

**Philips Medical Systems  
DICOM Conformance Statement**

**CT AV-Family with RIS**

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## 1 Introduction

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

### 1.1 Scope and field of application

The scope of this DICOM Conformance Statement is to facilitate data exchange with equipment of Philips Medical Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X-1996 standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

The field of application is the integration of the Philips Medical Systems equipment into an environment of medical devices.

This Conformance Statement should be read in conjunction with the DICOM standard and its addenda. The conformance to the DICOM standard is a key element of the Inturis Program (see [INTURIS]).

### 1.2 Intended audience

This Conformance Statement is intended for:

- (potential) customers,
- system integrators of medical equipment,
- marketing staff interested in system functionality,
- software designers implementing DICOM interfaces.

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

### 1.3 Contents and structure

The DICOM Conformance Statement is contained in chapter 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2-1996.

### 1.4 Used definitions, terms and abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3-1996 and PS 3.4-1996.

The word Philips in this document refers to Philips Medical Systems.

### 1.5 References

- [DICOM] The Digital Imaging and Communications in Medicine (DICOM) standard:  
NEMA PS 3.X.  
National Electrical Manufacturers Association (NEMA) Publication Sales  
1300 N. 17th Street, Suite 1847  
Rosslyn, Va. 22209, United States of America

[INTURIS] Philips Inturis Program  
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### 1.6 Important note to the reader

This Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

- **Interoperability**

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a networked environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment. It is the user's responsibility to analyse thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

- **Validation**

Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.

Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

- **New versions of the DICOM Standard**

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment, also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

## 1.7 General Acronyms and Abbreviations.

The following acronyms and abbreviations are used in the document.

- AE Application Entity
- ACR American College of Radiology
- ANSI American National Standard Institute
- BOT Basic Offset Table
- CD-R Compact Disk Recorder
- CD-M Compact Disk Medical
- CTAV Philips Medical Systems AV Product Line of CT
- DCR Dynamic Cardio Review
- DICOM Digital Imaging and Communication 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
- GUI Graphic User Interface
- HIS Hospital Information System
- HL7 Health Level Seven
- IOD Image Object Definition
- ILE Implicit (VR) Little Endian
- NEMA National Electric Manufacturers Association
- PACS Picture ArChiving System
- PDU Protocol Data Unit
- SC Secondary Capture/Service Class
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet protocol
- UID Unique Identifier
- ISIS Information System - Imaging System Interface
- RIS Radiology Information System
- RWA Real World Activity
- SCM Study Component Management
- SOP Service Object Pair
- WLM Worklist Management

## 2 Implementation model

The CT AV-Family Philips Medical Systems is a scanner generating Computed Tomography (CT) images. The CT AV-Family is made up by the CT AV\_P1, PS, E1, EU and the PF systems. The system can be installed with an Export function based on the DICOM Image Storage to transfer image data from the CT-AV system to a remote system and a RIS connection to gain patient/study information. The RIS information is incorporated in DICOM Export data.

The DICOM Export function implies the presence of the CT-AV Net I/F option software 1.3F or higher, plus RIS option software 1.0 B or higher.

The DICOM Export function and RIS interaction is described in this document.

It might be that other types of converter boxes are connected to the CT-AV (not delivered by Philips Medical Systems, possibly installed on hospital project basis). Conformance to the DICOM standard and to this Conformance Statement is not guaranteed for these converter boxes.

See for more details the service documentation.

### 2.1 Application Data Flow Diagram

The CT-AV system behaves as a single Application Entity. The related Implementation Model is shown in Figure 2-1 on page 9.

The Export function is activated by an operator request after the RIS info has been supplied. The images to be transferred are selected from the user interface, followed by the selection of the destination.

