patient demographic data that the operator is not required to enter manually. Additional patient information from the Modality Worklist server is passed on to the storage library with the associated images. Images are transferred from the ISM nStream using standard network connections to be processed on a DICOM Storage SCP. The system can also export images to media conforming to DICOM Part 10 for reading by generic File Set Readers (FSR).

1.7 Application Data Flow Diagram

The diagram below represents the relationship between the ISM nStream real-world activities that invoke the device Application Entity's local use of DICOM on the left side, and depicts the remote DICOM destination AE's on the right side. All Application Entities are in boxes.

Figure 1.7-1 Application Data Flow Diagram



1.8 Functional Definitions of AE's

nStream Storage - This AE handles sending images to a storage server using the DICOM C-STORE SCU Services. The remote SCP must support the Verification SOP Class. The images may also be archived locally for export to removable media or re-submission to PACS at a later time.

nStream MWL - This AE handles querying the Modality Worklist server as an SCU using the DICOM Basic Modality Worklist Service Class C-FIND service. It will locate and retrieve study requests that match user defined criteria. The remote SCP must support Verification SOP Class as well.

The nStream Storage AE and nStream MWL AE are independent AE's and can function separately in the system.

1.9 Sequencing of Real-World Activities

For storing using the End Procedure commands, an association must be opened. The destination device must have successfully responded to the Verification SOP class (storage and Modality Worklist) prior to use. An association for Modality Worklist will be made when the user initiated query is executed.

2. AE Specifications

2.1 Storing AE - Specification

The Storing AE provides conformance to the following DICOM SOP Classes as an SCU:

Table 2.1-1 Supported DICOM SOP Classes

SOP Class Name	SOP Class UID	Conformance Level
Verification SOP Class	1.2.840.10008.1.1	Standard
VL Endoscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.1	Standard
VL Photographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.77.1.4	Standard

Note: The offering of a VL Storage SOP Class is based on configuration of the specific input (camera) attached to the system.

2.1.1 Association Establishment Policies

The system will open the association at the end of the exam, transfer the entire study, then close the association. If an error occurs and the connection is broken, the system will not reattempt association to transfer the remaining data. The user can manually attempt to retransmit the data from the Review Mode of the nStream application.

2.1.1.1 General

Maximum PDU size offered: 16,384 bytes
Minimum PDU size accepted: 1,024 bytes

2.1.1.2 Number of Associations

The Storing AE can initiate one simultaneous association.

Note that the other Application Entities in this device may be simultaneously active and thus other associations may be open simultaneously.

2.1.1.3 Asynchronous Nature

The Storing AE will not use asynchronous operations.

2.1.1.4 Implementation Identifying Information

Implementation Class UID: “1.2.826.0.1.3680043.2.557.4.5”
Implementation Version name: “V4.5.0.0”

2.1.2 Association Initiation by: Real-World Activity

The Storing AE will open an association to the Remote Storage SCP when the real-world activity occurs corresponding to the user invocation of Select Remote Storage SCP.

2.1.3 Association Initiation by: Finish Patient

The user invocation of Finish Patient will cause an association to be initiated to a Remote Storage SCP.

2.1.4 Proposed Presentation Context to a Storage Server

The presentation context is configurable from the SOPs in the following table. Any combination of Storage SOP Classes plus Verification may be configured via the associated device file. The system will only request the SOP Classes enabled therein. Therefore the Proposed Presentation Contexts are configuration dependent.

TABLE 2.1.4-1 Storing AE Proposed Presentation Contexts to a Storage Server for images held in lossless form

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	JPEG Lossless Transfer Syntax	1.2.840.10008.1.2.4.57	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	JPEG Lossless, First-Order Prediction Transfer Syntax	1.2.840.10008.1.2.4.70	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

TABLE 2.1.4-2 Storing AE Proposed Presentation Contexts to a Storage Server for images held in lossy compressed form

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	JPEG Baseline, Default Transfer Syntax	1.2.840.10008.1.2.4.50	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	DICOM Explicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2.1	SCU	None
All SOP Classes in Table 2.1-1	See corresponding UID in Table 2.1-1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

Note: Whether the image is acquired in lossy or lossless form depends on system configuration. The user has the option of capturing compressed (lossy) or uncompressed (lossless) images.

