



**Technical Publications**

**DICOM Conformance Statement**

**Hipax Diagnostic Workstation**

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## 1. Purpose

The Hipax DW Viewer System is a medical image processing, analysis and communication software. This conformance statement (CS) specifies the Hipax DW Viewer Software for Windows NT/2000/XP compliance to DICOM. It details the DICOM Service Classes and roles which are supported by this product. Note that the format of this section strictly follows the format of DICOM Standard Part 2 (Conformance) Annex A. Please refer to that part of the standard while reading this section.

### 1.1 Used definitions, terms and abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3-1993 and PS 3.4-1994.

### 1.2 References

The Digital Imaging and Communications in Medicine (DICOM) standard: NEMA PS 3.X (X refers to the part 1 – 13) and Supplements National Electrical Manufacturers Association (NEMA) Publication Sales 1300 N. 17th Street, Suite 1847 Rosslyn, Va. 22209, United States of America

## 2. Implementation model

Hipax provides the following features:

- The application receives images sent to it by remote applications (e.g. workstations or imaging modalities) and stores them in a local database.
- The application allows the operator to copy images from the local database to remote data-bases and vice versa. For this purpose the operator is allowed to query remote databases.
- The application allows the operator, among other things, to view, to analyse, to process and to print the images stored in the local database.

### 2.1 Application Data Flow

The DICOM network functionality on the Hipax DW Viewer System is handled by the DICOM Network Service Application Entity (AE). The DICOM Network Service AE is permanently listening to a predefined port for incoming connections. When the connection is established, images are transferred through the physical link and are installed on the Hipax DW Viewer PC local disks. No user action is required for the DICOM Network Service Application Entity to respond to an incoming DICOM Store request. The DICOM Network Service Application Entity will perform image installation after the remote AE has sent an image to the Hipax DW Viewer System

### 2.2 Functional definition of Application Entities

The Hipax Application Entity acts as a service class provider (SCP) for Storage Service Class and as a service class user (SCU) for Storage Service Class, Query Retrieve Service Class and Move Service Class.

### 2.3 Sequencing of Real World Activities

Not applicable.



### 3. AE Specifications

#### 3.1 AE Hipax DW Viewer Specification

The Hipax DW Viewer Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCP.

**Table 1.** Supported SOP Classes

SOP Class Name	SOP Class UID	Role
Verification	1.2.840.10008.1.1	SCP
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	SCP/SCU
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	SCP/SCU
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30	SCP/SCU
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29	SCP/SCU
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	SCP/SCU
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	SCP/SCU
MR Spectroscopy Storage	1.2.840.10008.5.1.4.1.1.4.2	SCP/SCU
Raw Data Storage	1.2.840.10008.5.1.4.1.1.66	SCP/SCU
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	SCP/SCU
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	SCP/SCU
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2	SCP/SCU
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1	SCP/SCU
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5	SCP/SCU
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3	SCP/SCU
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4	SCP/SCU
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6	SCP/SCU
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7	SCP/SCU
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	SCP/SCU
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	SCP/SCU
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	SCP/SCU
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	SCP/SCU
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	SCP/SCU
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9	SCP/SCU
Waveform Storage (RETIRED)	1.2.840.10008.5.1.4.1.1.9.1	SCP/SCU
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1	SCP/SCU
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2	SCP/SCU
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3	SCP/SCU
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1	SCP/SCU
Cardiac Electrophysiology Waveform Storage	1.2.840.10008.5.1.4.1.1.9.3.1	SCP/SCU



