

**DICOM Conformance Statement**

**Simpleware ScanIP**

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## 1. Conformance Statement Overview

Simpleware ScanIP provides an image processing software environment for converting 3D scan data (MRI, CT, micro-CT, FIB-SEM...) into computational models. The application supports searching for and loading DICOM images from a local file system or remote file server. Single-frame grayscale image files may also be loaded and displayed.

Table 1-1 Network Services

SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<b>Transfer</b>		
CT Image Storage	Yes	No
Enhanced CT Image Storage	Yes	No
MR Image Storage	Yes	No
Enhanced MR Image Storage	Yes	No
Secondary Capture Image Storage	Yes	No
NM Image Storage	Yes	No
<b>Query/Retrieve</b>		
Study Root Query/Retrieve Information Model – FIND	Yes	No
Study Root Query/Retrieve Information Model – MOVE	Yes	No
Study Root Query/Retrieve Information Model – GET	Yes	No
Receipt of Images – STORE	No	Yes
<b>Verification</b>		
Verification – ECHO	Yes	No

Table 1-2 Media Services

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
<b>Compact Disk - Recordable</b>		
General Purpose CD-R	No	Yes
<b>DVD</b>		
General Purpose DVD-RAM	No	Yes
<b>USB</b>		
General Purpose USB Media Interchange	No	Yes

Table 1-3 Supported Image SOP Classes

Name	UID
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7
NM Image Storage	1.2.840.10008.5.1.4.1.1.20

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### **3. Introduction**

#### **3.2 Audience**

This document is written for people who need to understand what types of DICOM files and services Simpleware ScanIP is compatible with. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who must have a detailed understanding of the DICOM features of Simpleware ScanIP. This document contains some basic DICOM definitions so that any reader may understand how this product implements DICOM features. However, integrators are expected to fully understand all the DICOM terminology, how the tables in this document relate to the product's functionality, and how that functionality integrates with other devices that support compatible DICOM features.

#### **3.3 Remarks**

The scope of this DICOM Conformance Statement is to facilitate integration between Simpleware ScanIP and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard. DICOM by itself does not guarantee interoperability.

The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.

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

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

### 3.4 Terms and Definitions

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

Application Entity	A user or provider of one or more DICOM services. Simpleware ScanIP can act as an Application Entity.
File-Set Creator (FSC) File-Set Reader (FSR) File-Set Updater (FSU)	A creator/reader/updater of DICOMDIR and DICOM files.
Information Object Definition (IOD)	An object-oriented abstract data model used to define the structure of specific types of DICOM files, for example, the structure of a DICOM file containing an MRI image.
PACS server	A Picture archiving and communication system server used for the storage and retrieval of DICOM images.
Service Class User (SCU)	An Application Entity that uses a service (a client).
Service Class Provider (SCP)	An Application Entity which provides a service (a server).
Service/Object Pair Class (SOP Class)	An IOD and the operations that are applicable to it.
Service/Object Pair Instance (SOP Instance)	An instance of an IOD pertaining to a SOP Class, for example, a specific MRI image.

### 3.5 Basics of DICOM Communication

This section describes terminology used in this Conformance Statement for the non-specialist. The key terms used in the Conformance Statement are highlighted in italics below. This section is not a substitute for training about DICOM, and it makes many simplifications about the meanings of DICOM terms.

