HEALTHCARE
DICOM Conformance Statement

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AGFA

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Revision Record

Revision	Date	Author	Reason for Change
1.0	29 March 30, 2005	Patricia Lang	Initial revision

1 INTRODUCTION

1.1 Purpose of this Document

This document is a DICOM Conformance Statement for the storage services of *Web1000*.

Web1000 is a service class provider for services for the storage and retrieval of images.

1.2 Sources for this Document

> ACR-NEMA Digital Imaging and Communications in Medicine (DICOM) V3.0. Current.

> Web1000 3.1 Software Design Description.

1.3 Acronyms and Abbreviations

The following acronyms and abbreviations are used in this document:

ACR	American College of Radiology
AE	Application Entity
DICOM	Digital Imaging and Communications in Medicine
NEMA	National Electrical Manufacturers Association
PDU	Protocol Data Unit
SCP	Service Class Provider
SCU	Service Class User
SOP	Service-Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol
UID	Unique Identifier
MWL	Modality Worklist
LUT	Look Up Table

2 IMPLEMENTATION MODEL

Web1000 is a web server that allows web users access to medical images. *Web1000* is a single application entity that stores images sent to it by service class users, and simplifies the images into a format that can be viewed in a web browser. It also is able to query service class providers based on several standard query models, and retrieve requested images from a service class provider to the local database, either by an automated mechanism, or manually by user interaction.