**Table 1.** (Continue) Supported SOP Classes

SOP Class Name	SOP Class UID	Role
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1	SCP/SCU
Stand-alone Modality LUT Storage	1.2.840.10008.5.1.4.1.1.10	SCP/SCU
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8	SCP/SCU
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11	SCP/SCU
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	SCP/SCU
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129	SCP/SCU
Stored Print Storage	1.2.840.10008.5.1.1.27	SCP/SCU
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	SCP/SCU
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	SCP/SCU
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	SCP/SCU
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	SCP/SCU
Digital X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1	SCP/SCU
Digital X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	SCP/SCU
Digital Mammography Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	SCP/SCU
Digital Mammography Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	SCP/SCU
Digital Intra-oral X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3	SCP/SCU
Digital Intra-oral X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	SCP/SCU
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1	SCP/SCU
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2	SCP/SCU
VL Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.3	SCP/SCU
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4	SCP/SCU
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11	SCP/SCU
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22	SCP/SCU
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	SCP/SCU
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.50	SCP/SCU
Chest CAD SR	1.2.840.10008.5.1.4.1.1.88.65	SCP/SCU
Key Object	1.2.840.10008.5.1.4.1.1.88.59	SCP/SCU
Nuclear Medicine Image Storage (RETIRED)	1.2.840.10008.5.1.4.1.1.5	SCP/SCU
Ultrasound Image Storage (RETIRED)	1.2.840.10008.5.1.4.1.1.6	SCP/SCU
Ultrasound Multi-frame Image Storage (RETIRED)	1.2.840.10008.5.1.4.1.1.3	SCP/SCU
X-Ray Angiographic Bi-plane Image Storage (RETIRED)	1.2.840.10008.5.1.4.1.1.12.3	SCP/SCU
Patient Root Query/Retrieve Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	SCP/SCU
Patient Root Query/Retrieve Model - MOVE	1.2.840.10008.5.1.4.1.2.1.2	SCP/SCU
Study Root Query/Retrieve Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	SCP/SCU
Study Root Query/Retrieve Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	SCP/SCU
Basic Grayscale Print	1.2.840.10008.5.1.1.9	SCU
Modality Worklist Find	1.2.840.10008.5.1.4.31	SCP



### 3.1.1 Association Establishment Policies

#### 3.1.1.1 General

The User of the Hipax DW Viewer User Interface can select which Application Entity to associate with for Query/Retrieve and Move operations. The configuration file contains the configuration parameters such as host name, port number and specific SOP Classes to negotiate for each accessible Application Entity. The Hipax DICOM Service Application Entity always accepts the Verification and Store SOP Class.

Hipax DW Viewer and Service can be configured to use any PDU size. Hipax DW Viewer will accept any PDU size offered on associations initiated by remote applications.

#### 3.1.1.2 Number of Associations

The Hipax DW Viewer System will only use one simultaneous association for DICOM Print. Multiple associations can be used for DICOM query/retrieve/move. Up to 4 simultaneous associations will be used for DICOM storage to other AEs.

#### 3.1.1.3 Asynchronous Nature

This release does not support multiple outstanding transactions.

#### 3.1.1.4 Implementation Identifying Information

The Hipax DW Viewer and Service Implementation Class UID is 1.2.276.0.54.20030101.5.0.0.0. The implementation version name is HIPAX\_DICOM\_5\_00.

### 3.1.2 Association Initiation by Real World Activity

This section details the action of the Hipax DW Viewer SCU component as a result of user initiated activity on the Family of Hipax DW Viewer User Interface.

Hipax DW Viewer initiates associations as a result of the following events:

- The Hipax user queries a remote database.
- The Hipax user or a remote application copies images from the Hipax database to another database.

#### 3.1.2.1 Query Request / C - Find SCU

The user queries a remote database by means of the query tool in the Hipax DW Viewer user interface. Hipax DW Viewer initiates an association to the selected peer entity and uses it to send C-FIND requests (and receive the associated find replies). The association is released when the find execution completes.

##### 3.1.2.1.1 Associated Real World Activity

The user of the Hipax DW Viewer User Interface selects the Query operation button. Wild card or specific information can be specified by the user for Patient Name, Patient ID.



### 3.1.2.1.2 Proposed Presentation Contexts

The following table describes the Presentation Contexts that may be presented for the Query request.

**Table 2.** Presentation Context Table for the Query request

Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
See note		Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR, Little Endian	1.2.840.10008.1.2.1		
		Explicit VR, Big Endian	1.2.840.10008.1.2.2		

Note: Any of the FIND SOP classes listed in 3.1

### 3.1.2.1.3 C-FIND SCU Conformance

Hipax DW Viewer will not generate queries containing optional keys. Hipax DW Viewer will not generate relational queries.

## 3.1.2.2 Move Request / C-Move SCU

### 3.1.2.2.1 Associated Real World Activity

The user selects one or more studies and/or series within studies from a list presented as a result of a previous Query operation.

The user of the Hipax DW Viewer Application then selects the Load operation button on the user interface to initiate the move operation. The Destination Application Entity Title is always the own station. Hipax DW Viewer initiates for each selected study an association to the selected peer entity and uses it to send C-MOVE requests (and receive the associated move replies). The association is released when all selected images in the selected study have been transmitted.

### 3.1.2.2.2 Proposed Presentation Contexts

The following table describes the Presentation Contexts that may be presented for the Move request. The configuration file contains one of the listed Abstract Syntax's.