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

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

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

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

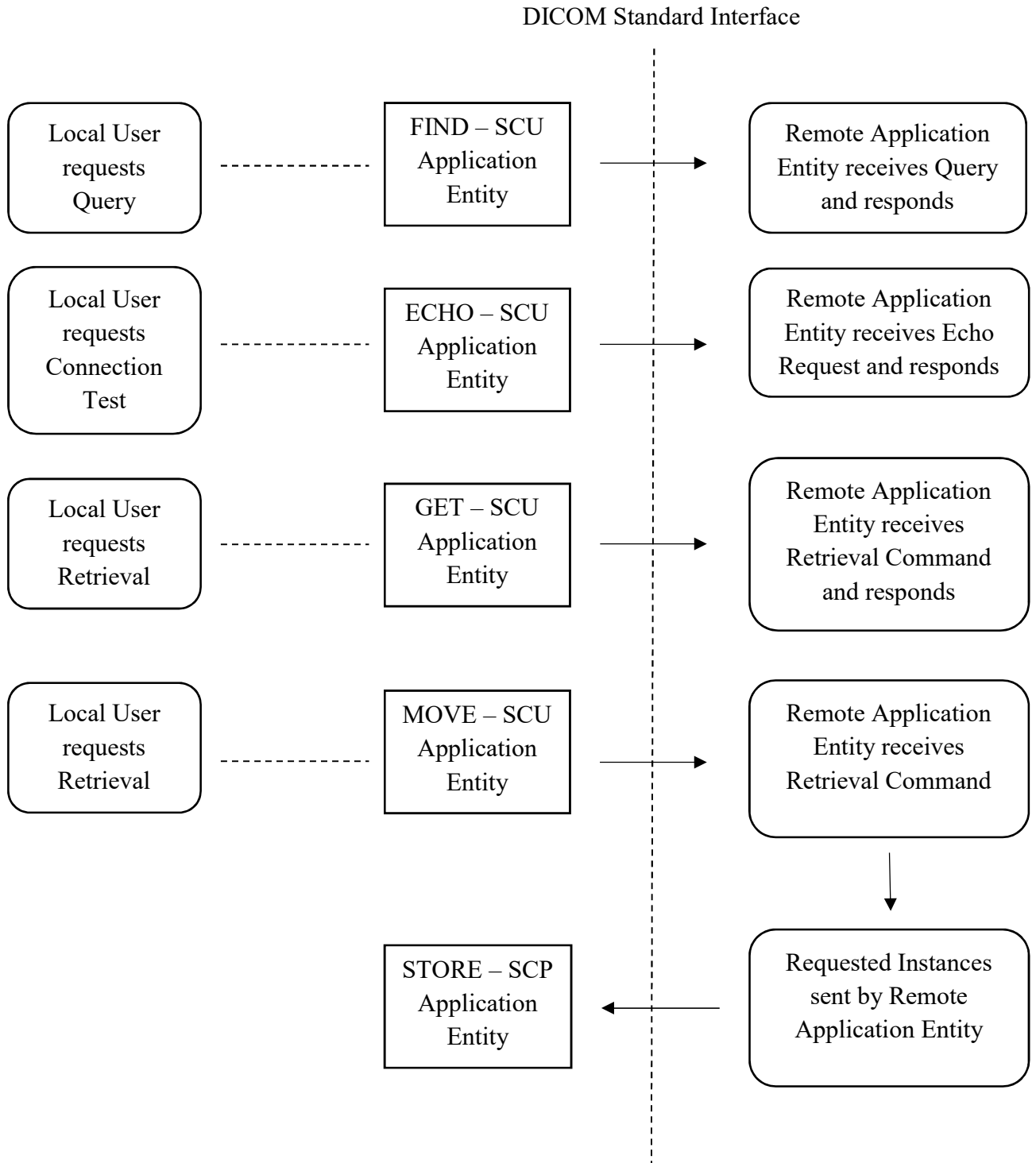
The Application Entities, having negotiated the Association parameters, may now commence exchanging data. Common data exchanges include queries for worklists and lists of stored images, transfer of image objects and analyses (structured reports), and sending images to film printers. Each exchangeable unit of data is formatted by the sender in accordance with the appropriate *Information Object Definition*, and sent using the negotiated Transfer Syntax. There is a Default Transfer Syntax that all systems must accept, but it may not be the most efficient for some use cases. Each transfer is explicitly acknowledged by the receiver with a *Response Status* indicating success, failure, or that query or retrieve operations are still in process.

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

## **4. Networking**

### **4.1 Implementation Model**

### 4.1.1 Application Data Flow Diagram



Simpleware ScanIP is a single application that provides both a user interface and network communication (spawning additional threads as necessary to handle incoming connections), as well as media support.

