

**Philips Medical Systems
DICOM Conformance Statement**

Integris 3DRA R 2

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1 Introduction

This section provides general information about the scope, intended audience and contents of this Conformance Statement and how to use it.

1.1 Scope and field of application

The scope of this DICOM Conformance Statement is to facilitate data exchange between equipment of Philips Medical Systems and with equipment of other vendors. This document specifies the compliance to the DICOM standard, formally called the NEMA PS 3.X 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), Service Elements 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.

1.2 Intended audience

This Conformance Statement is intended for:

- (potential) clients,
- marketing staff interested in data exchange functionality,
- system integrators and Customer Support Engineers of medical equipment,
- software engineers 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 section 2 through 13 and follows the contents and structuring requirements of DICOM PS 3.2.

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.

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 1996 (X refers to the part 1 - 13)
National Electrical Manufacturers Association (NEMA) Publication Sales
1300 N. 17th Street, Suite 1847
Rosslyn, Va. 22209, United States of America

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).

Introduction

1.7 Acronyms and Abbreviations.

The following acronyms and abbreviations are used in the document.

- ACC American College of Cardiology
- AE Application Entity
- ACR American College of Radiology
- ANSI American National Standard Institute
- BOT Basic Offset Table
- CD-R CD Recordable
- CD-M CD Medical
- DCI Digital Cardio Imaging
- 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
- ELE Explicit VR Little Endian
- EBE Explicit VR Big Endian
- FSC File Set Creator
- GUI Graphic User Interface
- HIS Hospital Information System
- HL7 Health Level Seven
- ILE Implicit VR Little Endian
- IOD Information Object Definition
- ISIS Information System - Imaging System
- MPPS Modality Performed Procedure Step
- NEMA National Electrical Manufacturers Association
- PACS Picture Archiving and Communication System
- PDU Protocol Data Unit
- RIS Radiology Information System
- RWA Real World Activity
- SC Secondary Capture
- SCM Study Component Management
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet protocol
- UID Unique Identifier
- WLM Worklist Management

2 Implementation model

2.1 Implementation model for the Integris 3DRA R 1

The Integris 3DRA R2 system of Philips Medical System is an 3D imaging generating system. The System contains:

- a DICOM Image export function to transfer DICOM Secondary Capture Images and private Reconstructed X-ray Images.
- DICOM Print.

The above DICOM Image Export and print functions are described in this document.

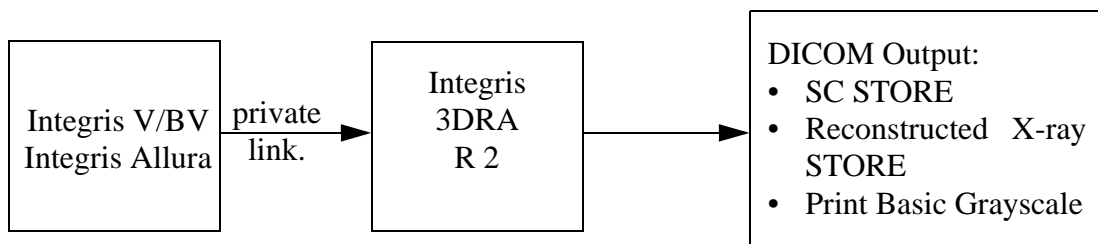


Figure 2-1: Topology Image

2.1.1 Application Data Flow Diagram for Integris 3DRA

The Integris 3DRA behaves as a system with one Application Entity (AE). The related Implementation Model is shown in Figure 2-2 .

