

Virtual Nodule Clinic DICOM Conformance Statement

APPROVALS

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REVISION HISTORY

Revision	DD-MMM-YYYY	Author	Detail
0	01-Apr-2021	G Grab	First issue for 2.1

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Virtual Nodule Clinic DICOM Conformance Statement

1 CONFORMANCE STATEMENT OVERVIEW

Virtual Nodule Clinic provides network services to assist medical professionals in the management of patients with pulmonary nodules that have been detected on thoracic imaging studies. The software can import and display DICOM 3.0 compliant imaging datasets from computer networks (PACS).

Table 1 provides an overview of the network services supported by the Virtual Nodule Clinic system.

SOP Class	User of Service (SCU)	Provider of Service (SCP)
CT Image Storage	No	Yes

Table 1 Network Services

Table 2 provides an overview of the Media Storage Application Profiles supported by the Virtual Nodule Clinic system.

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
CT Image Storage	No	No

Table 2 Media Services

Table 3 provides an overview of the viewable SOP classes for the Virtual Nodule Clinic system.

SOP Class	SOP Class UID	Data Type [0008,0008]
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Any

Table 3 Viewable SOP Services

2 INTRODUCTION

2.1 Revision History

Document Revision	Date	Description
1.0	05-Feb-2019	Issued for Virtual Nodule Clinic version 1.0
1.1	25-Apr-2019	Updated to clarify support for multiple AETs
1.2	01-Oct-2019	Update Storage SCP AE specifications for version 1.2
1.4	22-May-2020	Issued for Virtual Nodule Clinic version 1.4

2.2 Audience

This document is written for those who need to understand how Virtual Nodule Clinic will integrate into their healthcare facility. This includes those responsible for overall imaging network policy and architecture and integrators who need to have a detailed understanding of the DICOM features of the product.

This document contains some basic DICOM definitions to aid the reader in understanding how this product implements DICOM features, however integrators are expected to fully understand the terminology, the contents of this document and how this product will integrate with other devices that support compatible DICOM features.

2.3 Remarks

The purpose of this DICOM Conformance Statement is to facilitate integration between Virtual Nodule Clinic and other DICOM products. This document should be read and understood in conjunction with the DICOM Standard.

DICOM conformance alone does not guarantee interoperability. This document does, however, facility a first-level comparison for interoperability between devices supporting compatible DICOM functionality.

This DICOM Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of intended information. The user should be aware of the following important issues:

- The comparison of DICOM Conformance Statements is only the first step towards assessing interconnectivity and interoperability between the product and other devices.
- Test procedures should be defined and executed to validate the required level of interoperability with specific DICOM devices, as established by the healthcare facility.

2.4 Terms and Definitions

Informal definitions are provided for the following terms used in this DICOM Conformance Statement. The DICOM Standard is the authoritative source for formal definitions of these terms.

Term	Definition
Abstract Syntax	The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.
Application Entity (AE)	An endpoint of a DICOM information exchange, including the DICOM network or media interface software, i.e. the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.
Application Entity Title	The externally known name of an Application Entity, used to identify a DICOM application to other DICOM applications on the network.
Application Context	The specification of the type of communication used between Application Entities. Example: DICOM network protocol.
Association	A network communication channel set up between Application Entities.
Attribute	A unit of information in an object definition; it is a data element, identified by a tag. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

Term	Definition
Information Object Definition (IOD)	The specified set of Attributes that comprise a type of data object. It does not represent a specific instance of the data object, but rather a class of similar data objects that have the same properties. The Attributes may be specified as Mandatory (Type 1), Required but possibly unknown (Type 2), or Optional (Type 3), and there may be conditions associated with the use of an Attribute (Types 1C and 2C). Examples: MR Image IOD, CT Image IOD, Print Job IOD.
Joint Photographic Experts Group (JPEG)	A set of standardized image compression techniques, available for use by DICOM applications.
Media Application Profile	The specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs)
Module	A set of Attributes within an Information Object Definition that are logically related to each other. Example: Patient Module includes Patient Name, Patient ID, Patient Birth Date, and Patient Sex.
Negotiation	First phase of Association establishment that allows Application Entities to agree on the types of data to be exchanged and how that data will be encoded.
Presentation Context	The set of DICOM network services used over an Association, as negotiated between Application Entities; includes Abstract Syntaxes and Transfer Syntaxes.
Protocol Data Unit (PDU)	A packet (piece) of a DICOM message sent across the network. Devices must specify the maximum size packet they can receive for DICOM messages.
Security Profile	A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an Application Entity to ensure confidentiality, integrity, and/or availability of exchanged DICOM data
Service Class Provider (SCP)	Role of an Application Entity that provides a DICOM network service. Typically, this is a server that performs operations requested by another Application Entity (Service Class User). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).
Service Class User (SCU)	Role of an Application Entity that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU)
Service/Object Pair (SOP) Class	The specification of the network or media transfer (service) of a data object; the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.
Service/Object Pair (SOP) Instance	An information object, which is a specific occurrence of information exchanged in a SOP Class. Examples: a specific x-ray image.