Conceptually the network services may be modelled as the following separate AEs, though in fact all the AEs share a single (configurable) AE Title:

- FIND – SCU, which sends queries and listens for a response.
- ECHO – SCU, which sends echo requests and listens for a response.
- GET – SCU, which retrieves studies to a temporary operating system directory.
- MOVE – SCU, which requests the transfer of studies and waits for the remote system to initiate the transfer.
- STORE – SCP, which accepts studies, as requested by MOVE – SCU, and stores them in a temporary operating system directory.

## **4.1.2 Functional Definitions of AEs**

### **4.1.2.1 FIND – SCU**

FIND – SCU is activated through the user interface when the user initiates a search in the PACS import wizard. Search terms include Modalities, Study date (range) and a free-form text field for matches to Patient Name, Patient ID, Accession Number or Study Description.

### **4.1.2.2 ECHO – SCU**

ECHO – SCU is activated by the user when they want to test a connection to a PACS server.

### **4.1.2.3 GET – SCU**

GET – SCU is activated when the user selects a study to download (previously identified by FIND – SCU) from a PACS server configured to use the C-GET protocol.

### **4.1.2.4 MOVE – SCU**

MOVE – SCU is activated when the user selects a study to download (previously identified by FIND – SCU) from a PACS server configured to use the C-MOVE protocol.

### **4.1.2.5 STORE – SCP**

STORE – SCP is activated when a remote server initiates the transfer of a study via the C-MOVE protocol in response to a request made by MOVE – SCU.

### 4.1.3 Sequencing of Real-World Activities

All activities are sequentially initiated in the user interface, and another activity may not be initiated until the prior activity has completed.

## 4.2 AE Specifications

### 4.2.1 FIND – SCU

#### 4.2.1.1 SOP Classes

This Application Entity provides Standard Conformance to the following SOP Class:

SOP Class Name	SOP Class UID	SCU	SCP
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No

#### 4.2.1.2 Association Policies

##### 4.2.1.2.1 General

FIND-SCU initiates but never accepts associations.

##### 4.2.1.2.2 Number of Associations

Number of Associations as an Association Initiator for FIND – SCU

Maximum number of simultaneous associations	1
---	---

##### 4.2.1.2.3 Asynchronous Nature

FIND-SCU will only allow a single outstanding operation on an Association. Therefore, FIND-SCU will not perform asynchronous operations window negotiation.

#### 4.2.1.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.7230010.3.0.3.6.3
Implementation Version Name	OFFIS_DCMTK_363

#### 4.2.1.3 Association Initiation Policy

FIND-SCU attempts to initiate a new association when the user performs the query action from the user interface. If this involves recursive queries for lower query levels in the hierarchy, these will be performed on the same association.

##### 4.2.1.3.1 Activity - Query Remote AE

##### 4.2.1.3.1.1 Description and Sequencing of Activities

A single attempt will be made to query the remote AE. If the query fails, for whatever reason, no retry will be performed.

##### 4.2.1.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	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		

### 4.2.1.3.1.3 SOP Specific Conformance

#### 4.2.1.3.1.3.1 SOP Specific Conformance to C-FIND SOP Classes

FIND-SCU provides standard conformance to the supported C-FIND SOP Classes.

Only a single information model, Study Root, is supported.

All queries are initiated at the highest level of the information model (the STUDY level), and then for each response received, repeated at the next lower level (the SERIES level).

The following identifiers are supported in FIND – SCU queries.

Name	Tag	Types of Matching
Query Retrieve Level	(0008,0052)	“STUDY” or “SERIES”
<b>STUDY Level</b>		
Study Instance UID	(0020,000D)	Empty. For SCP to populate.
Patient’s Birth Date	(0010, 0030)	Empty. For SCP to populate.
Study Time	(0008, 0030)	Empty. For SCP to populate.
Study Date	(0008,0020)	Date range
Patient's Name	(0010,0010)	Free-form string with wildcards
Patient's ID	(0010,0020)	Free-form string with wildcards
Accession Number	(0008,0050)	Free-form string with wildcards
Study Description	(0008,1030)	Free-form string with wildcards
Modalities in Study	(0008,0061)	If all available modalities are checked, this is left empty; else it contains the required modalities as a string. Modalities are separated with a ‘\’ character.