The CT-AV system is able to transfer the following types of images:

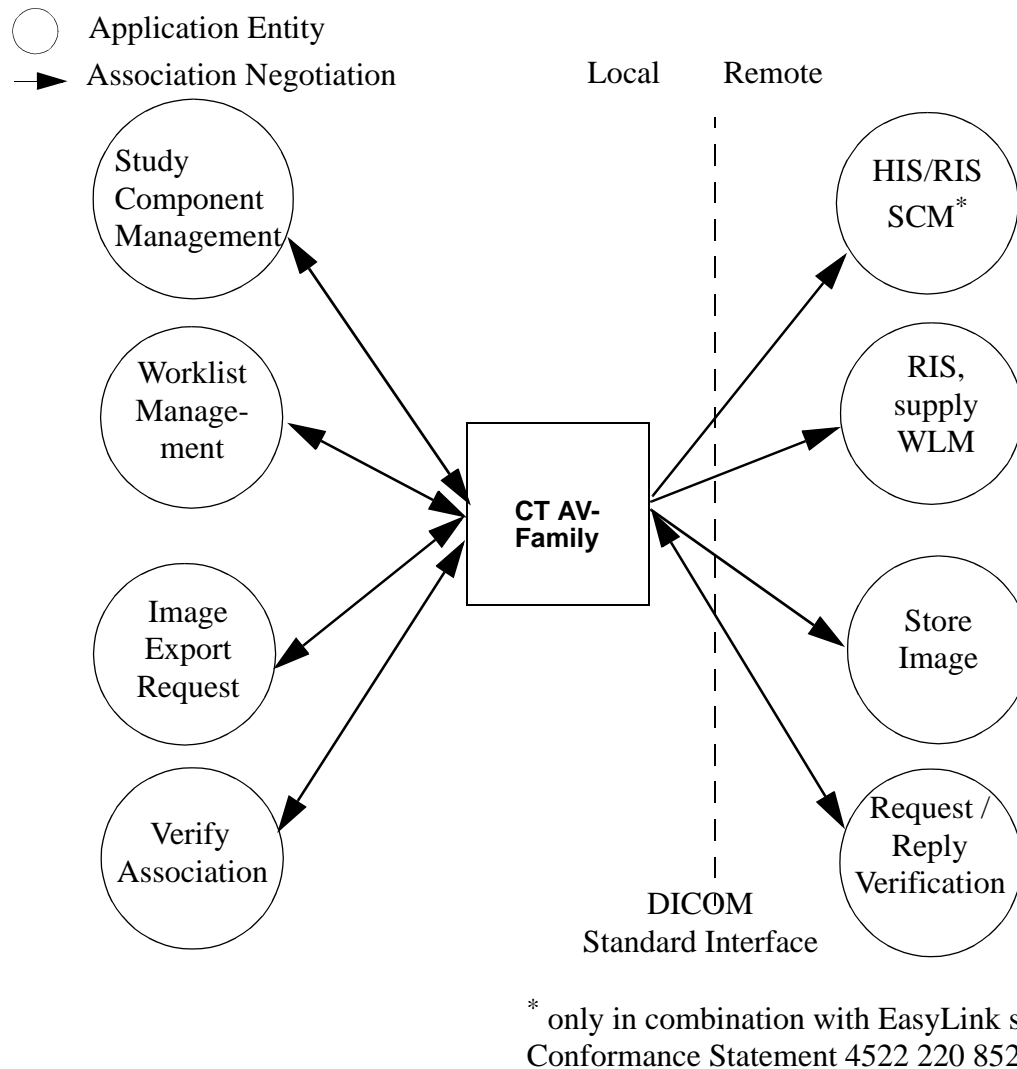
- Normal scans: fast scan, serial scan
- Dynamic scans
- Volume scans
- Scanograms

The system does **not** support the transfer of Tomoscan 350 (converted) images, Graphical Annotated images, biopsyview images and any images which are result of analysis.

Image data to be transferred are instances of the DICOM CT SOP Class. The images transferred are intended for viewing purposes. Postprocessing like MPR, 3D reconstruction and rendering may be possible, depending on the capabilities of the workstation receiving the CT images.