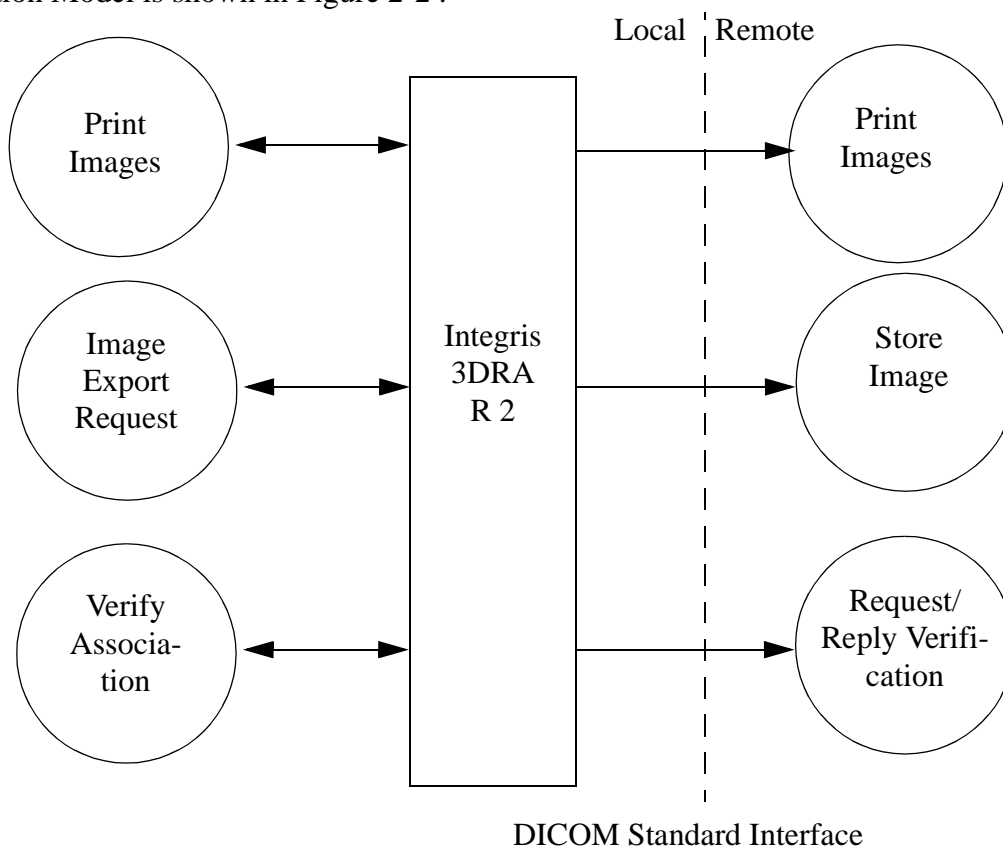


Figure 2-2: The Integris 3DRA DICOM Implementation Model.

The images to be sent are selected from one or more examinations of a patient. At export request the images will be converted into DICOM format and sent out to a remote destination.

2.1.2 Functional definition of Application Entities

The Integris 3DRA DICOM Image Export AE acts as a Service Class User (SCU) of the Storage Service Class. When the export is initiated, the AE will open an association to the remote system. The selected images and related image data are converted into a DICOM message to be sent to the remote system.

2.2 Sequencing of Real World Activities

When the examination is completed the created images can be exported via a network to the open domain.

Figure 2-3 gives an overview of the 3DRA system in a DICOM network.