<b>SERIES Level</b>		
Study Instance UID	(0020,000D)	A series is matched if it belongs to the queried study.
Series Instance UID	(0020, 000E)	Empty. For SCP to populate.
Series Date	(0008, 0021)	Empty. For SCP to populate.
Series Time	(0008, 0031)	Empty. For SCP to populate.
Series Description	(0008, 103E)	Empty. For SCP to populate.
Number of Series Related Instances	(0020, 1209)	Empty. For SCP to populate.
Modality	(0008,0060)	Empty. For SCP to populate. If the returned value is not a supported modality, then this field will appear blank in the user interface.

#### 4.2.1.3.1.3.2 Supported Modalities

The following modalities are supported for search purposes:

CT	Computed tomography
MR	Magnetic resonance
CR	Computed radiography
DX	Digital radiography
ES	Endoscopy
IO	Intra-oral radiography
MG	Mammography
NM	Nuclear medicine
OCT	Optical coherence tomography
PT	Positron emission tomography

PX	Panoramic X-ray
RF	Radio fluoroscopy
RG	Radiographic imaging
SR	SR document
US	Ultrasound
XA	X-ray angiography
XC	External-camera photography
OT	Other

#### 4.2.2 ECHO – SCU

##### 4.2.2.1 SOP Classes

This Application Entity provides Standard Conformance to the following SOP Class:

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	No

##### 4.2.2.2 Association Policies

###### 4.2.2.2.1 General

ECHO-SCU initiates but never accepts associations.

###### 4.2.2.2.2 Number of Associations

Number of Associations as an Association Initiator for ECHO – SCU

Maximum number of simultaneous associations	1
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#### 4.2.2.2.3 Asynchronous Nature

ECHO-SCU will only allow a single outstanding operation on an Association. Therefore, ECHO-SCU will not perform asynchronous operations window negotiation.

#### 4.2.2.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.7230010.3.0.3.6.3
Implementation Version Name	OFFIS_DCMTK_363

#### 4.2.2.3 Association Initiation Policy

ECHO-SCU attempts to initiate a new association when the user requests a connection test from the user interface.

##### 4.2.2.3.1 Activity – Test connection with Remote AE

###### 4.2.2.3.1.1 Description and Sequencing of Activities

A single attempt will be made to ‘ping’ the remote AE. If the query fails, for whatever reason, no retry will be performed.

###### 4.2.2.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification	1.2.840.10008.1.1	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		

### 4.2.2.3.1.3 SOP Specific Conformance

#### 4.2.2.3.1.3.1 SOP Specific Conformance to C-FIND SOP Classes

ECHO – SCU provides standard conformance to the Verification Service Class.

### 4.2.3 GET – SCU

#### 4.2.3.1 SOP Classes

GET-SCU provide Standard Conformance to the following SOP Class:

*Table 4.2.3.1-1 SOP Classes supported by GET – SCU*

Name	UID	SCU	SCP
Study Root Query/Retrieve Information Model - GET	1.2.840.10008.5.1.4.1.2.2.3	Yes	No
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	No
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	Yes	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	No
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	Yes	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	No

#### 4.2.3.2 Association Policies

##### 4.2.3.2.1 General

GET-SCU initiates but never accepts associations.

##### 4.2.3.2.2 Number of Associations

Maximum number of simultaneous associations	1
---	---

#### 4.2.3.2.3 Asynchronous Nature

GET-SCU will only allow a single outstanding operation on an Association. Therefore, GET-SCU will not perform asynchronous operations window negotiation.

#### 4.2.3.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.7230010.3.0.3.6.3
Implementation Version Name	OFFIS_DCMTK_363

#### 4.2.3.3 Association Initiation Policy

GET – SCU attempts to initiate a new association when the user performs the retrieve action from the user interface.