The system supports verification requests of the operator (mostly the service engineer) and answers verification requests from remote systems.





**Figure 2-1: The Modality DICOM Implementation Model (with references to the related sections)**

### 2.1.1 Description of the CT AV-Family Functionality

### 2.2 Functional definition of Application Entities

The CT-AV DICOM Export application entity acts as a Service Class User (SCU) of the Storage Service Class. After invoking it will open an association to the remote system. For each image to be transported a retrieve action from the internal CT-AV storage will take place followed by the conversion to a DICOM message to be sent to the remote system.

The CT-AV DICOM Export application entity supports also the Verification SOP Class both as SCU and SCP.

### **2.2.1 Transmit Images**

CT AV-Family acts as a SCU for C-STORE to transmit images to other compatible devices.

### **2.2.2 Requests Demographics**

CT AV-Family requests additional Patient Demographics and Study Information from the RIS/HIS. Received information is inserted in the exported image.

### **2.3 Sequencing of Real World Activities**

- Query for WLM
- Acquisition of data
- Export of images

### 3 AE Specifications

#### 3.1 CT AV-Family DICOM AE Specification.

##### 3.1.1 Verification as an SCU and SCP and Transfer Syntaxes

CT AV-Family provides Standard Conformance to the following DICOM 3.0 SOP class as a SCU and SCP:

**Table 3-1: Supported SOP Class by CT AV-Family as SCU and SCP and the Transfer Syntaxes**

<i>Presentation Context table</i>					
<i>Abstract Syntax</i>		<i>Transfer Syntax</i>		<i>Role</i>	<i>Extended Negotiation</i>
<i>Name</i>	<i>UID</i>	<i>Name List</i>	<i>UID List</i>		
Verification SOP Class	1.2.840.10008.1.1	ILE	1.2.840.10008.1.2	SCP SCU	None

##### 3.1.2 CT AV-Family as an SCU

CT AV-Family provides Standard Conformance to the following DICOM 3.0 SOP class as a SCU:

**Table 3-2: Storage SOP Classes and the Proposed Presentation Contexts for CT AV-Family**

<i>Presentation Context table</i>					
<i>Abstract Syntax</i>		<i>Transfer Syntax</i>		<i>Role</i>	<i>Extended Negotiation</i>
<i>Name</i>	<i>UID</i>	<i>Name List</i>	<i>UID List</i>		
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	ILE	1.2.840.10008.1.2	SCU	None
Study Component Management SOP Class Only in combination with EasyLink.	1.2.840.10008.3.1.2.3.2	ILE	1.2.840.10008.1.2	SCU	none
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	none

## **3.2 Association Establishment Policies**

### **3.2.1 General**

The maximum PDU size is default 100.000 bytes.

### **3.2.2 Number of Associations**

CT AV-Family will issue only one association request at a time to a remote AE. CT AV-Family can issue a single associations at one time.

### **3.2.3 Asynchronous Nature**

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

### **3.2.4 Implementation Identifying Information**

CT AV-Family will use and respond with the following implementation identifying parameters.

Import:

The Implementation Class UID is: 1.2.124.113532.3510

The implementation version name is: MITRAJUNE1997

Export:

The Implementation Class UID is: 1.2.124.113532.1.1

The implementation version name is: MITRA22JAN97

### **3.2.5 Called/Calling Titles.**

The default calling title of CT AV-Family is configurable, default HOSTNAME. This parameter can be configured via the GUI. CT AV-Family can be configured to validate the Called Title of the requesting SCU during association negotiation.

### **3.3 Association Initiation Policy**

Modality initiates an association as a result of several Real-World Activities (i.e. local events towards Modality):

#### **3.3.1 Real World Activity - Verification**

##### **3.3.1.1 Associated Real World Activity**

CT AV-Family will issue Verification requests in response to UI mediated requests from the user to test validity of DICOM connection.

##### **3.3.1.2 Presentation Context Table**

See Table 3-2.