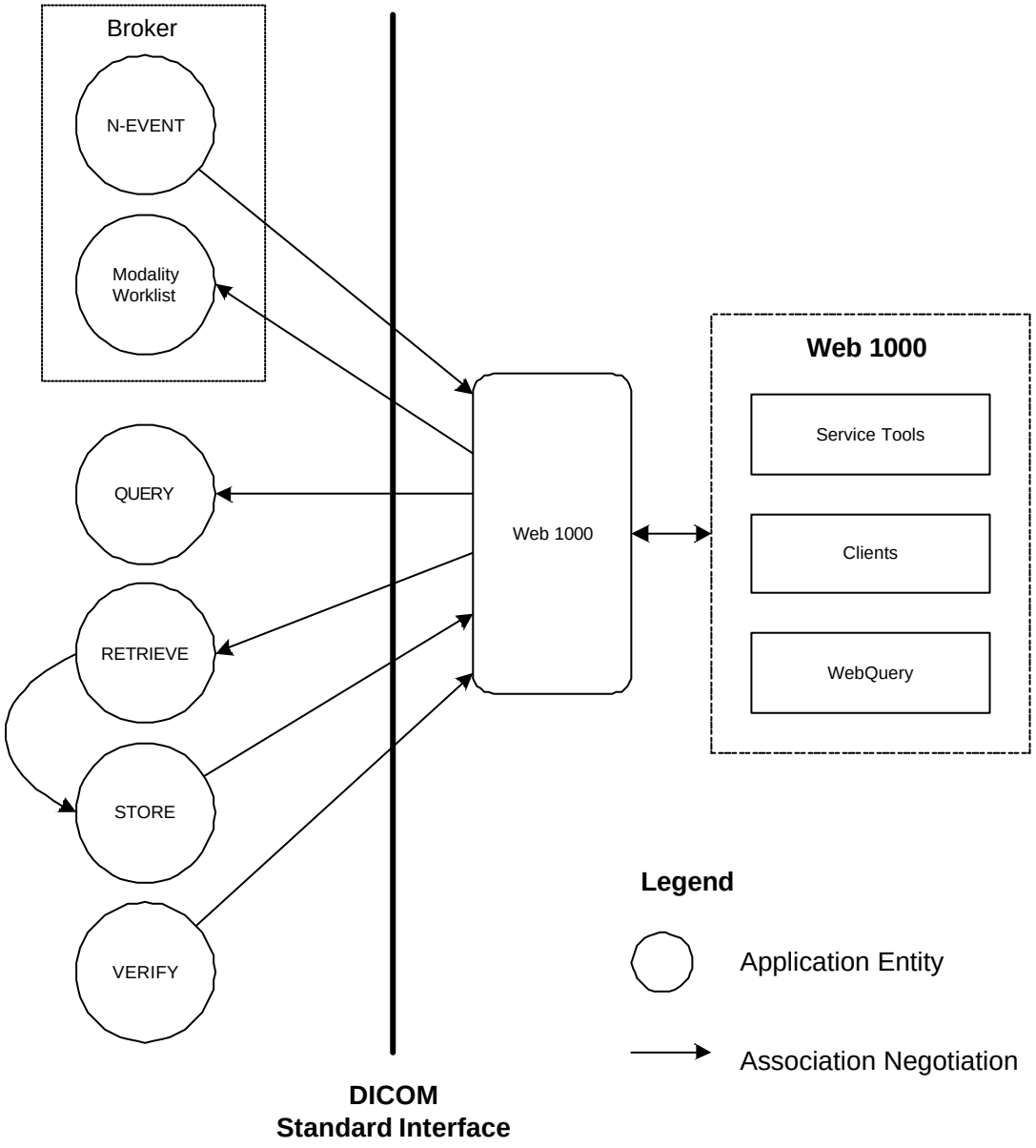

Figure 2.1 Application data flow diagram.

2.1 Functional Definition of Application Entities

2.1.1 Store Images

Web1000 stores a received image in its entirety, without change, in its internal data store. *Web1000* stores each image with the File Meta Information attached to it.

Web1000 extracts the query information with respect to the patient, study, series and image, and stores this information within its internal database.

2.1.2 Query to PACS Devices

Web1000 acts as a Service Class User of C-Find to query for studies stored on other PACS devices[1] based on a number of criteria.

Attribute	Allowed in local query	Allowed in remote PACS query
acession_number	Yes	Yes
referring_physician_name	Yes	Yes[2]
patient_name	Yes	Yes
patient_id	Yes	Yes
patient_sex	Yes	No
current_patient_location	Yes	No
modality	Yes	Yes
study_date	Yes	Yes
body_part	Yes	No
study_status_id	Yes	No
department	Yes	No
date range	Yes	Yes

Table 1: Attributes Used When Querying PACS Devices.

This type of query is initiated by the user. See the *Web1000* User and System Administration Manuals for more details. Other query constraints (such as patient location) may be specified in the *Web1000* client user interface, but these are ignored when querying a PACS device.

2.1.3 Retrieve Images from PACS Devices

Web1000 acts as a Service Class User of C-MOVE to retrieve images from a remote PACS device. It does so by using the results obtained from a C-FIND to request that the images be moved to Web1000 via C-MOVE.

2.1.4 Modality Work List Query to Broker Devices

[1] A PACS device is a DICOM device capable of storing images.
[2] This query may not be supported by all PACS devices. Check DICOM Conformance Statement for details. Unless otherwise stated only exact matches are supported.

Web1000 client users can query a Broker device directly in order to obtain a listing of studies that may not be available either in the local *Web1000* database, or on a remote PACS device. For example, users may wish to query for a list of studies that were not acquired digitally, i.e. images are available only on film. Once the study of interest has been located on the Broker, *Web1000* users can then query the Broker for a report for that study, even though no images are available for viewing.

The query constraints that can be applied when performing a MWL query to a Broker will be constrained by the query options available to the *Web1000* client user (see *Web1000* User Manual for a listing of available query constraints). Note that a referring physician constraint is ignored when performing a MWL query to a Broker.

2.1.5 Update Study Data

If study data change, Broker sends a STUDY_UPDATED N-Event-Report to the SCP and the SCP updates all of the study and patient level information for the study.

The N-Event-Report object is parsed to extract an event type attribute, which determines the type of information that has changed. The object is also parsed to obtain a study instance UID, which is used in a subsequent Modality Work List query to the Broker to obtain the updated study information.