**Table 3.** Presentation Context Table for the Move request

Abstract Syntax		Transfer Syntax		Role	Extended
Name	UID	Name	UID		Negotiation
See note		Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR, Little Endian	1.2.840.10008.1.2.1		
		Explicit VR, Big Endian	1.2.840.10008.1.2.2		

Note: Any of the MOVE SOP classes listed in 3.1

### 3.1.2.2.3 C-Move SCU Conformance

The AE provides standard conformance.



### 3.1.2.3 Storage Association Request / C - Store SCP

#### 3.1.2.3.1 Associated Real-World Activity

The Hipax DW Viewer stores image Information Object Instances received on the accepted association into its attached database.

#### 3.1.2.3.2 Proposed Presentation Contexts

The following table lists the possible Presentation Contexts.

**Table 4.** Presentation Context Table for the Storage SCP request

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See note		Implicit VR, Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR, Little Endian	1.2.840.10008.1.2.1		
		Explicit VR, Big Endian	1.2.840.10008.1.2.2		
		Hipax ZIP Codec	1.2.276.0.54.10008.1.2.4.1		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70		

Note: Any of the storage SOP classes listed in 3.1

#### 3.1.2.3.3 C-STORE SCP Conformance

The received Information Object Instance is stored in a database until some external application causes the data to be deleted. The Hipax DW Viewer Application accesses the stored data for display and other manipulation. Private attributes are discarded. In the case where the database is full, a status of 0xD000 is returned to the Storage SCU and the Information Object is discarded. The recovery action is to provide more storage space or to start the database server as appropriate.

#### 3.1.2.3.4 Presentation Context Acceptance Criterion

The accepted storage Presentation Contexts can be configured within the Service Control Panel. By default any storage SOP class will be accepted.



### 3.1.2.4 Storage Association Request / C - Store SCU

#### 3.1.2.4.1 Associated Real-World Activity

The operator copies a (part of a) study from the local database to a another database by means of the copy tool in the Hipax DW Viewer user interface. Hipax DW Viewer initiates for each selected study an association to the selected peer entity and uses it to send C-STORE requests (and receive the associated store replies). The association is released when all selected images in the selected study have been transmitted. Hipax DW Viewer handles user copy requests one after another. The association is released when all images selected by the move request identifier have been transmitted. Hipax DW Viewer do not handle simultaneous C-MOVE requests.

#### 3.1.2.4.2 Presentation Context Table

The following table lists the possible Presentation Contexts. The Application Entity configuration file specifies which of these Presentation Contexts are actually used in a specific configuration.

**Table 5.** Presentation Context Table for the Storage SCU request

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
See note		Implicit VR, Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR, Little Endian	1.2.840.10008.1.2.1		
		Explicit VR, Big Endian	1.2.840.10008.1.2.2		
		Hipax ZIP Codec	1.2.276.0.54.10008.1.2.4.1		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70		

Note: Any of the STORE SOP classes listed in 3.1

#### 3.1.2.4.3 C-STORE SCU Conformance

Hipax DW Viewer will stop the transfer of the images and release the association as soon as it receives an unsuccessful or warning store response status. If the Hipax DW Viewer user requested the transfer, the store response status is displayed via the user interface of Hipax DW Viewer.

The transmitted Storage SOP instances includes all optional elements specified in the standard and its supplements 4 and 6. The transmitted Storage SOP instances contain retired and private data elements.



### 3.1.2.5 DICOM Print Association Request

#### 3.1.2.5.1 Associated Real-World Activity

The operator sends images to a DICOM-Printer in the Hipax DW Viewer user interface. Hipax DW Viewer initiates the association. The association is released when all selected images have been transmitted. Hipax DW Viewer currently doesn't handle simultaneous PRINT requests.

#### 3.1.2.5.2 Print Management AE Specification

The Print Management Service Classes define an application-level class of services, which facilitate the printing of images on a hardcopy medium. The print management SCU and print management SCP are peer DICOM print management application entities. The Hipax DW Viewer supports the print management DIMSE services to act as an SCU.

The Hipax print management SCU invokes print management DIMSE services to transfer images from the local AE to the remote SCP AE to print images with defined layout on a selected network-based DICOM hardcopy printer. The Hipax DICOM print application provide Standard Conformance to the following DICOM print related SOP classes.

Hipax will propose the presentation contexts listed in Table 6 below.

**Table 6.** Proposed Presentation Contexts for Print

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

#### 3.1.2.5.2 SOP Specific Conformance

Hipax supports the following mandatory SOP classes which are defined under the Basic Grayscale Print Management Meta SOP Class.