##### **3.3.1.2.1 Sop Specific Conformance**

CT AV-Family provides Standard Conformance to the DICOM verification Service Class.

### 3.3.2 Real World Activity - Storage

#### 3.3.2.1 Associated Real World Activity

The CT-AV DICOM Export function will be accessible through the CT-AV user interface (Select Mode 43). The user will select the patient (also called examination), one or more images of that selected patient and the destination. The selected images are marked.

After the (successful, partly successful or failed) transfer of the selected images, the association is released.

#### 3.3.2.2 Presentation Context Table

See Table 3-2

#### 3.3.2.3 SOP Specific Conformance

For error messages check CT AV-Family user interface.

During and after the transfer of images, the user interface of the CT AV-Family shows an image counter indicating the number of successfully transferred images and the total number of images to transfer.

When the transfer is ended, CT-AV behaves as follows on the possible response states of the C-STORE messages:

**Table 3-3: Behaviour on successful, unsuccessful and warning C-STORE response states**

<i>C-STORE return status</i>	<i>Behaviour of the CT-AV system</i>
Success (status 0000) on all C-STORE messages	Status 'Completed' is shown on the console at the end of the transfer.
Refused (status A7xx) on one or more C-STORE messages	Status 'Incomplete' is shown on the console at the end of the transfer.
Error (status A9xx or Cxxx or 01xx) on one or more C-STORE messages	Status 'NetError' is shown on the console at the end of the transfer.
Warning (status B00x) on one or more C-STORE messages	All images are transferred successfully. Status 'Completed' is shown on the console, the warning is not shown or logged.

The CT-AV system will **not** retry after a failed transfer of one or more images.

The association is released when ready with the (complete or incomplete) transfer of selected images after pressing the select Mode button on the CT AV-Family user interface.

Error messages are displayed on the CT AV-Family RIS GUI.

Extended negotiation is not supported.

Table 3-4 lists the applied Conditional and Optional attributes in the CT images. The full list of applied attributes is given in Section 3.3.2.4 on page 15.

**Table 3-4: Applied Conditional and Optional attributes of the CT IOD**

<i>IE</i>	<i>Module</i>	<i>Conditional attributes</i>	<i>Optional attributes</i>
Patient	Patient	-	-
Study	General Study	-	Study Description
Series	General Series	Patient Position	Protocol Name, Performing Physician's Name, Series Time
Frame of Reference	Frame of Reference	-	-
Equipment	General Equipment	-	Institution Name, Station Name, Institutional Department Name, Manufacturer's Model name, Device Serial Number, Software Version(s)
Image	General Image	Patient Orientation	Image Comments, Acquisition Date
	Image Plane	-	Slice Location
	Image Pixel	-	-
	Contrast/Bolus	-	-
	CT Image	-	Reconstruction Diameter, Gantry/Detector Tilt, Table Height, Rotation Direction, Exposure Time, X-Ray Tube Current, Exposure, Convolution Kernel
	VOI LUT	Window Width	Window Center
	SOP Common	SOP Class UID, SOP Instance UID	Specific Character Set

**3.3.2.4 Overview Attributes C-STORE.**

The modules selected from the IOD module table of DICOM are given in the table below.

**Table 3-5: CT IOD Modules**

<i>IE</i>	<i>Module</i>	<i>Reference</i>
Patient	Patient	Table 3-6 on page 16
Study	General Study	Table 3-7 on page 17
Series	General Series	Table 3-8 on page 17
Frame of Reference	Frame of Reference	Table 3-9 on page 17
Equipment	General Equipment	Table 3-10 on page 18

**Table 3-5: CT IOD Modules (Continued)**

<i>IE</i>	<i>Module</i>	<i>Reference</i>
Image	General Image	Table 3-11 on page 18
	Image Plane	Table 3-12 on page 18
	Image Pixel	Table 3-13 on page 19
	Contrast/Bolus	Table 3-14 on page 19
	CT Image	Table 3-15 on page 19
	VOI LUT	Table 3-16 on page 20
	SOP Common	Table 3-17 on page 20

The details of these applied modules are given in the tables below. The list of possible values are given (if applicable). The situation that an attribute is present conditionally/optionally or that an attribute may contain a zero length value, is indicated too. Standard DICOM Conditions and Defined/Enumerated Values are applicable but are not shown in the tables.

