

SIDICOM PS

(SIDEXIS DICOM Print Service)

DICOM Conformance Statement



V.2.1

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for product version from 2.1 onwards

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History

Release	Date	Author	Review	Comment
2.0	07/21/2009	U. Meng	J. Zimmermann	-
2.1	10/01/2014	J. Zimmermann	U. Meng	-

0 Introduction

0.1 Purpose

This document refers to the DICOM functionality of the SIDEXIS XG PlugIn "SIDICOM PS" version 2.1 or higher.

This document is written according to part PS 3.2 of the DICOM standard [1].

"SIDICOM PS" is an interface between the SIDEXIS XG software and a DICOM Printer. The PlugIn is fully integrated into SIDEXIS. It enhances SIDEXIS with the possibility to print images and reports on a DICOM greyscale printer. Only one image or one report at a time can be printed to a film.

Furthermore SIDICOM PS supports the C-Echo service as an SCU for administration purposes.

0.2 Scope

This Conformance Statement refers to the Sirona X-Ray products using SIDEXIS and SIDICOM PS.

0.2.1 System requirements

- SIDEXIS XG version see ReadMe file, [ReadMe.html](#)
- Supported operating systems see ReadMe file, [ReadMe.html](#)

0.3 Definitions, Abbreviations

ACR	American College of Radiology
AE	DICOM Application Entity
DICOM	Digital Imaging and Communication in Medicine
IOD	DICOM Information Object Definition
NEMA	National Electrical Manufacturers Association
SIDEXIS	<i>Sirona DEntal X-ray and Imaging System</i>
SOP	DICOM Service-Object Pair
UID	Unique Identifier, string unique in the whole network

0.4 References

- [1] Digital Imaging and Communication in Medicine (DICOM) 3.0, NEMA PS 3.1-15, 2011

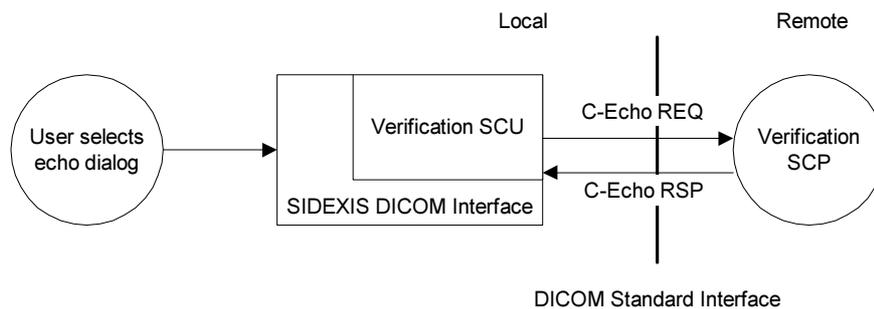
1 Implementation Model

1.1 Verification

1.1.1 Application Data Flow Diagram

The Verification service class defines an application-level class of service which allows the operator to verify the ability of an application on a remote node to respond to DICOM messages.

In SIDICOM WLS the Verification service is totally integrated to act as SCU with all possible DICOM partners. There is an easy user interface to test the configured partners, Modality Worklist SCP, PPS SCP and C-Store SCP. The SCP will answer this response with C-Echo replies.



1.1.2 Functional Definitions of AE's

SIDICOM PS opens an association to an application on the remote node and sends a Verification message (C-Echo Request) to verify that the remote application can respond (C-Echo Response) to DICOM messages.