Term	Definition
Tag	A 32-bit identifier for a data element, represented as a pair of four-digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element]
Transfer Syntax	The encoding used for exchange of DICOM information objects and messages. Examples: JPEG compressed (images), little endian explicit value representation.
Unique Identifier (UID)	A globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.
Value Representation (VR)	The format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR). In the case of Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

2.5 Basics of DICOM Communication

This section describes terminology used in this DICOM Conformance Statement. It is not intended as a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

Two Application Entities (devices) that want to communicate with each other over a network using DICOM protocol must first agree on several things during an initial network “handshake”. One of the two devices must initiate an Association (a connection to the other device), and ask if specific services, information, and encoding can be supported by the other device (Negotiation).

The DICOM Standard specifies several network services and types of information objects for the Negotiation, each of which is called an Abstract Syntax. The DICOM standard also specifies a variety of methods for encoding data, Transfer Syntaxes. The Negotiation allows the initiating Application Entity to propose combinations of Abstract Syntax and Transfer Syntax to be used on the Association; these combinations are called Presentation Contexts. The receiving Application Entity accepts the Presentation Contexts it supports.

For each Presentation Context, the Association Negotiation also allows the devices to agree on Roles – which one is the Service Class User (SCU - client) and which is the Service Class Provider (SCP - server). Normally the device initiating the connection is the SCU, i.e. the client system calls the server, but not always.

Finally, the Association Negotiation enables exchange of maximum network packet (PDU) size, security information, and network service options (called Extended Negotiation information).

The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for stored images and transfer of image objects. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate Information Object Definition and sent using the negotiated Transfer Syntax. There is a

Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a Response Status indicating success, failure, or that query or retrieve operations are still in process.

Two Application Entities may also communicate with each other by exchanging media (such as a CD or DVD). Since there is no Association Negotiation possible, they both use a Media Application Profile that specifies “pre-negotiated” exchange media format, Abstract Syntax, and Transfer Syntax.

2.6 Abbreviations

Abbreviation	Meaning
AE	Application Entity
AET	Application Entity Title
CSE	Customer Service Engineer
CT	Computed Tomography
DICOM	Digital Imaging and Communications in Medicine
IOD	Information Object Definition
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISO	International Organization for Standards
JPEG	Joint Photographic Experts Group
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance Imaging
NM	Nuclear Medicine
O	Optional (Key Attribute)
PET	Positron Emission Tomography
PDU	Protocol Data Unit
R	Required (Key Attribute)
RT	Radiotherapy
SC	Secondary Capture
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
SR	Structured Reporting
TCP/IP	Transmission Control Protocol/Internet Protocol
U	Unique (Key Attribute)
UL	Upper Layer
VR	Value Representation

2.7 References

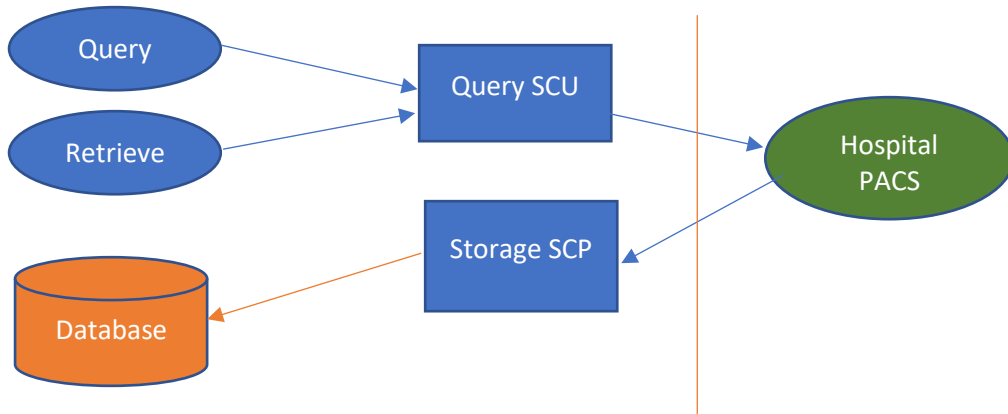
Reference	Document
NEMA-PS3	Digital Imaging and Communications in Medicine (DICOM) Standard, available from http://medical.nema.org/ .