**NOTE: The shaded Boxes show Attributes which obtain their content from the RIS, depending on the configuration**

Changes in the GUI concerning the RIS parameters are overruled at export time by the RIS values.

**Table 3-6: CT Image Storage SOP Class - Patient Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Patient's Name	0010,0010	From WLM Patient Identification - Patient Name. The user interface does not show the special character in ISO-IR 100.
Patient ID	0010,0020	From WLM Patient identification - Patient ID.
Patient's Birth Date	0010,0030	From WLM Patient Demographic - Patient Birth Data.
Patient's Sex	0010,0040	From WLM Patient Demographic - Patient Sex.

Patient's Name, Patient ID, Patients's Birth Date and Patient's Sex can also be entered from the user interface and therefore can differ from the data obtained from the RIS.

NOTE: Data in the RIS is always master. The user must make sure that he supplies RIS, in case of emergency patients, with same data as already entered at CT for that examination.



**Table 3-7: CT Image Storage SOP Class - General Study Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Study Date	0008,0020	Generated by the scanner.
Study Time	0008,0030	Generated by the scanner.
Accession Number	0008,0050	From WLM Imaging Service Request - Accession Number.
Referring Physician's Name	0008,0090	From WLM Imaging Service Request - Referring Physician's Name.
Study Description <sup>a</sup>	0008,1030	From WLM Scheduled Procedure Step (sequenced) Scheduled Procedure Step Description or Requested Procedure.
Study Instance UID	0020,000D	From WLM Requested Procedure - Study Instance UID.
Study ID	0020,0010	From WLM Scheduled Procedure Step ID.

a. This tag contains the Accession number when the images come from EasyVision

**Table 3-8: CT Image Storage SOP Class - General Series Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Modality	0008,0060	Applied value(s): CT
Protocol Name	0018,1030	
Patient Position	0018,5100	
Series Instance UID	0020,000E	
Series Number	0020,0011	
Series Date	0008,0021	

**Table 3-9: CT Image Storage SOP Class - Frame of Reference Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Frame of Reference UID	0020,0052	Frame of reference UID of Scannogram is identical to those of the related slices.
Position Reference Indicator	0020,1040	Always zero length value.

**Table 3-10: CT Image Storage SOP Class - General Equipment Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Manufacturer	0008,0070	Applied value(s): Philips Medical Systems
Institution Name	0008,0080	
Station Name	0008,1010	
Institutional Department Name	0008,1040	
Manufacturer's Model Name	0008,1090	
Device Serial Number	0018,1000	
Software Version(s)	0018,1020	

**Table 3-11: CT Image Storage SOP Class - General Image Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Image Number	0020,0013	
Image Comments	0020,4000	Only present if entered by user. <i>The first line contains the Accession Nmbr. and may therefore not be overwritten.</i>
Acquisition Date	0008,0022	
Image Date	0008,0023	
Image Time	0008,0033	

**Table 3-12: CT Image Storage SOP Class - Image Plane Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Slice Thickness	0018,0050	
Image Position (Patient)	0020,0032	
Image Orientation (Patient)	0020,0037	
Slice Location	0020,1041	
Pixel Spacing	0028,0030	

**Table 3-13: CT Image Storage SOP Class - Image Pixel Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Photometric Interpretation	0028,0004	Applied value(s): MONOCHROME2
Rows	0028,0010	
Columns	0028,0011	
Bits Allocated	0028,0100	Applied value(s): 16
High Bit	0028,0102	Applied value(s): 11
Pixel Representation	0028,0103	Applied value(s): 0000
Pixel Data	7FE0,0010	