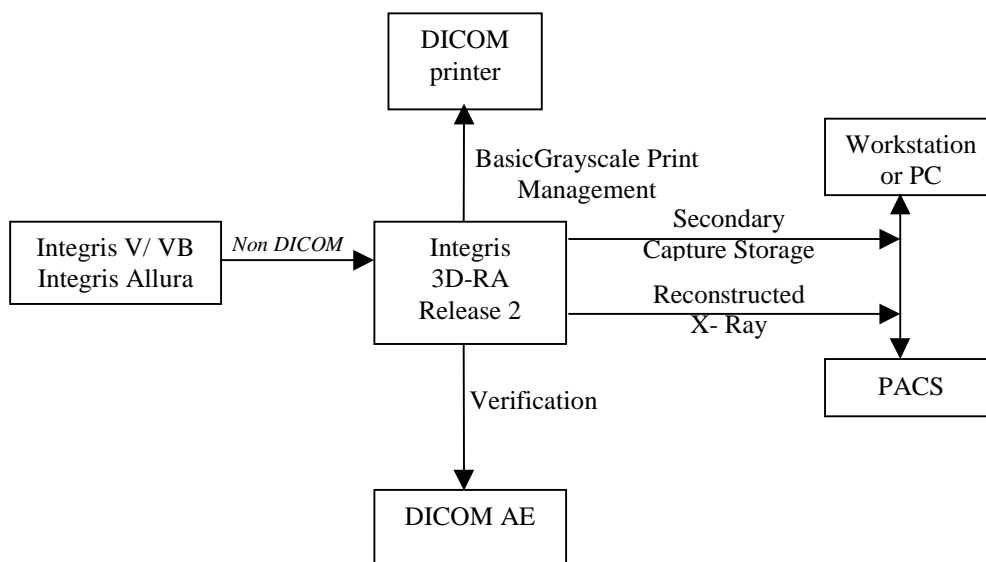


Figure 2-3: 3DRA in a DICOM network

3 AE Specifications

3.1 DICOM Image Storage AE Specification for the Integris 3DRA

The Integris 3DRA DICOM Storage Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

Table 3-1: Supported SOP Classes by the Integris 3DRA AE as SCU

| <i>SOP Class Name</i> | <i>UID</i> |
|---|---------------------------|
| Secondary Capture Image Storage SOP Class | 1.2.840.10008.5.1.4.1.1.7 |
| Reconstructed X-ray SOP Class | 1.3.46.670589.2.4.1.1 |
| Verification | 1.2.840.10008.1.1 |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.10008.5.1.1.9 |
| > ^a Basic Film Session SOP Class | 1.2.840.10008.5.1.1.1 |
| > Basic Film Box SOP Class | 1.2.840.10008.5.1.1.2 |
| > Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4 |
| > Printer SOP Class | 1.2.840.10008.5.1.1.16 |

a. The '>' sign indicates that the SOP Class is part of the above mentioned Meta SOP Class.

3.1.1 Association Establishment Policies

3.1.1.1 General

Integris 3DRA uses a PDU size of 16k.

3.1.1.2 Number of Associations

Integris 3DRA will establish one association at a time.

3.1.1.3 Asynchronous Nature

Integris 3DRA does not support asynchronous operations and will not perform asynchronous window negotiation.

3.1.1.4 Implementation Identifying Information

The Implementation Class UID is: 1.3.46.670589.7.8.1.2

The implementation version name is: 3DRA_release_2

3.1.2 Association Initiation Policy

Integris 3DRA initiates associations as a result of the following local Real-World activities:

- The Image Export Request to send the Secondary Capture from the Integris 3DRA to a remote system (Section 3.1.2.4 on page 8)

3.1.2.1 Request for Verification

Real World Activity - Verification

3.1.2.2 Associated Real World Activity

Integris 3DRA will issue Verification requests in response to UI mediated requests from the user to test validity of DICOM connection.

3.1.2.3 Presentation Context Table

The Integris 3DRA will propose the following presentation contexts:

Table 3-2: Proposed Presentation Contexts for the request to send images

| Presentation Context table | | | | | |
|----------------------------|-------------------|-------------------|---|------|----------------------|
| Abstract Syntax | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | Name List | UID List | | |
| Verification | 1.2.840.10008.1.1 | ILE ELE EBE | 1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 | SCU | None |

3.1.2.3.1 SOP Specific Conformance

The Integris 3DRA provides Standard Conformance to the DICOM Verification Service Class.

3.1.2.4 Request to send images from Integris 3DRA to a remote system

3.1.(43.1-21021.[(A)52.3(1)8.7(s)-1.3(c1)8.7iatC)5.7es(-W) 26.7(rld r)-1(RA)476(c)-1.3tC

3.1.2.4.4 SC SCU Conformance

Table 3-5 lists the applied Conditional (DICOM Type 1C and 2C) and Optional (DICOM Type 3) attributes in the SC Image IOD.