2.1.4.1 SOP Specific Conformance to Verification SOP Class

The Storing AE provides standard conformance to the Verification SOP Class as an SCU. The remote SCP must support the Verification SOP Class on the same Association as the Storage SOP Class.

2.1.4.2 SOP Specific Conformance to VL Image Storage SOP Class

The Modality Worklist implementation will combine new image data with specific attributes in various modules within the VL Photographic Image IOD or VL Endoscopic Image IOD. These additions are listed in Table 2.2.3.3-4 Worklist Attributes added to the standard DICOM image header for C-STORE.

VL Endoscopic/VL Photographic Image Storage Modules Used:

IE	Module	Usage	Description
Patient	Patient	M	Used
	Clinical Trial Subject	U	Not used
Study	General Study	M	Used
	Patient Study	U	Used
	Clinical Trial Study	U	Not used
Series	General Series	M	Used
	Clinical Trial Series	U	Not used
Equipment	General Equipment	M	Used
Image	General Image	M	Used
	Image Pixel	M	Used
	Acquisition Context	M	Used
	VL Image	M	Used
	Overlay Plane	U	Not used
	SOP Common	M	Used

Each module which is used by the Storing AE has a table below which indicates the elements supported.

Patient Module Elements:

Name	Attribute	Type	VR	Range	Description
Patient's Name	0010, 0010	2	PN		Used, when provided by MWL server or specified by Operator. Patient name with ^ delimiters, supporting LAST^FIRST^M only. As of 10.1.2, Last Name field may contain up to 64 characters. If Last is less, then first will be filled. If space remains, Middle is added. Attribute will not exceed 64 characters total, including ^ delimiters.
Patient ID	0010, 0020	2	LO		Used, when provided by MWL server or specified by Operator.
Birth Date	0010, 0030	2	DA		Used, when provided by MWL server or specified by Operator.
Patient Sex	0010, 0040	2	CS		Used, when provided by the MWL server or specified by Operator. M, F, or O.
Referenced Patient Sequence		3			Not used
Patient's Birth Time		3			Not used
Other Patient IDs	0010,1000	3	LO		Used, when provided by MWL server. IDs are

					delimited by \.
Other Patient Names		3			Not used
Ethnic Group		3			Not used
Patient Comments		3			Not used

General Study Module Elements:

Name	Attribute	Type	VR	Range	Description
Study Instance UID	0020, 000D	1	UI		System generated, unless provided by MWL server
Study Date	0008, 0020	2	DA	yyyymmdd	Exam date
Study Time	0008, 0030	2	TM	hhmmss	Exam time
Referring Physician Name	0008, 0090	2	PN		Blank, unless provided by MWL server.
Study ID	0020, 0010	2	SH		System Generated, unless provided by MWL server.
Accession Number	0008, 0050	2	SH		Blank if none entered or provided by MWL server.
Study Description	0008, 1030	3	LO		Blank, unless provided by MWL server.

General Series Module Elements:

Name	Attribute	Type	VR	Range	Description
Modality	0008, 0060	1	CS	ES or XC	Endoscopic or External Camera modalities supported.
Series Instance UID	0020, 000E	1	UI		Used
Series Number	0020, 0011	2	IS		Series number in exam . ES = 0 and XC = 2
Laterality	0020, 0060	2C			Not used
Series Date	0008, 0021	3	DA	yyyymmdd	Used
Series Time	0008, 0031	3	TM	hhmmss	Used
Performing Physician's Name	0008, 1050	3	PN	1-n	Used
Protocol Name	0018, 1030	3			Not used
Series Description	0008, 103E	3	CS		Blank, unless provided by MWL server
Operator's Name	0008, 1070	3	PN	1-n	Used
Referenced Study Component Sequence	0008, 1111	3			Not used
Body Part Examined	0018, 0015	3			Not used
Patient Position	0018, 5100	2C			Not used
Smallest Pixel Value in Series	0028, 0108	3			Not used
Largest Pixel Value in Series	0028, 0109	3			Not used

General Equipment Module Elements

Name	Attribute	Type	VR	Range	Description
Manufacturer	0008,0070	2	LO	Image Stream Medical	Used
Institution Name	0008, 0080	3	LO		Used, from configuration file.
Institution Address		3			Not used
Station Name	0008, 1010	3	SH		Used, from configuration file.
Institutional Department Name		3			Not used
Manufacturer's Model Name	0008, 1090	3			Used, from configuration file.
Device Serial Number		3			Not used
Software Version	0018, 1020	3	LO	1-n	Used , nStream application software version.
Spatial Resolution		3			Not used
Date of Last Calibration		3			Not used
Time of Last Calibration		3			Not used
Pixel Padding Value		3			Not used