**Table 3-14: CT Image Storage SOP Class - Contrast/Bolus Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Contrast/Bolus Agent	0018,0010	

**Table 3-15: CT Image Storage SOP Class - CT Image Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Image Type	0008,0008	Applied value(s): ORIGINAL, PRIMARY, AXIAL / LOCALIZER, NORMAL / VOLUME / DYNAMIC
KVP	0018,0060	
Reconstruction Diameter	0018,1100	
Gantry/Detector Tilt	0018,1120	
Table Height	0018,1130	
Rotation Direction	0018,1140	
Exposure Time	0018,1150	
X-ray Tube Current	0018,1151	
Convolution Kernel	0018,1210	
Acquisition Number	0020,0012	

**Table 3-15: CT Image Storage SOP Class - CT Image Module (Continued)**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Samples per Pixel	0028,0002	Applied value(s): 1
Bits Stored	0028,0101	Applied value(s): 12
Rescale Intercept	0028,1052	The CT Pixel Shift is standard 200, for noise reduction. Applied value(s): -1200
Rescale Slope	0028,1053	Applied value(s): 1

**Table 3-16: CT Image Storage SOP Class - VOI LUT Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Window Center	0028,1050	Two values are possible (for multiple viewing purpose).
Window Width	0028,1051	Two values are possible (for multiple viewing purpose).

**Table 3-17: CT Image Storage SOP Class - SOP Common Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Specific Character Set	0008,0005	
SOP Class UID	0008,0016	Applied value(s): 1.2.840.10008.5.1.4.1.1.2
SOP Instance UID	0008,0018	

### 3.3.3 Real World Activity - Study Component Management

#### 3.3.3.1 Associated Real World Activity

CT AV-Family will issue DIMSE N-CREATE

- Study Started - used to notify HIS/RIS that a study has started.

CT AV-Family will issue DIMSE N-SET

- Study Completed - used to notify HIS/RIS that the study has been successfully received from the modality.

#### 3.3.3.2 Presentation Context Table

See Table 3-2.

#### 3.3.3.3 Sop Specific Conformance

CT AV-Family provides standard conformance to the DICOM Study Component Management Service Class, N-CREATE, - used to notify HIS/RIS that the study has been started, and N-SET, - used to notify HIS/RIS that the study has been successfully received from the modality. Only in combination with an EasyLink.

**Table 3-18: The supported Optional and Conditional Attributes for N-CREATE**

<i>Module</i>	<i>Supported Conditional Attributes</i>	<i>Supported Optional Attributes</i>
SOP Common Module	Specific Character Set	-
Study Component	-	-
Study Component Relationship	-	-
Study Component Acquisition	-	-

**Table 3-19: The supported Optional and Conditional Attributes for N-SET**

<i>Module</i>	<i>Supported Conditional Attributes</i>	<i>Supported Optional Attributes</i>
Study Component	-	All attributes.
Study Component Acquisition	-	All attributes.

All the attributes in the N-SET are Optional.

#### 3.3.3.4 Presentation Context Initiate Criteria

CT AV-Family will always issue a Presentation Context for the Study Component Management SOP Class.

**3.3.3.5 Transfer Syntax Selection Policies**

CT AV-Family supports only the ILE Transfer Syntax.

**3.3.3.6 Overview attributes Study Component Management N-CREATE****Table 3-20: Applied Modules Study Component Management N-CREATE**

Module	Table
SOP Common Module	Table 3-21
Study Component	Table 3-22
Study Component Relationship	Table 3-23
Study Component Acquisition	Table 3-24

**Table 3-21: Study Component Management SOP Class - SOP Common Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Specific Character Set	0008,0005	

**Table 3-22: Study Component Management SOP Class - Study Component Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Referenced Series Sequence	0008,1115	Is always empty.
Study ID	0020,0010	Is always empty.