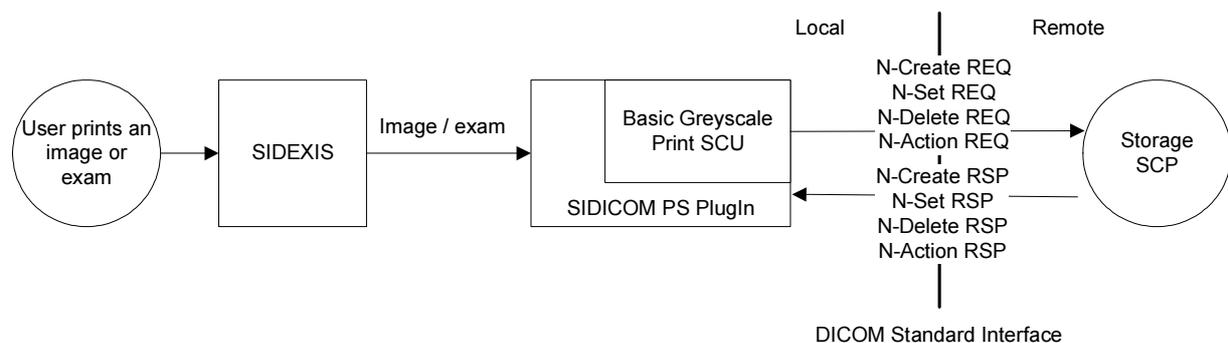
1.1.3 Sequencing of Real-World Activities

The user pushes the "Test DICOM Connection" button from the configuration dialog of SIDICOM PS for the currently selected printer. The result gets displayed in a message box.

1.2 Print

1.2.1 Application Data Flow Diagram

SIDICOM PS receives images, exams and related patient data from the SIDEXIS application via the PlugIn interface of SIDEXIS, converts them into DICOM Basic Greyscale Print objects and manages to print them on the connected DICOM Printer.



1.2.2 Functional Definitions of AE's

SIDICOM PS entity acts as a Service Class User (SCU) for Basic Greyscale Print Service Class.

1.2.3 Sequencing of Real-World Activities

For sending images, exams and patient data from SIDEXIS to a DICOM Printer the user needs to activate a DICOM Print command from within SIDEXIS.

There are different send commands within SIDEXIS. These commands can be reached by menu or you can place them as buttons in the SIDEXIS toolbars (see SIDEXIS manual):

SIDEXIS Command	Description
Exam > Print > Print on DICOM printer	Print the complete currently active exam / currently active page of a report by using its layout, with or without overlays
Exam > Print > DICOM exam print preview	Same as above but with a dialog showing a print preview.
Image > Print > Print on DICOM printer	Print the currently active image 1:1 or fit to page with or without overlays
Image > Print > DICOM image print preview	Same as above but with a dialog showing a print preview.

SIDICOM PS will obtain the data from SIDEXIS and convert them into a DICOM V3.0 Basic Greyscale image box.

Then SIDICOM PS associates a connection by defining a Basic Film Session and sends the image box to a DICOM V3.0 Basic Greyscale Printer. It automatically feeds back a successful send process or errors via the SIDICOM PS Queue traybar application.

2 AE Specifications

2.1 SIDICOM PS Specification

The SIDICOM PS Application Entity provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

SOP Class Name	SOP Class UID
Verification Service Class	1.2.840.10008.1.1
Basic Greyscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
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 Grey Image Box SOP Class	1.2.840.10008.5.1.1.4
Printer SOP Class	1.2.840.10008.5.1.1.16

2.1.1 Association Establishment Policies

2.1.1.1 General

The configuration of SIDICOM PS defines the Application Entity Titles, the port number, the host name or net address of one or more DICOM Printers with one or more film sheets. There is a DICOM Printer Wizard for a fast and easy configuration containing a lot of broadly available DICOM printers of different manufacturers.

The own Application Entity Title of SIDICOM PS can be configured, too (Default = "SIDICOMPS").

2.1.1.2 Number of Associations

SIDICOM PS can only attempt one association for each service establishment at a time.

2.1.1.3 Asynchronous Nature

SIDICOM PS does not support asynchronous communication (multiple outstanding transactions over a single association).

2.1.1.4 Proposed Presentation Context to a Grey Print Server

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification Service Class	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Basic Grey Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

2.1.1.4.1 SOP Specific Conformance to Basic Grey Print Management Meta SOP Class

The Printing AE provides Standard Conformance to the Basic Grey Print Management Meta SOP Class as an SCU. **This implies** standard conformance for the

- Basic Film Session SOP Class,
- Basic Film Box SOP Class,
- Basic Greyscale Image Box SOP Class,

- Printer SOP Class.