Table 3-5: Applied Conditional and Optional Attributes of the SC Image IOD

| <i>IE</i> | <i>Module</i> | <i>Conditional Attributes</i> | <i>Optional Attributes</i> |
|-----------|-------------------|---|--|
| Patient | Patient | - | - |
| Study | General Study | - | - |
| Series | General Series | Code Value, Code Scheme Designator, Scheduled Procedure Step ID, Requested Procedure ID | Series Date, Series Time, Performing Physician's Name, Referenced Study Component Sequence, Code Meaning, Performed Procedure Step Start Date, Performed Procedure Step Start Time, Performed Procedure Step ID, Performed procedure Step Description, Request Attributes Sequence, Scheduled Procedure Step Description, Scheduled Action Item Code Sequence, |
| Equipment | General Equipment | - | Institution Name, Station Name, Manufacturer's Model Name, Software Version(s) |
| | SC Equipment | - | |
| Image | General Image | - | Image Type |
| | Image Pixel | - | |
| | SC Image Module | - | Date of Secondary Capture, Time of Secondary Capture |
| | VOI LUT | Window Width | Window Center |
| | SOP Common | Specific Character Set | |

3.1.2.4.5 SC Image IOD for the Integris 3DRA attribute overview

The shaded boxes contain values which contents are obtained from the RIS/HIS via Modality Worklist Query/Retrieve. The RIS/HIS information is obtained via the private link from the Integris which can be connected to a RIS/HIS, see Figure 2-1 on page 4

The availability of attributes depends on the image obtained from via the private link form the Integris.

Table 3-6: Applied Modules in the SC Image IOD For the Integris 3DRA

| <i>Module</i> | <i>Usage</i> | <i>Reference</i> |
|-------------------|--------------|------------------|
| Patient | M | Table 3-7 |
| General Study | M | Table 3-8 |
| General Series | M | Table 3-9 |
| General Equipment | U | Table 3-10 |
| SC Equipment | M | Table 3-11 |
| General Image | M | Table 3-12 |
| Image Pixel | M | Table 3-13 |
| SC Image | M | Table 3-14 |
| VOI LUT | U | Table 3-15 |
| SOP Common | M | Table 3-16 |

Table 3-7: Secondary Capture Image Storage SOP Class - Patient Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|---|
| Patient's Name | 0010,0010 | Patient's full legal name. |
| Patient ID | 0010,0020 | Primary hospital identification number or code for the patient. |
| Patient's Birth Date | 0010,0030 | Birth date of the patient. |
| Patient's Sex | 0010,0040 | Sex of the named patient. |

Table 3-8: Secondary Capture Image Storage SOP Class - General Study Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|----------------------------|------------|--|
| Study Date | 0008,0020 | Date the Study started. |
| Study Time | 0008,0030 | Time the Study started. |
| Accession Number | 0008,0050 | A RIS generated number which identifies the order for the Study. |
| Referring Physician's Name | 0008,0090 | Patient's referring physician. |

Table 3-8: Secondary Capture Image Storage SOP Class - General Study Module (Continued)

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|---|
| Study Instance UID | 0020,000D | Unique identifier for the Study. |
| Study ID | 0020,0010 | User or equipment generated Study identification. |