##### 4.2.3.3.1 Activity – Retrieve files from Remote AE

###### 4.2.3.3.1.1 Description and Sequencing of Activities

For the study selected from the user interface to be retrieved, a single attempt will be made to retrieve it from the remote AE in question. If the retrieve fails, for whatever reason, no retry will be performed. As studies are received they are copied to a temporary operating system directory. Temporary files are removed once relevant data has been extracted into the Simpleware ScanIP propriety format, or if the operation is cancelled.

#### 4.2.3.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Table 4.2.3.1-1	See Table 4.2.3.1-1	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		

#### 4.2.3.3.1.3 SOP Specific Conformance

##### 4.2.3.3.1.3.1 SOP Specific Conformance to for SOP Classes

GET – SCU provides standard conformance to the supported C-GET SOP Classes.

Only a single information model, Study Root, is supported.

A retrieval will be performed at the STUDY level.

##### 4.2.3.4 Association Acceptance Policy

GET-SCU does not accept associations.

#### 4.2.4 MOVE – SCU

#### 4.2.4.1 SOP Classes

MOVE-SCU provide Standard Conformance to the following SOP Class:

*Table 4.2.4.1-1 SOP Classes supported by MOVE – SCU*

Name	UID	SCU	SCP
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

#### 4.2.4.2 Association Policies

##### 4.2.4.2.1 General

MOVE-SCU initiates but never accepts associations.

##### 4.2.4.2.2 Number of Associations

Maximum number of simultaneous associations	1
---	---

##### 4.2.4.2.3 Asynchronous Nature

MOVE-SCU will only allow a single outstanding operation on an Association. Therefore, MOVE-SCU will not perform asynchronous operations window negotiation.

##### 4.2.4.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.7230010.3.0.3.6.3
Implementation Version Name	OFFIS_DCMTK_363

#### 4.2.4.3 Association Initiation Policy

MOVE – SCU attempts to initiate a new association when the user requests the study delivery from the user interface.

#### 4.2.4.3.1 Activity – Request file delivery from AE

##### 4.2.4.3.1.1 Description and Sequencing of Activities

For the study selected from the user interface to be delivered, a single attempt will be made to request it from the remote AE in question. If the request fails, for whatever reason, no retry will be performed.

##### 4.2.4.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	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	1.2.840.1008.1.2.2		

##### 4.2.4.3.1.3 SOP Specific Conformance

###### 4.2.4.3.1.3.1 SOP Specific Conformance to for SOP Classes

MOVE – SCU provides standard conformance to the supported C-MOVE SOP Classes.

Only a single information model, Study Root, is supported.

A delivery request will be performed at the STUDY level.

##### 4.2.4.4 Association Acceptance Policy

MOVE-SCU does not accept associations.

## 4.2.5 STORE – SCP

### 4.2.5.1 SOP Classes

STORE-SCP provide Standard Conformance to the following SOP Classes:

*Table 4.2.5.1-1 SOP Classes supported by RECEIVE – SCP*

<b>Name</b>	<b>UID</b>	<b>SCU</b>	<b>SCP</b>
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	Yes
Enhanced CT Image Storage	1.2.840.10008.5.1.4.1.1.2.1	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No	Yes
Enhanced MR Image Storage	1.2.840.10008.5.1.4.1.1.4.1	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
NM Image Storage	1.2.840.10008.5.1.4.1.1.20	No	Yes

### 4.2.5.2 Association Policies

#### 4.2.5.2.1 General

STORE-SCP accepts but never initiates associations.

#### 4.2.5.2.2 Number of Associations

Maximum number of simultaneous associations	1
---	---

#### 4.2.5.2.3 Asynchronous Nature

STORE-SCP will only allow a single outstanding operation on an Association. Therefore, STORE-SCP will not perform asynchronous operations window negotiation.

#### 4.2.5.2.4 Implementation Identifying Information

Implementation Class UID	1.2.276.0.7230010.3.0.3.6.3
Implementation Version Name	OFFIS_DCMTK_363

#### 4.2.5.3 Association Initiation Policy

STORE-SCP does not initiate associations.