2.1.6 Update Patient Data

If patient data change, Broker can signal *Web1000* by sending it a PATIENT_UPDATED N-Event-Report object to the SCP and the SCP updates all of the patient level information for all referenced studies. There is no need to perform a subsequent MWL query to the Broker, as is done in the study updated scenario, since all the patient information is included in the N-Event-Report object.

2.1.7 Update Report Status

If a report interpretation is recorded, transcribed or approved, Broker sends an INTERPRETATION_* N-Event-Report to the SCP and the SCP updates the reported status of the study as recorded in the database. This status is displayed graphically in the *Web1000* client GUI.

2.1.8 Perform HIS Verification

When images arrive at SCP, *Web1000* may use DICOM MWL to verify incoming demographics with the HIS/RIS. By far, the most common way this is done is by using the incoming patient_id and accession_number pair to query the HIS/RIS using DICOM WML to look for a match.

If *Web1000* finds one and only one match, then it will use the mappings defined in DICOM MWL to image mapping table (see Table 26 Appendix A) to modify the patient and study information contained in the incoming images. If *Web1000* does not find one and only one match, then it will mark the study as being unverified and the user must manually link the incoming study information to a MWL object at a later point in time using the Fixup tool in the Service Tools application.

If either the patient_id or the accession_number are not available and/or not reliable, then *Web1000* may use different query constraints to search for a match. It is strongly recommended that at least one key piece of patient information (patient id, patient surname) and one key piece of study information (accession number, study date/modality) is used to constrain the query. The constraints that are used for HIS/RIS verification are defined in the Source Manager of the Service Tools application (see *Web1000* System Administration Manual for more information).

3 AE SPECIFICATIONS

3.1 Web1000 Specifications

3.1.1 Verification as an SCU and SCP

Web1000 provides standard conformance to the following DICOM V3.0 SOP Class as an SCU and SCP.

SOP Class	SOP Class UID
Verification	1.2.840.10008.1.1

Table 2: Verification SOP Class.

3.1.2 Default Transfer Syntaxes

Web1000 supports the default transfer syntaxes displayed in Table 3.

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 3: Default Transfer Syntaxes.

3.1.3 Extended Transfer Syntaxes

Web1000 supports the extended transfer syntaxes displayed in Table 4 for the purpose of storage.

Transfer Syntax	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2
DICOM Explicit VR Little Endian	1.2.840.10008.1.2.1
DICOM Lossy JPEG 8 bit JPEG 1	1.2.840.10008.1.2.4.50
DICOM Lossy JPEG 12 bit JPEG 4	1.2.840.10008.1.2.4.51
DICOM Lossless Non-Hierarchical JPEG 14	1.2.840.10008.1.2.4.57
DICOM Lossless Non-Hierarchical, first-order prediction JPEG 14-1	1.2.840.10008.1.2.4.70
DICOM RLE Lossless	1.2.840.10008.1.2.5
DICOM Explicit VR Big Endia	1.2.840.10008.1.2

Table 4: Extended Transfer Syntaxes.

3.1.4 Storage as an SCP

Table 5 lists the SOP Classes that are supported by *Web1000* for storage services. In general, *Web1000* supports most image SOP classes recognized by DICOM, with the following exceptions:

> Standalone overlays or curves

> Standalone LUTs

SOP Class	SOP Class UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
Digital X-ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.1
Digital X-ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
Digital Mammography Image Storage - For Presentation[3]	1.2.840.10008.5.1.4.1.1.1.2
Digital Mammography Image Storage - For Processing[4]	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Intra-oral X-ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.3
Digital Intra-oral X-ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
US Multi-frame Image Storage (retired)	1.2.840.10008.5.1.4.1.1.3
US Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.5
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20
US Image Storage (retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
Secondary Capture Image Storage X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.7 1.2.840.10008.5.1.4.1.1.12.1
X-ray RadioFluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-ray Angiographic Bi-Plane Image Storage	1.2.840.10008.5.1.4.1.1.12.3
Visible Light Storage (retired)	1.2.840.10008.5.1.4.1.1..77.1
Visible Light Multi-frame Storage (retired)	1.2.840.10008.5.1.4.1.1.77.2
Visible Light Storage	1.2.840.10008.5.1.4.1.1.77.1.1
Visible Light Multi-frame Storage	1.2.840.10008.5.1.4.1.1.77.2.1
Visible Light Slide-Coordinates Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.3.1
Visible Light Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.4.1
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128
Standalone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129

Table 5: Storage SOP Classes.