3 NETWORKING

3.1 Implementation Model

3.1.1 Application Data Flow

The system incorporates a DICOM application entity which can issue a query/retrieve (C-FIND followed by C-MOVE) to a remote entity, such as a hospital PACS and act as a storage node for the data received remote entity (using C-STORE).



3.1.2 Functional Definition of Application Entities

The Query SCU queries a remote Application Entity for data.

The Storage SCP acts as a target to received data from the remote Application Entity, which is then stored.

3.2 AE Specifications

3.2.1 Query SCU Application Entity Specification

3.2.1.1 SOP Classes

This Application Entity provides standard conformance to the following SOP Classes:

SOP Class Name	SOP Class UID	SCU	SCP
Patient Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.1.1	Yes	No
Patient Root Q/R Information Model – Move	1.2.840.10008.5.1.4.1.2.1.2	Yes	No
Study Root Q/R Information Model – Find	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Q/R Information Model – Move	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

3.2.1.2 Association Establishment Policies

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

Policy	Value
Application Context Name	1.2.840.10008.3.1.1.1
Maximum number of simultaneous connections	Unlimited
Maximum number of asynchronous connections	1
Implementation Class UID	1.2.826.0.1.9846477
Implementation Version Name	2.1

3.2.1.3 Association Initiation Policy

The Query SCU is invoked by system action to perform a query against a remote Application Entity and retrieve data from it.

The system can propose the following Presentation Contexts.

Abstract Syntax	Transfer Syntax	Role	Extended Negotiation
Patient Root Q/R Information Model – Find Patient Root Q/R Information Model – Move Study Root Q/R Information Model – Find Study Root Q/R Information Model – Move	LittleEndianImplicitTransferSyntax LittleEndianExplicitTransferSyntax BigEndianExplicitTransferSyntax DeflatedExplicitVRLittleEndianTransferSyntax	SCU	None

Abstract Syntax	Transfer Syntax	Role	Extended Negotiation
	JPEGProcess1TransferSyntax		
	JPEGProcess2_4TransferSyntax		
	JPEGProcess3_5TransferSyntax		
	JPEGProcess6_8TransferSyntax		
	JPEGProcess7_9TransferSyntax		
	JPEGProcess10_12TransferSyntax		
	JPEGProcess11_13TransferSyntax		
	JPEGProcess14TransferSyntax		
	JPEGProcess15TransferSyntax		
	JPEGProcess16_18TransferSyntax		
	JPEGProcess17_19TransferSyntax		
	JPEGProcess20_22TransferSyntax		
	JPEGProcess21_23TransferSyntax		
	JPEGProcess24_26TransferSyntax		
	JPEGProcess25_27TransferSyntax		
	JPEGProcess28TransferSyntax		
	JPEGProcess29TransferSyntax		
	JPEGProcess14SV1TransferSyntax		
	JPEGLSLosslessTransferSyntax		
	JPEGLSLossyTransferSyntax		
	JPEG2000LosslessOnlyTransferSyntax		
	JPEG2000TransferSyntax		
	JPEG2000Part2MulticomponentImageCompressionLosslessOnlyTransferSyntax		
	JPEG2000Part2MulticomponentImageCompressionTransferSyntax		
	JPIPReferencedTransferSyntax		
	JPIPReferencedDeflateTransferSyntax		
	MPEG2MainProfileAtMainLevelTransferSyntax		
	MPEG2MainProfileAtHighLevelTransferSyntax		
	RLELosslessTransferSyntax		