General Image Module Elements

Name	Attribute	Type	VR	Range	Description
Image Number	0020, 0013	2	IS	1-n	Used, Image number in exam
Patient Orientation	0020, 0020	2	CS		Blank
Image Date	0008 ,0023	2C	DA	yyyymmdd	Used
Image Time	0008 ,0033	2C	TM	hhmmss	Used
Image Type	0008, 0008	2	CS	ORIGINAL/ PRIMARY	Used
Acquisition Number	0020, 0012	3			Not used
Acquisition Date	0008, 0022	3			Not used
Acquisition Time	0008, 0032	3			Not used
Image Comments	0020, 4000	3	LT		Used, when provided by user input for image annotation .

Image Pixel Module Elements:

Name	Attribute	Type	VR	Range	Description
Samples/ Pixel	0028, 0002	1	US	3	Color
Photometric Interpretation	0028, 0004	1	CS	RGB / YBR_FULL_422	If JPEGBaseLine transfer syntax is used, this value will be “YBR_FULL_422”, else this value will be RGB(for BitMaps as well)
Rows	0028, 0010	1	US	480	Used
Columns	0028, 0011	1	US	640	Used
Bits Allocated	0028, 0100	1	US	8	Used
Bits Stored	0028, 0101	1	US	8	Used
High Bit	0028, 0102	1	US	7	Used
Pixel Representation	0028, 0103	1	US	0	Unsigned integers
Pixel Data	7FE0, 0010	1	OB		Used
Planar Configuration	0028, 0006	1C	US	0	0=Pixel
Aspect Ratio	0028, 0034	1C			Not used
Smallest Image Pixel Value	0028, 0106	3			Not used
Largest Image Pixel Value	0028, 0107	3			Not used
Red Palette Color Lookup Table Descriptor	0028, 1101	1C			Not used
Green Palette Color Lookup Table Descriptor	0028, 1102	1C			Not used
Blue Palette Color Lookup Table Descriptor	0028, 1103	1C			Not used
Red Palette Color Lookup Table Data	0028, 1201	1C			Not used
Green Palette Color Lookup Table Data	0028, 1202	1C			Not used
Blue Palette Color Lookup Table Data	0028, 1203	1C			Not used

VL Image Module Elements:

Attribute Name	Attribute	Type	VR	Range	Description
Image Type	0008,0008	1	CS	ORIGINAL/ PRIMARY	Used
Photometric Interpretation	0028,0004	1	CS	RGB / YBR_FULL_422	Used. If JPEGBaseLine transfer syntax is used, this value will be “YBR_FULL_422”, else this value will be RGB(for BitMaps as well)
Bits Allocated	0028,0100	1	US	8	Used.
Bits Stored	0028,0101	1	US	8	Used

High Bit	0028,0102	1	US	7	Used
Pixel Representation	0028,0103	1	US	0	Used
Samples per Pixel	0028,0002	1	US	3	Used
Planar Configuration	0028,0006	1C	US	0	Used
Content Time	0008,0033	1C			Not used
Lossy Image Compression	0028,2110	2	CS	00	Used, if configured for compression.
Lossy Image Compression Ratio	0028,2112	2	DS	20	Used, if configured for compression.
Lossy Image Compression Ratio	0028,2114	2	CS	ISO_10918_1	Used, if configured for compression.
Referenced Image Sequence	0008,1140	1C			Not used
Referenced SOP Class UID	0008,1150	1C			Not used
Referenced SOP Instance UID	0008,1155	1C			Not used.

2.1.5 Storing AE Behavior to SCP Status

Storing AE Behavior to Status Returned from SCP:

Status Value	Meaning	Description	Storing AE Behavior
0000	Success		Upon successfully storing data to an archive server, the Storing AE will continue operation without user notification.
A7xx	Refused	Out of resources	The association is terminated. The user is notified of the failure.
A9xx	Error	Data set does not match SOP class	Same as A7xx.
Cxxx	Error	Cannot understand	Same as A7xx.
B000	Warning	Coercion of data elements	Ignored.
B007	Warning	Data set does not match SOP class	Same as A7xx.
B006	Warning	Elements discarded	Ignored.