3.1.5 Query/Retrieve as an SCU and SCP

Web1000 provides Standard Conformance to the following DICOM V3.0 Query/Retrieve SOP Classes as an SCU and SCP.

SOP Class	SOP Class UID
Patient Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.1.1
Patient Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.1.2
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2
Patient-Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.3.1

[3] This class is supported only for instances of the software where the digital mammography feature is enabled with a valid license key.
[4] This class is supported only for instances of the software where the digital mammography feature is enabled with a valid license key.

Patient-Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.3.2

Table 6: Query/Retrieve SOP Classes.

3.1.6 Modality Worklist Query as an SCU

Web1000 users can query a remote Broker device for studies that match certain query constraints. The list of constraints that users can specify when querying a Broker are limited by the capabilities of the *Web1000* client user interface, and include the following:

Query Constraint	Allowed in Local Query	Allowed in MWL Query
accession_number	Yes	Yes
referring_physician_name	Yes	Yes[5]
patient_name	Yes	Yes
patient_id	Yes	Yes
patient_sex	Yes	No
current_patient_location	Yes	No
modality	Yes	Yes
study_date	Yes	Yes
body_part	Yes	No
study_status_id	Yes	No
department	Yes	No
date range	Yes	Yes

Table 7: Attributes Allowed in Modality Worklist Query.

The full structure of the modality worklist response is shown in Table 26 (Appendix A), including the mapping of returned DICOM attributes to database tables.

Studies returned by this query can be selected by the user to retrieve reports using the SQL RIS interface on the Broker, or to retrieve images from a remote PACS device using C-MOVE. See the *Web1000* User Manual for more details.

3.1.7 Study Update as an SCU

Web1000 can be configured to listen for DICOM N-EVENT-REPORT events from a Broker in order to update its internal database of patient and study information. N-EVENT-REPORT messages must be sent with the SOP class listed below.

SOP Class	SOP Class UID
Private Detached Study Management	1.2.840.113532.3500.13

Table 8: Private Detached Study Management SOP Class.

When an N-Event-Report object is received with this SOP class, *Web1000* will parse the command object associated with the N-EVENT to obtain the event_type_id. The structure of the command object is shown below.

[5] This is a limitation of the Broker DICOM MWL interface.

Group Element Length	DICOM attribute	VR	VM	Sample value
0000 0000 4	group_length	UL	1	0x00000084 132
0000 0002 22	affected_sop_class_uid	UI	1	"1.2.840.113532.3500.13"
0000 0100 2	Command_field	US	1	0x0100 256
0000 0110 2	Message_id	US	1	0x0000 0
0000 0800 2	data_set_type	US	1	0x0100 256
0000 1000 54	affected_sop_instance_uid	UI	1	"1.3.46.670589.16.2.2.192.168.7.219.20000118.61505.1405"
0000 1002 2	event_type_id	US	1	0x0009 9

Table 9: DICOM N-EVENT-REPORT Command Object.

The event_type_id attribute is used to determine the type of event and subsequent response by the SCP, as summarized in the table below.

event_type_id	Interpretation
1	Study created
2	Study scheduled
3	Patient arrived
4	*Study started*[6]
5	*Study completed*[4]
6	*Study verified*[4]
7	Study read
8	*Study deleted*[4]
9	Study updated

Table 10: Study event_type_id Interpretation

The N-EVENT object received is a private composite study object, whose complete structure is shown in Table 27 (Appendix A). For this scenario, the only attribute of interest in this object is the study_instance_uid, since this attribute will be used to identify the study in a query back to the Broker.