3.2.2 Storage SCP Application Entity Specification

3.2.2.1 SOP Classes

This Application Entity provides standard conformance to the following SOP Classes:

SOP Class Name	SOP Class UID	SCP	SCU
VerificationSOPClass	1.2.840.10008.1.1	Yes	No
RETIRED_StoredPrintStorage	1.2.840.10008.5.1.1.27	Yes	No
RETIRED_HardcopyGrayscaleImageStorage	1.2.840.10008.5.1.1.29	Yes	No
RETIRED_HardcopyColorImageStorage	1.2.840.10008.5.1.1.30	Yes	No
ComputedRadiographylmageStorage	1.2.840.10008.5.1.4.1.1.1	Yes	No
DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
DigitalXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
DigitalMammographyXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	No
DigitalMammographyXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	No
DigitalIntraOralXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	No
DigitalIntraOralXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	No
CTImageStorage	1.2.840.10008.5.1.4.1.1.2	Yes	No
EnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.1	Yes	No
LegacyConvertedEnhancedCTImageStorage	1.2.840.10008.5.1.4.1.1.2.2	Yes	No
RETIRED_UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3	Yes	No
UltrasoundMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.3.1	Yes	No
MRImageStorage	1.2.840.10008.5.1.4.1.1.4	Yes	No
EnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.1	Yes	No
MRSpectroscopyStorage	1.2.840.10008.5.1.4.1.1.4.2	Yes	No
EnhancedMRColorImageStorage	1.2.840.10008.5.1.4.1.1.4.3	Yes	No
LegacyConvertedEnhancedMRImageStorage	1.2.840.10008.5.1.4.1.1.4.4	Yes	No
RETIRED_NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.5	Yes	No

RETIRED_UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6	Yes	No
UltrasoundImageStorage	1.2.840.10008.5.1.4.1.1.6.1	Yes	No
EnhancedUSVolumeStorage	1.2.840.10008.5.1.4.1.1.6.2	Yes	No
SecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7	Yes	No
MultiframeSingleBitSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.1	Yes	No
MultiframeGrayscaleByteSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.2	Yes	No
MultiframeGrayscaleWordSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.3	Yes	No
MultiframeTrueColorSecondaryCaptureImageStorage	1.2.840.10008.5.1.4.1.1.7.4	Yes	No
RETIRED_StandaloneOverlayStorage	1.2.840.10008.5.1.4.1.1.8	Yes	No
RETIRED_StandaloneCurveStorage	1.2.840.10008.5.1.4.1.1.9	Yes	No
DRAFT_WaveformStorage	1.2.840.10008.5.1.4.1.1.9.1	Yes	No
TwelveLeadECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.1	Yes	No
GeneralECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.2	Yes	No
AmbulatoryECGWaveformStorage	1.2.840.10008.5.1.4.1.1.9.1.3	Yes	No
HemodynamicWaveformStorage	1.2.840.10008.5.1.4.1.1.9.2.1	Yes	No
CardiacElectrophysiologyWaveformStorage	1.2.840.10008.5.1.4.1.1.9.3.1	Yes	No
BasicVoiceAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.1	Yes	No
GeneralAudioWaveformStorage	1.2.840.10008.5.1.4.1.1.9.4.2	Yes	No
ArterialPulseWaveformStorage	1.2.840.10008.5.1.4.1.1.9.5.1	Yes	No
RespiratoryWaveformStorage	1.2.840.10008.5.1.4.1.1.9.6.1	Yes	No
RETIRED_StandaloneModalityLUTStorage	1.2.840.10008.5.1.4.1.1.10	Yes	No
RETIRED_StandaloneVOILUTStorage	1.2.840.10008.5.1.4.1.1.11	Yes	No
GrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.1	Yes	No
ColorSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.2	Yes	No
PseudoColorSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.3	Yes	No
BlendingSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.4	Yes	No
XAXRFGrayscaleSoftcopyPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.5	Yes	No

GrayscalePlanarMPRVolumetricPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.6	Yes	No
CompositingPlanarMPRVolumetricPresent.StateStorage	1.2.840.10008.5.1.4.1.1.11.7	Yes	No
AdvancedBlendingPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.8	Yes	No
VolumeRenderingVolumetricPresentationStateStorage	1.2.840.10008.5.1.4.1.1.11.9	Yes	No
SegmentedVolumeRenderingVolumetricPres.StateStorage	1.2.840.10008.5.1.4.1.1.11.10	Yes	No
MultipleVolumeRenderingVolumetricPres.StateStorage	1.2.840.10008.5.1.4.1.1.11.11	Yes	No
XRyAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.12.1	Yes	No
EnhancedXAImageStorage	1.2.840.10008.5.1.4.1.1.12.1.1	Yes	No
XRyRadiofluoroscopicImageStorage	1.2.840.10008.5.1.4.1.1.12.2	Yes	No
EnhancedXRImageStorage	1.2.840.10008.5.1.4.1.1.12.2.1	Yes	No
RETIRED_XRyAngiographicBiPlaneImageStorage	1.2.840.10008.5.1.4.1.1.12.3	Yes	No
XRy3DAngiographicImageStorage	1.2.840.10008.5.1.4.1.1.13.1.1	Yes	No
XRy3DCraniofacialImageStorage	1.2.840.10008.5.1.4.1.1.13.1.2	Yes	No
BreastTomosynthesisImageStorage	1.2.840.10008.5.1.4.1.1.13.1.3	Yes	No
BreastProjectionXRyImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.13.1.4	Yes	No
BreastProjectionXRyImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.13.1.5	Yes	No
IntravascularOpt.Coh.Tom.ImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.14.1	Yes	No
IntravascularOpt.Coh.Tom.ImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.14.2	Yes	No
NuclearMedicineImageStorage	1.2.840.10008.5.1.4.1.1.20	Yes	No
ParametricMapStorage	1.2.840.10008.5.1.4.1.1.30	Yes	No
RawDataStorage	1.2.840.10008.5.1.4.1.1.66	Yes	No
SpatialRegistrationStorage	1.2.840.10008.5.1.4.1.1.66.1	Yes	No
SpatialFiducialsStorage	1.2.840.10008.5.1.4.1.1.66.2	Yes	No
DeformableSpatialRegistrationStorage	1.2.840.10008.5.1.4.1.1.66.3	Yes	No
SegmentationStorage	1.2.840.10008.5.1.4.1.1.66.4	Yes	No
SurfaceSegmentationStorage	1.2.840.10008.5.1.4.1.1.66.5	Yes	No
TractographyResultsStorage	1.2.840.10008.5.1.4.1.1.66.6	Yes	No

RealWorldValueMappingStorage	1.2.840.10008.5.1.4.1.1.67	Yes	No
SurfaceScanMeshStorage	1.2.840.10008.5.1.4.1.1.68.1	Yes	No
SurfaceScanPointCloudStorage	1.2.840.10008.5.1.4.1.1.68.2	Yes	No
RETIRED_VLImageStorage	1.2.840.10008.5.1.4.1.1.77.1	Yes	No
VLEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1	Yes	No
VideoEndoscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.1.1	Yes	No
VLMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2	Yes	No
VideoMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.2.1	Yes	No
VLSlideCoordinatesMicroscopicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.3	Yes	No
VLPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4	Yes	No
VideoPhotographicImageStorage	1.2.840.10008.5.1.4.1.1.77.1.4.1	Yes	No
OphthalmicPhotography8BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Yes	No
OphthalmicPhotography16BitImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Yes	No
StereometricRelationshipStorage	1.2.840.10008.5.1.4.1.1.77.1.5.3	Yes	No
OphthalmicTomographyImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.4	Yes	No
WideFieldOphthalmicPhoto.Stereogr.Proj.ImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.5	Yes	No
WideFieldOphthalmicPhotogr.3DCoordinatesImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.6	Yes	No
OphthalmicOpticalCoherenceTomogr.EnFaceImageStorage	1.2.840.10008.5.1.4.1.1.77.1.5.7	Yes	No
OphthalmicOpticalCoh.Tomogr.BscanVolumeAnalysisStor.	1.2.840.10008.5.1.4.1.1.77.1.5.8	Yes	No
VLWholeSlideMicroscopyImageStorage	1.2.840.10008.5.1.4.1.1.77.1.6	Yes	No
RETIRED_VLMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.77.2	Yes	No
LensometryMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.1	Yes	No
AutorefractometryMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.2	Yes	No
KeratometryMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.3	Yes	No
SubjectiveRefractionMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.4	Yes	No
VisualAcuityMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.5	Yes	No
SpectaclePrescriptionReportStorage	1.2.840.10008.5.1.4.1.1.78.6	Yes	No