##### 4.2.5.3.1 Activity – Accept file from Remote AE

###### 4.2.5.3.1.1 Description and Sequencing of Activities

As instances are received they are copied to a temporary operating system directory. Temporary files are removed once relevant data has been extracted into the Simpleware ScanIP propriety format, or if the operation is cancelled.

###### 4.2.5.3.1.2 Proposed Presentation Contexts

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
See Table 4.2.5.1-1	See Table 4.2.5.1-1	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	1.2.840.10008.1.2.1		

###### 4.2.5.3.1.3 SOP Specific Conformance

###### 4.2.5.3.1.3.1 SOP Specific Conformance to C-FIND SOP Classes

STORE-SCP provides standard conformance to the Storage Service Class.

## 4.3 Network Interfaces

### 4.3.1 Physical Network Interface

The application is indifferent to the physical medium over which TCP/IP executes, which is dependent on the underlying operating system and hardware.

### 4.3.2 Additional Protocols

When host names rather than IP addresses are used in the configuration properties to specify presentation addresses for remote AEs, the application is dependent on the name resolution mechanism of the underlying operating system.

### 4.3.3 IPv4 and IPv6 Support

This product supports IPv4 only.

## 4.4 Configuration

All configuration is performed in the PACS section of the Simpleware ScanIP Preferences dialog. Refer to the Simpleware ScanIP built-in help system for details.

### 4.4.1 AE Title/Presentation Address Mapping

The AE Title of the local application is configurable in the Simpleware ScanIP preferences dialog and is shared by all the AEs listed in section 4.1 Implementation Model. The mapping of the logical name by which remote AEs are described in the user interface to presentation address (hostname or IP address and port number) is configurable in the preferences dialog.

### 4.4.2 Parameters

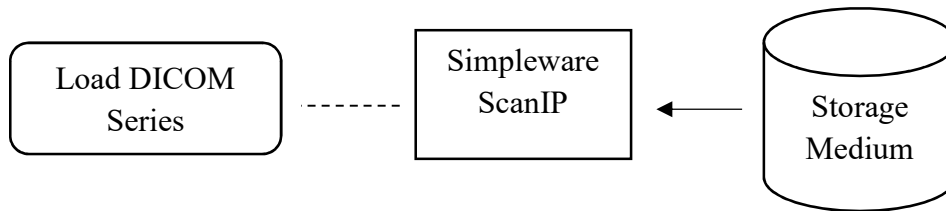
Parameter	Configurable (Yes/No)	Default Value
<b>General Parameters</b>		
PDU Size	No	16kB

Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	30 seconds
General DIMSE level time-out values	No	None (0)
Time-out waiting for response to TCP/IP connect() request. (Low-level timeout)	No	None
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	None
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	None
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	None
<b>AE Specific Parameters (all AEs)</b>		
Size constraint in maximum object size	No	None
Maximum PDU size the AE can receive	No	16kB
Maximum PDU size the AE can send	No	16kB
AE specific DIMSE level time-out values	No	None (0)
Number of simultaneous Associations by Service and/or SOP Class	No	1
SOP Class support	No	All supported SOP Classes always proposed and accepted
Transfer Syntax support	No	All supported Transfer Syntaxes always proposed and accepted

## 5. Media Interchange

### 5.1 Implementation Model

#### 5.1.1 Application Data Flow Diagram



#### 5.1.2 Functional Definitions of AEs

Simpleware ScanIP provides media support as a File Set Reader. The user may select a series of single-frame image files from a directory, or a multi-frame image file, to be loaded for display and further processing. The reading and display of the contents of DICOMDIR files is supported to help identify series for loading.

#### 5.1.3 Sequencing of Real World Activities

All FSR activities are sequentially initiated in the user interface or through commands in a script. Another activity may not be initiated until the prior activity has completed.