Each of these SOP classes are described in the paragraphs to follow.

2.1.1.4.2 SOP Specific Conformance to Basic Film Session SOP Class

DICOM specific usage: M = mandatory, U = User option

Supported DIMSE Services

Name	Usage	Description
N-Create	M	Creates the film session
N-Set	U	Not used
N-Delete	U	Deletes the film session
N-Action	U	Not used

Supported SOP Class Elements

Name	Usage	Range	Description
Number of Copies	U	1..n	Number of requested copies of film
Print Priority	U	High Medium Low	Default is Medium
Medium Type	U	Blue Film Clear Film Current Paper	Range may be further restricted by printer
Film Destination	U	Magazine Processor BIN_1 BIN_2	Range may be further restricted by printer
Film Session Label	U	-	Not used
Memory Allocation	U	-	Not used

2.1.1.4.3 SOP Specific Conformance to Basic Film Box SOP Class

DICOM specific usage: M = mandatory, U = User option

Supported DIMSE Services

Name	Usage	Description
N-Create	M	Creates the film box
N-Set	U	Not used
N-Delete	U	Deletes the film box, used after each film is printed
N-Action	M	Print, sent after each filling of a film box

Supported SOP Class Elements

Name	Usage	Range	Description
Image Display Format	M	STANDARD \ 1,1	SIDICOM PS always uses a 1:1 layout, multiple image reports are rendered on SIDEXIS side
Referenced Film Session Sequence	M		Used
> Referenced SOP Class UID	M	1.2.840.10008.5.1.1.1	Each Session SOP Class UID
> Referenced SOP Instance UID	M		Referenced Film Session SOP
Film Orientation	U	PORTRAIT, LANDSCAPE	Only one, depending on the configuration of the printer matrix, SIDICOM PS supports best fit auto-rotation
Film Size ID	U	8INX10IN 10INX12IN 10INX14IN 11INX14IN 14INX14IN 14INX17IN 24CMX24CM 24CMX30CM 26CMX36CM 35CMX43CM	Range may be further restricted by printer on the one hand and can basically be extended by manual configuration on the other hand
Magnification Type	U	NONE	
Max Density	U	Limited by printer	Default, not used
Configuration Information	U	-	Not used
Annotation Display Format Id	U	-	Not used
Smoothing Type	U	NONE	
Border Density	U		Not used
Empty Image Density	U	Limited by printer	Default, not used

Name	Usage	Range	Description
Min Density	U	Limited by printer	Default, not used

2.1.1.4.4 SOP Specific Conformance to Basic Greyscale Image Box SOP Class

Supported DIMSE Services

Name	Usage	Description
N-Set	M	An image box instance is created by the SCP for each potential image of the film box, only the instance which will actually contain images will be updated with the N-Set message

Supported SOP Class Elements

Name	Usage	Range	Description
Image Position	M	1	Used
Preformatted Greyscale Image Sequence	M		Used
> Samples/pixel	M	1	Used
> Photometric Interpretation	M	Monochrome 2	0...255 or 0...4095, limited by printer
> Rows	M	Fix Value	Configured printer matrix rows
> Columns	M	Fix Value	Configured printer matrix columns
> Pixel Aspect Ratio	M	Row/column	Row/column
> Bits Allocated	M	8 or 16	Limited by printer
> Bits stored	M	8-16	Limited by printer
> High bit	M	7-15	Limited by printer
> Pixel	M	0 or 1	Unsigned or signed pixel data
> Representation		0	Limited by printer
> Pixel Data	M		Grey pixel data
Polarity	U		Not used
Referenced Overlay Sequence	U		Not used
> SOP Class UID	U		Not used
> SOP Instance UID	U		Not used
Magnification Type	U		Not used
Smoothing Type	U		Not used
Requested Image Size	U		Limited by printer

2.1.1.4.5 SOP Specific Conformance to Printer SOP Class

Supported SOP Class Elements

Name	Usage	Description
N-Event Report	M	Handled but sometimes ignored
N-Get	U	May be issued by this device at any time to get printer status