OphthalmicAxialMeasurementsStorage	1.2.840.10008.5.1.4.1.1.78.7	Yes	No
IntraocularLensCalculationsStorage	1.2.840.10008.5.1.4.1.1.78.8	Yes	No
MacularGridThicknessAndVolumeReportStorage	1.2.840.10008.5.1.4.1.1.79.1	Yes	No
OphthalmicVisualFieldStaticPerimetryMeasurementsSt.	1.2.840.10008.5.1.4.1.1.80.1	Yes	No
OphthalmicThicknessMapStorage	1.2.840.10008.5.1.4.1.1.81.1	Yes	No
CornealTopographyMapStorage	1.2.840.10008.5.1.4.1.1.82.1	Yes	No
DRAFT_SRTextStorage	1.2.840.10008.5.1.4.1.1.88.1	Yes	No
DRAFT_SRAudioStorage	1.2.840.10008.5.1.4.1.1.88.2	Yes	No
DRAFT_SRDetailStorage	1.2.840.10008.5.1.4.1.1.88.3	Yes	No
DRAFT_SRComprehensiveStorage	1.2.840.10008.5.1.4.1.1.88.4	Yes	No
BasicTextSRStorage	1.2.840.10008.5.1.4.1.1.88.11	Yes	No
EnhancedSRStorage	1.2.840.10008.5.1.4.1.1.88.22	Yes	No
ComprehensiveSRStorage	1.2.840.10008.5.1.4.1.1.88.33	Yes	No
Comprehensive3DSRStorage	1.2.840.10008.5.1.4.1.1.88.34	Yes	No
ExtensibleSRStorage	1.2.840.10008.5.1.4.1.1.88.35	Yes	No
ProcedureLogStorage	1.2.840.10008.5.1.4.1.1.88.40	Yes	No
MammographyCADSRStorage	1.2.840.10008.5.1.4.1.1.88.50	Yes	No
KeyObjectSelectionDocumentStorage	1.2.840.10008.5.1.4.1.1.88.59	Yes	No
ChestCADSRStorage	1.2.840.10008.5.1.4.1.1.88.65	Yes	No
XRayRadiationDoseSRStorage	1.2.840.10008.5.1.4.1.1.88.67	Yes	No
RadiopharmaceuticalRadiationDoseSRStorage	1.2.840.10008.5.1.4.1.1.88.68	Yes	No
ColonCADSRStorage	1.2.840.10008.5.1.4.1.1.88.69	Yes	No
ImplantationPlanSRDocumentStorage	1.2.840.10008.5.1.4.1.1.88.70	Yes	No
AcquisitionContextSRStorage	1.2.840.10008.5.1.4.1.1.88.71	Yes	No
SimplifiedAdultEchoSRStorage	1.2.840.10008.5.1.4.1.1.88.72	Yes	No
PatientRadiationDoseSRStorage	1.2.840.10008.5.1.4.1.1.88.73	Yes	No
ContentAssessmentResultsStorage	1.2.840.10008.5.1.4.1.1.90.1	Yes	No