**Table 3-23: Study Component Management SOP Class - Study Component Relationship Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Referenced Study Sequence	0008,1110	
> Referenced SOP Class UID	0008,1150	Detached Study SOP Class UID. Applied value(s): 1.2.840.10008.3.1.2.3.1
> Referenced SOP Instance UID	0008,1155	Contains the Study Instance UID.

**Table 3-24: Study Component Management SOP Class - Study Component Acquisition Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Accession Number	0008,0050	RIS/EasyLink provided Accession Nnbr.
Modality	0008,0060	Applied value(s): CT
Study Description	0008,1030	
Study Component Status ID	0032,1055	Applied value(s): CREATED.

**3.3.3.7 Overview attributes Study Component Management N-SET****Table 3-25: Applied Modules Study Component Management N-SET**

Module	Table
Study Component	Table 3-26
Study Component Acquisition	Table 3-27

**Table 3-26: Study Component Management SOP Class - Study Component Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Referenced Series Sequence	0008,1115	
> Series Date	0008,0021	
> Series Time	0008,0031	
> Retrieve AE Title	0008,0054	
> Series Instance UID	0020,000E	

**Table 3-27: Study Component Management SOP Class - Study Component Acquisition Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Study Description	0008,1030	Comments on the Scheduled Procedure Step is mapped to Study Classification if Study Description is empty.
Procedure Code Sequence	0008,1032	

**Table 3-27: Study Component Management SOP Class - Study Component Acquisition Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
> Code Value	0008,0100	
> Coding Scheme Designator	0008,0102	
> Code Meaning	0008,0104	
Study Component Status ID	0032,1055	Applied value(s): COMPLETED
Study ID **	0032,000A	Applied value(s): COMPLETED

\*\* For backward compatibility with existing systems.

### 3.3.3.8 Presentation Context Initiate Criterion

CT AV-Family will always issue a Presentation Context for the Study Component Management SOP Class.

### 3.3.3.9 Transfer Syntax Selection Policies

CT AV-Family supports only the ILE Transfer Syntax.



### 3.3.4 Real World Activity - Modality Worklist Management

CT AV-Family will initiate Modality Worklist Management - C-FIND for the purpose of requesting patient demographics and study information.

#### 3.3.4.1 Presentation Context Table

See Table 3-2.

#### 3.3.4.2 SOP Specific Conformance

**Table 3-28: The supported Optional and Conditional Attributes for C-FIND**

<i>Module</i>	<i>Supported Conditional Attributes</i>	<i>Supported Optional Attributes</i>
Patient Identification		Other Patient ID
Patient Demographic		Patient's Age
Scheduled Procedure Step	-	-
Requested Procedure	Requested Procedure Description	Reason for Requested Procedure, Requested Procedure Comments,
Imaging Service request		Imaging Service Request Comments, Reason for Imaging Service Request

**Table 3-29: Requested Matching Key Types**

<i>Matching key Types</i>	
SV	single values match
WC	wild card match
SQ	sequence match
DR	date range match

#### 3.3.4.3 Overview attributes Modality Worklist C-FIND

**Table 3-30: Applied Modules in the Modality Worklist C-FIND**

Module	Table
Patient Identification	Table 3-32
Patient Demographic	Table 3-33
Scheduled Procedure Step	Table 3-34

**Table 3-30: Applied Modules in the Modality Worklist C-FIND (Continued)**

Module	Table
Requested Procedure	Table 3-35
Imaging Service request	Table 3-36

**NOTE: The shaded Note Boxes shows Attributes which transfer their content to CT Image Storage IOD.**

In case of dates, “.” must not be used.

**Table 3-31: Modality Worklist Information Model - FIND SOP Class - General Study Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Name of Physician(s) Reading Study	0008,1060	Mapped to: General Study, Name of Physician(s) Reading Study.

**Table 3-32: Modality Worklist Information Model - FIND SOP Class - Patient Identification Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Patient's Name	0010,0010	Mapped to: Patient, Patient's Name.
Patient ID	0010,0020	Mapped to: Patient, Patient ID.
Other Patient IDs	0010,1000	Mapped to: Patient, Other Patient IDs.