Table 3-9: Secondary Capture Image Storage SOP Class - General Series Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|--|------------|--|
| Series Date | 0008,0021 | Date the Series started. |
| Series Time | 0008,0031 | Time the Series started. |
| Modality | 0008,0060 | Type of equipment that originally acquired the data used to create the Image. Applied value(s): XA |
| Performing Physician's Name | 0008,1050 | Name of the physicians administering the Series. |
| Referenced Study Component Sequence | 0008,1111 | Uniquely identifies the Study Component SOP Instance or Modality Performed Procedure Step Instance to which the Series is related. |
| > Referenced SOP Class UID | 0008,1150 | Uniquely identifies the referenced Modality Performed Procedure SOP Class. Applied value(s): 1.2.840.10008.3.1.2.3.3 |
| > Referenced SOP Instance UID | 0008,1155 | Uniquely identifies the referenced SOP Instance. |
| Patient Position | 00018.5100 | |
| Series Instance UID | 0020,000E | Unique identifier of the Series. |
| Series Number | 0020,0011 | A number that identifies this series. Applied value(s): 1 |
| Performed Procedure Step Start Date | 0040,0244 | Date on which the Performed procedure Step Started. |
| Performed Procedure Step Start Time | 0040,0245 | Time on which the Performed Procedure Step Started. |
| Performed Procedure Step ID | 0040,0253 | identification of that part of a Procedure that has been carried out within this step. |
| Performed Procedure Step Description | 0040,0254 | Institution-generated description or classification of the Procedure Step that was performed. |
| Request Attributes Sequence | 0040,0275 | Sequence that contains attributes from the Imaging Service Request. |
| > Scheduled Procedure Step Description | 0040,0007 | Institution-generated description or classification of the Scheduled Procedure Step to be performed. |

Table 3-9: Secondary Capture Image Storage SOP Class - General Series Module (Continued)

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|---------------------------------------|------------|--|
| > Scheduled Action Item Code Sequence | 0040,0008 | Sequence describing the Scheduled Action Item(s) following a specific coding scheme. |
| >> Code Value | 0008,0100 | |
| >> Coding Scheme Designator | 0008,0102 | |
| >> Code Meaning | 0008,0104 | |
| > Scheduled Procedure Step ID | 0040,0009 | Identifier which identifies the requested Procedure in the Imaging Service request. |
| > Requested Procedure ID | 0040,1001 | Identifier which identifies the Scheduled Procedure Step. |

Table 3-10: Secondary Capture 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 (Netherlands) |
| Institution Name | 0008,0080 | Institution where the equipment is located that produced the digital images. |
| Station Name | 0008,1010 | User defined name identifying the machine that produced the digital images. |
| Manufacturer's Model Name | 0008,1090 | Applied value(s): Integris 3D-RA Release 2 |
| Software Version(s) | 0018,1020 | Applied value(s):6.5.3mR_2.1.1 |

Table 3-11: Secondary Capture Image Storage SOP Class - SC Equipment Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|--|
| Conversion Type | 0008,0064 | Describes the kind of image conversion. Applied value(s): WSD |

Table 3-12: Secondary Capture Image Storage SOP Class - General Image Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|---------------------------------------|
| Image Type | 0008,0008 | Applied value(s): DERIVED \ SECONDARY |
| Image Number | 0020,0013 | A number that identifies the images. |
| Patient Orientation | 0020,0020 | |

Table 3-13: Secondary Capture Image Storage SOP Class - Image Pixel Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|----------------------------|------------|--|
| Samples per Pixel | 0028,0002 | Number of samples (planes) in This image. Applied value(s): 1 |
| Photometric Interpretation | 0028,0004 | Specifies the intended interpretation of the pixel data. Applied value(s): MONOCHROME2 |
| Rows | 0028,0010 | Number of rows in the image. Applied value(s): 512 |
| Columns | 0028,0011 | Number of columns in the image. Applied value(s): 512 |
| Bits Allocated | 0028,0100 | Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. Applied value(s): 8 |
| Bits Stored | 0028,0101 | Number of bits stored for each pixel sample. Applied value(s): 8 |
| High Bit | 0028,0102 | Most significant bit for pixel sample data. Each sample shall have the same high bit. Applied value(s): 7 |
| Pixel Representation | 0028,0103 | Data representation of the pixel samples. Each sample shall have the same pixel representation. Applied value(s): 0000 |
| Pixel Data | 7FE0,0010 | A data stream of the pixel samples which comprise the Image. |