**Table 7.** Mandatory Print SOP Classes Supported by Hipax DICOM-Print

SOP Class Name	SOP Class UID
Basic Film Session SOP Class	1.2.840.10008.5.1.1
Basic Film Box SOP Class	1.2.840.10008.5.1.2
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.4
Printer SOP Class	1.2.840.10008.5.1.14



Hipax supports the following optional SOP class attributes and DIMSE services.

**Table 8.** Option SOP Class Attributes/DIMSE Services Supported by Hipax

SOP Class	Optional Attribute	Tag	Supported Values
Basic Film Session SOP Class (N-CREATE, N-DELETE)	Number of Copies	(2000, 0010)	1 2 3 4 5
	Medium Type	(2000, 0030)	CLEAR FILM BLUE FILM PAPER
	Film Destination	(2000, 0040)	MAGAZINE PROCESSOR
Basic Film Box SOP Class (N-CREATE, N-ACTION, N-DELETE)	Image Display Format	(2010, 0010)	STANDARD\1,1 STANDARD\1,2 STANDARD\2,1 STANDARD\2,2 STANDARD\2,3 STANDARD\2,4 STANDARD\3,2 STANDARD\3,3 STANDARD\3,4 STANDARD\3,5 STANDARD\4,3 STANDARD\4,4 STANDARD\4,5 STANDARD\4,6 STANDARD\5,3 STANDARD\5,4 STANDARD\5,5 STANDARD\5,6 STANDARD\5,7
	Film Orientation	(2010, 0040)	PORTRAIT LANDSCAPE



**Table 8.** (Continue) Option SOP Class Attributes/DIMSE Services Supported by Hipax

SOP Class	Optional Attribute	Tag	Supported Values
Basic Film Box SOP Class (N-CREATE, N-ACTION, N-DELETE) (Continue)	Film Size ID	(2010, 0050)	8INX10IN 10INX12IN 10INX14IN 11INX14IN 14INX14IN 14INX17IN 14INX14IN 14INX17IN A3 A4
	Magnification Type	(2010, 0060)	Bilinear CUBIC NONE REPLICATE
	Smoothing Type	(2010, 0080)	<i>Any value supported from the printer, if magnification type is cubic</i>
	Configuration Information	(2010, 0150)	<i>Character string that contains either the ID of the printer configuration table that contains a set of values for implementation specific print parameters (e.g. perception LUT related parameters) or one or more configuration data values, encoded as characters. If there are multiple configuration data values encoded in the string, they shall be separated by backslashes. The definition of values shall be contained in the SCP's Conformance Statement.</i>
	Border Density	(2010, 0100)	BLACK WHITE
	Empty Image Density	(2010, 0110)	BLACK WHITE



**Table 8.** (Continue) Option SOP Class Attributes/DIMSE Services Supported by Hipax

SOP Class	Optional Attribute	Tag	Supported Values
Basic Film Box SOP Class (N-CREATE, N-ACTION, N-DELETE) (Continue)	Min Density	(2010, 0120)	0 < Value < 100
	Max Density	(2010, 0130)	0 < Value
	Trim	(2010, 0140)	YES NO
Basic Grayscale Image Box SOP Class (N-SET)	Polarity	(2020, 0020)	NORMAL REVERSE
	BASIC Grayscale Image Sequence	(2020, 0010)	
	> Samples per Pixel	(0028, 0002)	1
	> Photometric Interpretation	(0028, 0004)	MONOCHROME1 MONOCHROME2
	> Rows	(0028, 0010)	
	> Columns	(0028, 0011)	
	> Pixel Aspect Ratio	(0028, 0034)	1\1
	> Bits allocated	(0028, 0100)	8 16
	> Bits Stored	(0028, 0101)	8, 10, 12
	> High Bit	(0028, 0102)	7, 9, 11
	> Pixel Representation	(0028, 0103)	0
	> Pixeldata	(7FE0, 0010)	

### 3.1.2.6 DICOM Worklist

#### 3.1.2.6.1 Associated Real-World Activity

A network application will perform worklist queries with the C-FIND request manually. The received worklist items will be compared with the contents of the local scheduler database. New items will be inserted into scheduler database.

#### 3.1.2.6.2 Implementation Model Worklist

The Basic Worklist Management Service class defines an application-level class of service, which facilitates the transfer of worklists from the information system to the imaging modality. The worklist is queried by the AE and supplies the SCP with the scheduled tasks, which have to be performed on the modality. The Hipax DICOM worklist application supports the worklist service as SCP.