**Table 3-33: Modality Worklist Information Model - FIND SOP Class - Patient Demographic Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Patient's Birth Date	0010,0030	Mapped to: Patient, Patient's Birth date.
Patient's Sex	0010,0040	
Patient's Age	0010,1010	Mapped to: Patient Study, Patient's Age.

**Table 3-34: Modality Worklist Information Model - FIND SOP Class - Scheduled Procedure Step Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Scheduled Procedure Step Sequence	0040,0100	
> Modality	0008,0060	
> Scheduled Station AE Title	0040,0001	
> Scheduled Procedure Step Start Date	0040,0002	
> Scheduled Procedure Step Start Time	0040,0003	
> Scheduled Performing Physician's Name	0040,0006	Mapped to: General Series, Performing Physician's name.
> Scheduled Procedure Step Description	0040,0007	Mapped to: General Study, Study Description.
> Scheduled Procedure Step ID	0040,0009	
> Scheduled Station Name	0040,0010	
> Comments on the Scheduled Procedure Step	0040,0400	

**Table 3-35: Modality Worklist Information Model - FIND SOP Class - Requested Procedure Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Study Instance UID	0020,000D	Mapped to: General Study, Study Instance UID.
Requested Procedure Description	0032,1060	Mapped to: General Study, Study Description.
Requested Procedure ID	0040,1001	
Reason for the Requested Procedure	0040,1002	Mapped to: Patient Study, Additional Patient's History.
Requested Procedure Comments	0040,1400	

**Table 3-36: Modality Worklist Information Model - FIND SOP Class - Imaging Service Request Module**

<i>Attribute Name</i>	<i>Tag</i>	<i>Note</i>
Accession Number	0008,0050	Mapped to: General Study, Accession Number.
Referring Physician's Name	0008,0090	Mapped to: General Study, Referring Physician's Name.
Requesting Physician	0032,1032	
Reason for the Imaging Service Request	0040,2001	
Imaging Service Request Comments	0040,2400	

### **3.4 Association Acceptance Policy**

#### **3.4.1 Real World Activity - Verification**

##### **3.4.1.1 Associated Real World Activity**

CT AV-Family will respond to Verification requests to provide an SCU with the ability to determine if CT AV-Family is receiving DICOM requests.

##### **3.4.1.2 Presentation Context Table**

See Table 3-2.

##### **3.4.1.3 SOP Specific Conformance**

CT AV-Family provides standard conformance to the DICOM Verification Service Class.

##### **3.4.1.4 Presentation Context Initiate Criterion**

CT AV-Family will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax as listed in Table 3-2.

## 4 Communication Profiles

CT AV-Family provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM standard

### 4.1 TCP/IP Stack

CT AV-Family provides DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM 3.0 Standard.

#### 4.1.1 Physical Media Support

CT AV-Family supports fast ethernet (twisted pair) 10/100 BASE-T, if supported by hardware.

## 5 Extensions /Specializations/Privatizations

The Study Component Management N-SET is a specialization in combination with the EasyLink.

## 6 Configuration

CT AV-Family obtains configuration information from the following sources:

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

### 6.1 AE Title/Presentation Address mapping

#### 6.1.1 Local AE Titles and Presentation Addresses

The local Application Entity Title and Presentation Address (i.e. IP-address and port number) are configurable.

#### 6.1.2 Remote AE Titles and Presentation Addresses

All remote applications to be selected as export destination (SCP) are configurable for the following items:

- The Application Entity Title of the remote application.
- The Presentation Address (i.e. IP-address and port number) at which the remote application should accept association requests.
- The Remote Host Name of the system on which the remote application resides.

### 6.2 Configurable Parameters

- The AE title will be configurable.
- The PMU size is configurable up to 100.000 bytes.

Check service documentation for other configurable parameters.

## 7 Support of Extended Character Sets

CT AV-Family is known to support the following character sets:

- ISO-IR 100 Latin Alphabet Supplement No. 1