Table 3-14: Secondary Capture Image Storage SOP Class - SC Image Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|---------------------------|------------|-------------|
| Date of Secondary Capture | 0018,1012 | |
| Time of Secondary Capture | 0018,1014 | |

Table 3-15: Secondary Capture Image Storage SOP Class - VOI LUT Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|-------------------------|
| Window Center | 0028,1050 | Applied value(s): 127.5 |
| Window Width | 0028,1051 | Applied value(s): 255 |

Table 3-16: Secondary Capture Image Storage SOP Class - SOP Common Module

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|------------------------|------------|--|
| Specific Character Set | 0008,0005 | Character Set that expands or replaces the Basic Graphic Set Applied value(s): ISO_IR 100 |
| SOP Class UID | 0008,0016 | Uniquely identifies the SOP Class. Applied value(s): 1.2.840.10008.5.1.4.1.1.7 |
| SOP Instance UID | 0008,0018 | Uniquely identifies the SOP Instance. |

3.1.2.5 Print Images

3.1.2.5.1 Associated Real-World Activity

There are two ways to request for image printing:

- **Print Compose**

The operator is able to select one or more images from the internal database (via the Data Handling facility) and perform the Print operation on them.

The operator will select the print destination (out of choice list of configured printers) and some print parameters.

As a result, the Integr3 3DRA will initiate an association to the selected printer and uses it to send the Print Service Elements of the Print SOP Classes.

3.1.2.5.2 Proposed Presentation Context

The Integris 3DRA will propose the following presentation contexts for Print:

Table 3-17: Proposed Presentation Contexts for print images

| Presentation Context table | | | | | | | |
|---|------------------------|--|--|-------------------|---|------|----------------------|
| Abstract Syntax | | | | Transfer Syntax | | Role | Extended Negotiation |
| Name | UID | | | Name List | UID List | | |
| Basic Grayscale Print Management Meta SOP Class | 1.2.840.100008.5.1.1.9 | | | ILE ELE EBE | 1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 | SCU | None |

3.1.2.5.3 Conformance to the Print SOP Classes

The Integris 3DRA provides standard conformance to the Basic Grayscale Print Management Meta SOP Class.

The applied order of Print Service Elements (DIMSE's) is specified in Table 3-18. A description and the applied optional (i.e. non-mandatory attributes as Print SCU) attributes in these Service Elements are specified too. Note that the Service Elements order is not specified by the DICOM standard.

An explicit N-DELETE Request on the created instances is not done by the Integris 3DRA; these are deleted implicitly when releasing the association.

The full list of (Mandatory and Optional) attributes applied in these Service Elements are:.

Table 3-18: The applied order of Print Service Elements and its optional attributes

| <i>Service Element of SOP Class</i> | <i>Description and applied optional attributes</i> |
|--|--|
| N-GET of the Printer SOP Class | Purpose is to retrieve printer information. |
| N-CREATE of the Basic Film Session SOP Class | Integris 3DRA specifies the DICOM Printer about some general presentation parameters, applicable for all films in the Film Session. Applied optional attributes are: Number of Copies, Medium Type |
| N-CREATE of the Basic Film Box SOP Class | Integris 3DRA specifies the DICOM Printer about some general presentation parameters, applicable for all images in the Film Box. Applied optional attributes are: Film Orientation, Film Size ID, Magnification Type, Max. Density, Configuration Information, Trim. |
| N-SET of the Basic Grayscale Image Box SOP Class | Integris 3DRA will send the images to be printed. |

Table 3-18: The applied order of Print Service Elements and its optional attributes

| <i>Service Element of SOP Class</i> | <i>Description and applied optional attributes</i> |
|--|---|
| N-ACTION of the Basic Film Box SOP Class | Integris 3DRA triggers the DICOM Printer to print, this actual print action is done at film box level. No (optional) attributes are present. |

The table below specifies the supported Service Elements which may be generated by the Printer at any time during the association.