2.2 Modality Work List AE - Specification

The Modality Worklist SOP Class in the Basic Worklist Service Class identifies the Modality Worklist Information Model, and the DIMSE-C operations supported. The following Standard SOP Class is used here:

SOP Class Name	SOP Class UID	Conformance Level
Verification SOP Class	1.2.840.10008.1.1	Standard
Modality Worklist Information Model – FIND	1.2.840.100008.5.1.4.31	Standard

2.2.1 Association Establishment Policies

The Modality Worklist AE will initiate an association under several conditions. The user may manually initiate a Worklist Update which will use the settings of the Automatic Query to determine the search criteria, and then issue the C-FIND command to the Modality Worklist server. After the requested data is returned, the association is closed.

The system may also be set for an automatic query to occur at intervals set by the user in the configuration screens.

2.2.1.1 General

Maximum PDU size offered: 16,384 bytes
Minimum PDU size accepted: 1,024 bytes

2.2.1.2 Number of Associations

The Modality Worklist AE can initiate one simultaneous association.

Note that the other Application Entities in this device may be simultaneously active and thus other associations may be open simultaneously.

2.2.1.3 Asynchronous Nature

The Modality Worklist AE will not use asynchronous operations.

2.2.1.4 Implementation Identifying Information

Implementation Class UID: “1.2.826.0.1.3680043.2.557.4.5”
Implementation Version name: “V4.5.0.0”

2.2.2 Association Initiation by: Real-World Activity

Not Applicable.

2.2.2.1 Association Initiation by: New Patient

The user invocation of New Patient will cause an association to be initiated to a Remote MWL SCP to retrieve patient demographic information.

2.2.2.2 Association Initiation by: Update List

Not Supported.

2.2.2.3 Association Initiation by: New Patient Data Entry Panel

Not Supported.

2.2.2.4 Association Initiation by: Select Modality Worklist Server

Upon selecting the Modality Worklist Search button, the system will initiate a DICOM Ping to verify the Modality Worklist server is available. If available, it will retrieve Modality Worklist data.

2.2.3 Proposed Presentation Context to a Modality Worklist Server

TABLE 2.2.3-1 Modality Worklist AE Proposed Presentation Contexts to a MWL server:

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None
Modality Worklist Information Model – FIND	1.2.840.100008.5.1.4.3.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

2.2.3.1 SOP Specific Conformance to Verification SOP Class

The Modality Worklist AE provides standard conformance to the Verification SOP Class as an SCU. The remote SCP must support the Verification SOP Class on the same Association as the Worklist C-FIND Service.

2.2.3.2 System Query Configuration Options

Table 2.2.3.2-1 System Query Configuration Options:

Query Action	Location of Entry	Settings
When selecting "New Patient"	Patient Data Entry Screen	Query criteria set in Define Query
Upon User Request (Search)	Patient Data Entry Screen. Search based on Patient ID, Last Name &.Accession Number	Query criteria set in Patient Data Entry Screen.

2.2.3.2.1 System Query Functions

Table 2.2.3.2.1-1 Data Used For Different System Or User Queries:

Query Type	Data Used	Located in:
Search (User Request)	Modality	Used, from configuration file. Blank will query all modalities.
Search (User Request)	Last Name	Used, User Interface.
Search (User Request)	Patient ID	Used, User Interface
Search (User Request)	Accession Number	User, User Interface

Table 2.2.3.3-2 Procedure Query Matching Keys:

Attribute Name	Attribute	Comments
Accession Number	0008,0050	Single Value Matching
Patient's Name	0010,0010	Suffix Wild Card Matching on Last Name
Patient ID	0010,0020	Single Value Matching

Table 2.2.3.3-3 Returned Attributes:

Attribute Name	Attribute	Key Type
Accession Number	0008,0050	2
Modality	0008,0060	1
Referring Physician Name	0008,0090	2
Patient's Name	0010,0010	1
Patient ID	0010,0020	1
Patient's Birth Date	0010,0030	2
Patient's Sex	0010,0040	2
Scheduled Procedure Step Start Date	0040,0002	1
Scheduled Procedure Step Start Time	0040,0003	1
Scheduled Performing Physician's Name	0040,0006	2
Scheduled Procedure Step Description	0040,0007	1C
Scheduled Procedure Step Sequence	0040,0100	1
Study ID	0020,0010	2
Other Patient IDs	0010,1000	3
Physician's Name	0008,1050	
Procedure Description	0032,1060	
Study Instance ID	0020,000D	1

Note: All requested attributes are sent blank, and blank return values are accepted. The following attributes, if returned, will be added to the C-Store Image Header.