EncapsulatedPDFStorage	1.2.840.10008.5.1.4.1.1.104.1	Yes	No
EncapsulatedCDASStorage	1.2.840.10008.5.1.4.1.1.104.2	Yes	No
PositronEmissionTomographyImageStorage	1.2.840.10008.5.1.4.1.1.128	Yes	No
LegacyConvertedEnhancedPETImageStorage	1.2.840.10008.5.1.4.1.1.128.1	Yes	No
RETIRED_ StandalonePETCurveStorage	1.2.840.10008.5.1.4.1.1.129	Yes	No
EnhancedPETImageStorage	1.2.840.10008.5.1.4.1.1.130	Yes	No
BasicStructuredDisplayStorage	1.2.840.10008.5.1.4.1.1.131	Yes	No
CTPerformedProcedureProtocolStorage	1.2.840.10008.5.1.4.1.1.200.2	Yes	No
RTImageStorage	1.2.840.10008.5.1.4.1.1.481.1	Yes	No
RTDoseStorage	1.2.840.10008.5.1.4.1.1.481.2	Yes	No
RTStructureSetStorage	1.2.840.10008.5.1.4.1.1.481.3	Yes	No
RTBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.4	Yes	No
RTPlanStorage	1.2.840.10008.5.1.4.1.1.481.5	Yes	No
RTBrachyTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.6	Yes	No
RTTreatmentSummaryRecordStorage	1.2.840.10008.5.1.4.1.1.481.7	Yes	No
RTIonPlanStorage	1.2.840.10008.5.1.4.1.1.481.8	Yes	No
RTIonBeamsTreatmentRecordStorage	1.2.840.10008.5.1.4.1.1.481.9	Yes	No
DICOS_CTImageStorage	1.2.840.10008.5.1.4.1.1.501.1	Yes	No
DICOS_DigitalXRayImageStorageForPresentation	1.2.840.10008.5.1.4.1.1.501.2.1	Yes	No
DICOS_DigitalXRayImageStorageForProcessing	1.2.840.10008.5.1.4.1.1.501.2.2	Yes	No
DICOS_ThreatDetectionReportStorage	1.2.840.10008.5.1.4.1.1.501.3	Yes	No
DICOS_2DAITStorage	1.2.840.10008.5.1.4.1.1.501.4	Yes	No
DICOS_3DAITStorage	1.2.840.10008.5.1.4.1.1.501.5	Yes	No
DICOS_QuadrupoleResonanceStorage	1.2.840.10008.5.1.4.1.1.501.6	Yes	No
DICONDE_EddyCurrentImageStorage	1.2.840.10008.5.1.4.1.1.601.1	Yes	No
DICONDE_EddyCurrentMultiframeImageStorage	1.2.840.10008.5.1.4.1.1.601.2	Yes	No
DRAFT_RTBeamsDeliveryInstructionStorage	1.2.840.10008.5.1.4.34.1	Yes	No

RTBeamsDeliveryInstructionStorage	1.2.840.10008.5.1.4.34.7	Yes	No
RTBrachyApplicationSetupDeliveryInstructionStorage	1.2.840.10008.5.1.4.34.10	Yes	No

3.2.2.2 Association Policies

The Storage SCP does not initiate associations.

Policy	Value
Application Context Name	1.2.840.10008.3.1.1.1
Maximum number of simultaneous connections	Unlimited
Maximum number of asynchronous connections	1
Implementation Class UID	1.2.276.0.7230010.3.0.3.6.2
Implementation Version Name	OFFIS_DCMTK_362

3.2.2.3 Association Acceptance Policy

The Storage SCP accepts associations from a remote Application Entity. DICOM SOP instances received via Storage SOP Classes are stored in a local filesystem to be consumed by Virtual Nodule Clinic.

Virtual Nodule Clinic can accept these Presentation Contexts:

Abstract Syntax	Transfer Syntax	Role	Extended Negotiation
All supported SOP classes (See 3.2.2.1)	LittleEndianImplicitTransferSyntax LittleEndianExplicitTransferSyntax BigEndianExplicitTransferSyntax	SCP	None

3.2.2.4 SOP Specific Conformance for SOP Classes

All Storage SOP Classes supported by the Storage AE exhibit the same behaviour. If a SOP Instance is included in the task and a corresponding Presentation Context is not accepted, then the Association is aborted using A-P-ABORT and the task is failed.

3.3 Network Interfaces

No network interfaces are implemented by this software

3.4 Configuration

3.4.1 Local AE Configuration

The AE titles for each of the Application Entities may be configured within configuration files. This configuration is usually performed upon initial system installation.

Application Entity	Default AE Title	Default TCP/IP Port
AE Query SCU	PROXY	N/A
AE Storage SCP	PROXY	4242

3.4.2 Remove AE Configuration

The AE title, host name and port number of remote applications are specified in configuration files.

The ARTIM timeout is set to a fixed value of 10 seconds for each remote application.

4 SUPPORT OF CHARACTER SETS

Virtual Nodule Clinic supports the following character sets:

Character set
ISO_IR 6
ISO_IR 100

5 SECURITY

Virtual Nodule Clinic DICOM services do not support any specific security measures.

Any communication with external hosts and services outside the locally secured environment is exclusively conducted through Transport Layer Security (TLS) secured network connections.

In its default configuration, the system will not initiate a network connection with services outside the locally secured environment.