Table 3-19: The applied sequence of Print Service Elements and its optional attributes

| <i>Service Element of SOP Class</i> | <i>Note</i> |
|---|---|
| N-EVENT-REPORT of the Printer SOP Class | May be sent at any moment by the Printer SCP (i.e. the DICOM Printer). Integris 3DRA will respond. |

The Status Codes of DIMSE Responses (Success, Warning, Failure) as returned by the printer will also be logged (for service purposes) and are mapped onto window messages.

The following implementation remarks are important to achieve successful printing:

- The Integris 3DRA will release the association after the last print command has been given and a N-ACTION-RSP from the printer SOP has been received.

3.1.2.5.4 Basic Film Session SOP Class

Table 3-20: Basic Film Session SOP Class - N-CREATE

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|---|
| Number of Copies | 2000,0010 | |
| Print Priority | 2000,0020 | Applied value(s): HIGH, MED, LOW |
| Medium Type | 2000,0030 | Applied value(s): BLUE FILM, CLEAR FILM, PAPER |
| Film Destination | 2000,0040 | Applied value(s):MAGAZINE, PROCESSOR, BIN_I (with I > 0) |

3.1.2.5.5 Basic Film Box SOP Class**Table 3-21: Basic Film Box SOP Class - N-CREATE**

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|----------------------------------|------------|---|
| Image Display Format * | 2010,0010 | The applied value below is an Integris 3DRA specific value indicating that one (large) image is contained in a Film Box. Applied value(s): STANDARD\1,1 STANDARD\1,2 STANDARD\2,1 STANDARD\2,3 |
| Film Orientation | 2010,0040 | Applied value(s): PORTRAIT |
| Film Size ID * | 2010,0050 | DICOM specifies a number of Defined Terms. Applied value(s): 8INx10IN, 10INx12IN, 11INx14IN, 14INx14IN, 14INx17IN, 24CMx24CM, 24CMx30CM |
| Magnification Type* | 2010,0060 | Normally sent out, however some DICOM printers are not able to handle (value NONE for) this attribute. Applied value(s): BILINEAR, CUBIC, NONE, REPLICATE |
| Max Density * | 2010,0130 | User selectable 0-350. |
| Trim | 2010,0140 | Applied value(s): NO |
| Configuration Information * | 2010,0150 | Used to refer to a vendor specific Lookup-table (LUT); should be applied by the DICOM printer if LUT data is present. |
| Smoothing Type | 2010,0080 | Printer dependend. |
| Border Density | 2010,0100 | Applied value(s): BLACK |
| Empty Image Density | 2010,0110 | Applied value(s): BLACK |
| Min. Density | 2010,0120 | Applied value(s) 0..399 (printer dependend) |
| Referenced Film Session Sequence | 2010,0500 | Parent Film Session. |
| > Referenced SOP Class UID | 0008,1150 | Applied value(s): 1.2.840.10008.5.1.1.1 |
| > Referenced SOP Instance UID | 0008,1155 | |

* Note: that Image Display Format, and Film Size ID are selectable.

Table 3-22: Basic Film Box SOP Class - N-ACTION

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------------|------------|-------------|
| No data attributes present. | | |

3.1.2.5.6 Basic Grayscale Image Box SOP Class**Table 3-23: Basic Grayscale Image Box SOP Class - N-SET**

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|--------------------------------|------------|--|
| Image Position | 2020,0010 | 1 up to number of images on film. |
| Polarity | 2020,0020 | Applied value(s): NORMAL |
| Basic Grayscale Image Sequence | 2020,0110 | |
| > Samples per Pixel | 0028,0002 | Applied value(s): 1 |
| > Photometric Interpretation | 0028,0004 | Applied value(s): MONOCHROME2 |
| > Rows | 0028,0010 | Applied value(s): 512 |
| > Columns | 0028,0011 | Applied value(s): 512 |
| > Bits Allocated | 0028,0100 | Applied value(s): 8 |
| > Bits Stored | 0028,0101 | Applied value(s): 8 |
| > High Bit | 0028,0102 | Applied value(s): 7 |
| > Pixel Representation | 0028,0103 | Applied value(s): 0x0000 (i.e. unsigned integer) |
| > Pixel Data | 7FE0,0010 | |