Table 2.2.3.3-4 Worklist Attributes Added To the Standard DICOM Image Header for C-Store:

Attribute Name	Attribute	Comments
Study Description	0008, 0030	Mapped from Scheduled Procedure Step Description (0040,0007)
Accession Number	0008, 0050	
Referring Physician Name	0008, 0090	
Series Description	0008, 103E	Mapped from Scheduled Procedure Step Description (0040,0007)
Patient's Name	0010, 0010	
Patient ID	0010, 0020	
Patient's Birth Date	0010, 0030	
Patient's Sex	0010, 0040	
Study Instance UID	0020, 000D	
Scheduled Procedure Step Description	0040, 0007	
Study Date	0008, 0020	

Study Time	0008, 0030	
Series Date	0008, 0021	
Series Time	0008, 0031	
Image Date	0008, 0023	
Image Time	0008, 0033	
Image Type	0008, 0008	
Manufacturer Model Name	0008, 1090	
Manufacturer	0008, 0070	
Physician's Name	0008, 1050	
SOP Class ID	0008, 0016	
SOP Instance ID	0008, 0018	
Institution Name	0008, 0080	
Operator Name	0008, 1070	
Station Name	0008, 1010	
Manufacturer Model Version	0018, 1020	
Series ID	0020, 000E	
Study ID	0020, 0010	
Series Number	0020, 0011	
Image Number	0020, 0013	
Patient Orientation	0020, 0020	
Planar Orientation	0028, 0006	
Procedure Description	0032, 1060	
Image Type	0028, 2110	.
Lossy Image Compression	0028, 2112	.
Photometric Interpretation	0028, 0004	
Lossy Image Compression Method	0028, 2114	

Note: If the comment is empty, the attribute is simply copied from that received from the MWL server into the image.

2.2.4 Modality Worklist AE Behavior to SCP Status (C-FIND Response)

Table 2.2.4-1 Modality Worklist AE Behavior to Status Returned From SCP:

Status Value	Meaning	Related Fields	Description	Modality Worklist AE Behavior
0000	Success	None	Matching is Complete. No final Identifier is supplied.	Upon successfully connecting to a Modality Worklist server, and retrieving the requested data, the Modality Worklist AE will continue operation without user notification.
A700	Refused	0000, 0902	Out of resources	The association is terminated. The user is notified of the failure.
A900	Failed	0000, 0901 0000, 0902	Identifier does not match SOP class	Same as A7xx.
Cxxx	Failed	0000, 0901 0000, 0902	Unable to Process	Same as A7xx.
FE00	Cancel	None	Matching is Terminated due to Cancel Request	Terminated due to a Cancel Request.
FF00	Pending	Identifier	Matches are continuing.	Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys.
FF01	Pending	Identifier	Matches are continuing.	Warning that one or more Optional Keys were not supported for existence for this Identifier.

3. Communication Profiles

3.1 TCP/IP Stack Supported

The TCP/IP protocol is used.

3.2 Physical Media Supported

Standard IEEE 802 (Ethernet) 10/100BaseT (twisted pair) is supported.

4. Extensions/Specializations/Privatizations

4.1 Standard Extended/Specialized/Private SOPs

None

4.2 Private Transfer Syntaxes

None

5. Configuration

This device obtains configuration information at the time of installation to provide the following.

- Mapping from Application Entity Title to Presentation Address
- Device configuration information

5.1 AE Title/Presentation Address Mapping

The translation from AE Title to Presentation Address is to be performed using a look up table loaded at installation or some other time.

5.2 Configurable Parameters

The nStream application provides a DICOM Maintenance User Interface for configuration of the following parameters:

- Application Entity Titles (Calling AE and Called AE)
- Node: hostname or IP address (e.g. host1.mynetwork.com or xxx.xxx.xxx.xxx)
- Remote SCP Port number.
- Modality (MWL only)
- Input Modality (Storage only)

6. Support of Extended Character Sets

Extended character sets are not supported.