## 5.2 AE Specifications

### 5.2.1 Simpleware ScanIP - Specification

Table 5.2-1. Application Profiles, Activities, and Roles for Simpleware ScanIP

Application Profiles Supported	Real World Activity	Role
STD-GEN-CD	Load directory or file	FSR
STD-GEN-DVD-RAM	Load directory or file	FSR
STD-CTMR-CD	Load directory or file	FSR
STD-CTMR-DVD	Load directory or file	FSR

### **5.2.1.1 File Meta Information for Simpleware ScanIP**

Not applicable as Simpleware ScanIP is not a FSC or FSU.

### **5.2.1.2 Real World Activities**

#### **5.2.1.2.1 Load directory or file**

When the user selects the DICOM import operation, a wizard will be displayed allowing an operating system directory or a DICOMDIR file to be selected. Once selected, a browser will be displayed from which a DICOM series may be chosen and in turn imported into the software. The user can examine relevant DICOM elements prior to import.

## **5.3 Augmented and Private Profiles**

### **5.3.1 Augmented Profiles**

None.

### **5.3.2 Private Profiles**

None.

## **5.4 Media Configuration**

None.

## **6. Support of Character Sets**

### **6.1 Overview**

Support extends to correctly decoding and displaying the correct symbols in the supported character sets for all strings read from DICOM files.

No specific support for sorting of strings other than in the default character set is provided in the browsers.

## 6.1 Character Sets

Simpleware ScanIP supports the following character sets:

<b>Character Set Description</b>	<b>Defined Term</b>
Default repertoire	n/a
Latin alphabet No. 1	ISO_IR 100
Latin alphabet No. 2	ISO_IR 101
Latin alphabet No. 3	ISO_IR 109
Latin alphabet No. 4	ISO_IR 110
Cyrillic	ISO_IR 144
Arabic	ISO_IR 127
Greek	ISO_IR 126
Hebrew	ISO_IR 138
Latin alphabet No. 5	ISO_IR 148
Japanese	ISO_IR 13
Thai	ISO_IR 166
Japanese (JIS X 0208: Kanji)	ISO 2022 IR 87
Japanese (JIS X 0212: Supplementary Kanji set)	ISO 2022 IR 159
Korean	ISO 2022 IR 149
Simplified Chinese	ISO 2022 IR 58
Unicode in UTF-8	ISO_IR 192
GB18030	GB18030
GBK	GBK

Multiple character sets specified for a single string (ISO 2022) are not supported, when this occurs or an otherwise unsupported character set is encountered, Simpleware ScanIP loads the raw bytes interpreting them using the operating system's locale.

## **7. Security**

### **7.1 Security Profiles**

None supported.

### **7.2 Association Level Security**

None supported.

### **7.3 Application Level Security**

None supported.

## **8. Annexes**

### **8.1 IOD Contents**

#### **8.1.1 Created SOP Instances**

None.

#### **8.1.2 Usage of Attributes From Received IODs**

No SOP Class specific fields are required.

Simpleware ScanIP makes use of the conventional identification attributes to distinguish patients, studies, series and instances. In particular, during import, if an operating system directory is chosen to be scanned for DICOM series, they are grouped by Series instance UID, Series Number, Sequence Name, Slice Thickness, Rows, Columns and Image Type. The operator may additionally specify Study Description, Series Description, Patient's Name, Protocol Name and Acquisition Number if the default grouping is not satisfactory.

#### **8.1.3 Attribute Mapping**

Not applicable.

#### **8.1.4 Coerced/Modified Fields**

No coercion is performed.

## **8.2 Data Dictionary of Private Attributes**

No private attributes are defined.

## **8.3 Coded Terminology and Templates**

Not applicable.

## **8.4 Grayscale Image Consistency**

Not applicable.

## **8.5 Standard Extended/Specialized/Private SOP Classes**

None

## **8.6 Private Transfer Syntaxes**

None.

**Regulatory Information:**

Simpleware ScanIP is intended for use as a software interface and image segmentation system for the transfer of imaging information from a medical scanner such as a CT scanner or a Magnetic Resonance Imaging scanner to an output file. It is also intended as pre-operative software for simulating/evaluating surgical treatment options. Simpleware ScanIP is not intended to be used for mammography imaging.

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