3.1.2.5.7 Printer SOP Class**Table 3-24: Printer SOP Class - N-GET**

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-------------------------|------------|-------------|
| Printer Status | 2110,0010 | |
| Printer Status Info | 2110,0020 | |
| Printer Name | 2110,0030 | |
| Manufacturer | 0008,0070 | |
| Manufacturer model name | 0008,1090 | |
| Device serial number | 0018,1000 | |
| Software Versions | 0018,1020 | |

Table 3-24: Printer SOP Class - N-GET (Continued)

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|-------------|
| Date last calibration | 0018,1200 | |

Table 3-25: Printer SOP Class - N-EVENT-REPORT^a

| <i>Attribute Name</i> | <i>Tag</i> | <i>Note</i> |
|-----------------------|------------|---|
| Printer Status Info | 2110,0020 | Conditionally sent by the Printer. The Integris 3DRA will react on notification, and will show corresponding messages on the UI for the events WARNING and FAILURE. |
| Film destination | 2000,0040 | |
| Printer Name | 2110,0030 | |

a. This Service Element is sent by the printer and interpreted by Integris 3DRA.

The Integris 3DRA does not send an attribute list to the printer, therefore the only attributes which are needed to be supported by the printer, are the mandatory attributes listed in Table 3-24, “Printer SOP Class - N-GET,” on page 18.

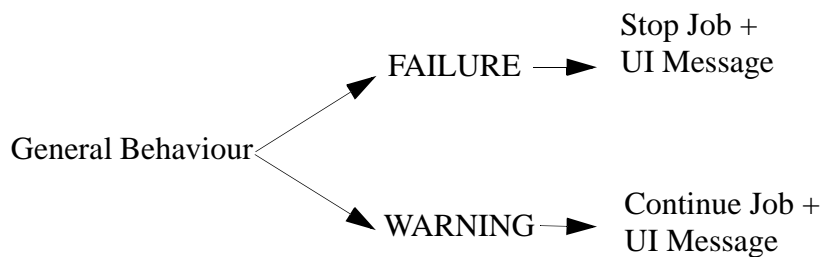


Figure 3-1: general behaviour for N_GET and N_EVENT_REPORT

3.1.3 Association Acceptance Policy

The Integris 3DRA Application Entity does not accept associations.

4 Communication Profiles

4.1 Supported Communication Stacks

The Integris 3DRA provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.2 TCP/IP Stack

The Integris 3DRA uses the TCP/IP program stack of Silicon Graphics Irix (SGI) for the image transport.

4.2.1 Physical Media Support

The Integris 3DRA supports Ethernet (ISO 8802-3), 10 and 100-BaseT for the Image and Printer Interface.

5 Extensions/Specialization/Privatization

6 Configurations.

6.1 AE Title/Presentation Address mapping

6.1.1 Local AE Titles and Presentation Addresses

The Integris 3DRA AE titles are configurable the default values are:

- Import Provider 3DRAimport
- Remote Print 3DRAprint
- Remote Store SC 3DRAexport
- Remote Store Reconstructed X-ray SC 3DRAexportvol
- Echo 3DRAecho

6.1.2 Remote AE Titles and Presentation Addresses

For remote applications that act as Service Class Provider the following additional information must be provided:

- The host name on which the application resides, is configurable, Section 6.2

6.2 Configurable parameters.

- IP adress.
- The port number

7 Support of Extended Character Set

The Integris 3DRA supports Extended Character Set “ISO_IR 100” which is the Latin alphabet No 1, supplementary set.