Hipax will propose the presentation contexts listed in Table 9 below.

**Table 9.** Proposed Presentation Contexts for Worklist Requests

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Modality Worklist Information Model FIND	1.2.840.10008.5.1.4.31	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCP	None



### 3.1.2.6.3 SOP Specific Conformance

The Hipax DICOM worklist SCU supports “broad worklist queries” with all required search keys. The following tables describe the “broad query” search keys that the SCU supports.

**Table 10.** Search Key Attributes of the Worklist C-FIND

Attribut Name	Tag	Query Value
Scheduled Procedure Step Sequence	(0040, 0100)	
>Scheduled Station AE-Title	(0040, 0001)	<own AET>
>Scheduled Procedure Start Date	(0040, 0002)	<act Date>
> Modality	(0008, 0060)	<*> or <own Modality>

**Table 11.** Return Key Attributes of the Worklist Request

Attribut Name	Tag
Modality	(0008, 0060)
Requested Procedure Description	(0032, 1060)
Study Instance UID	(0020, 000D)
Accession Number	(0008, 0050)
Requesting Physician	(0032, 1032)
Referring Physician's Name	(0008, 0090)
Patient's Name	(0010, 0010)
Patient ID	(0010, 0020)
Patient's Birth Date	(0010, 0030)
Patient's Sex	(0010, 0040)
Patient's Address	(0010, 1040)

### 3.1.2.7 DICOM Email

#### 3.1.2.7.1 Associated Real-World Activity

The Hipax DW Viewer stores image Information Object Instances received on the accepted association into its attached database.

Hipax can send images to the defined Email address using alternate Email servers. In addition, up to 3 Email servers can be used to receive DICOM Emails.

Hipax is compatible to the DICOM Supplement 54 (DICOM Email). Furthermore, simple text files can be transmitted (Non DICOM Objects)



### 3.1.2.7.2 Implementation Module DICOM Email

The DICOM Email Module supports all defined Media Storage SOP Classes for sending and receiving.

### 3.1.2.7.3 Encryption

The encryption is compatible to OpenPGP and optional.

### 3.1.2.7.4 Signature

The OpenPGP Signature is supported and optional.

### 3.1.2.7.5 Compression

The OpenPGP Encryption includes a ZIP Compression. This compression is supported and optional.

### 3.1.2.7.6 MIME Standard

Hipax supports Multipart Mail, Message Partial and X-Tags.

### 3.1.2.7.7 X-Tags

X-TAGS are also encrypted.

**Table 12.** X-Tags

X-Tag	Meaning
X-TELEMEDICINE-STUDYID	StudyInstanceUID [0020:000D] for non DICOM-Objects
X-TELEMEDICINE-SETID	Unique Identifier for a set of Emails
X-TELEMEDICINE-SETPART	Number of Emails, if one image is splitted into several Emails
X-TELEMEDICINE-SETTOTAL	Total number of Emails belonging to one transmission

### 3.1.2.7.8 Error and Status Codes

**Table 13.** Error Codes

Code	Meaning
[000]	No public key available
[001]	Public key expired
[002]	Valid signature from untrusted public key
[003]	Corrupt signature
[004]	Corrupt attachement, decryption impossible

**Table 14.** Status Codes

Code	Meaning
[100]	Email received successfully
[101]	Email successfully processed



## 4. Communication Profiles

### 4.1 Supported Communication Stacks (Parts 8,9)

The TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard is supported.

### 4.2 TCP/IP Stack

TCP/IP + Ethernet

### 4.3 Point-to-Point Stack

Not supported.

## 5. Extensions/Specialization's/Privatization's

Not applicable

### 5.1 Private Transfer Syntax's

No Private Transfer Syntax's are used by Hipax DW Viewer.

## 6. Configuration

### 6.1 AE Title/Presentation Address Mapping

The Hipax DW Viewer DICOM module is configured by means of a configuration interface. The Hipax System Application Entity maps Application Entity Titles to host name and port number via lookups in the configuration file. The IP address for host name is determined using standard system calls. The configuration file supports the use of IP addresses in place of host names, this is to reduce the dependence on system configuration files.

### 6.2 Configurable Parameters

The maximum PDU size for associations initiated by Hipax DW Viewer is configurable.

The port number to listen on for association requests is configurable.

## 7. Support of Extended Character Sets

Extended character sets are not supported by the Application Entity.

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