Group Element Length	DICOM attribute	VR	VM	Sample value
…	…	…	…	…
0020 000d 54	study_instance_uid	UI	1	"1.3.46.670589.16.2.2.192.168.7.219.20000118.61505.1405"
…	…	…	…	…

Table 11: DICOM N-EVENT-REPORT Composite Study Object.

Once the study_instance_uid has been extracted from the composite study object, *Web1000* will then perform a C-FIND Modality Worklist query to the Broker using the study_instance_uid as the sole query constraint. After receiving the result of the query (there should be one and only one result), *Web1000* will update studies currently registered in the database using the fetched result. *Web1000* will re-verify all existing studies based on the DICOM MWL to image mapping table (Table 26 Appendix A). Essentially, this can be considered to be an automatic re-verification.

[6] These event_type_id's do not initiate any action by the SCP, and will return an error.

3.1.8 Patient Update as an SCU

Web1000 can be configured to listen for DICOM N-EVENT-REPORT events from a Broker in order to update its internal database of patient information. N-EVENT-REPORT messages must be sent with the SOP class listed below.

SOP Class	SOP Class UID
Private Detached Patient Management	1.2.840.113532.3500.10

Table 12: Private Detached Patient Management SOP Class.

When an N-Event-Report object is received with this SOP class, *Web1000* will parse the command object associated with the N-EVENT to obtain the event_type_id. The structure of the command object is shown in Table 9.

The event_type_id attribute is used to determine the type of event and subsequent response by the SCP, as summarized in the table below:

event_type_id	Interpretation
1	*Patient created*[7]
2	*Patient deleted*[5]
3	Patient updated

Table 13: Patient event_type_id Interpretation.

When *Web1000* gets a patient updated event, it searches for all studies within MVF which are referenced by the study sequence contained in the object. For each found study, *Web1000* updates the patient level information in the *Web1000* database using the patient information contained in the incoming event object. Attributes that may be updated by this process are:

> patient_id

> other_patient_ids

> patient_name

> patient_birth_date

> patient_sex

3.1.9 Report Interpretation Update as an SCU

Web1000 can be configured to listen for DICOM N-EVENT-REPORT events from a Broker in order to update the study status for the referenced study. N-EVENT-REPORT messages must be sent with the SOP class listed below.

SOP Class	SOP Class UID
Private Detached Interpretation Management	1.2.840.113532.3500.16

Table 14: Private Detached Interpretation Management SOP Class.

[7] These event_type_id's do not initiate any action by the SCP, and will return an error.

When an N-Event-Report object is received with this SOP class, *Web1000* will parse the command object associated with the N-EVENT to obtain the event_type_id. The structure of the command object is shown in Table 9.

The event_type_id attribute is used to determine the type of event and subsequent response by the SCP, as summarized in the table below:

event_type_id	Interpretation
1	*Interpretation created*[8]
2	Interpretation recorded
3	Interpretation transcribed
4	Interpretation approved
5	*Interpretation deleted*[6]
6	Interpretation updated

Table 15: Interpretation event_type_id Interpretation.

Depending on the event_type_id, the reported status field in the *Web1000* database will be set to one of 'D', 'r' or 'R' corresponding to recorded, transcribed and approved statuses, respectively. If the event_type_id returned is 6 (interpretation updated), the new status will be inferred from the current status. The *Web1000* client uses the contents of this field to display a representative icon in the study list that indicates the report status.

3.1.10 HIS Verify as an SCU

Web1000 can be configured to perform HIS verification on studies that are received by the SCP. After the association with the modality is closed, *Web1000* will perform a C-FIND Modality Worklist query to the Broker, using the study attributes defined in the Source Manager to identify the study.

If the study is found on the Broker, the MWL response is returned to *Web1000* with the updated study information. The attributes that are updated are summarized in Table 26 Appendix A.

3.2 Association Establishment Policies

3.2.1 General

The following Application Context Name will be proposed and recognized by *Web1000*:

> DICOM 3.0 Application Context **1.2.840.10008.4.1.1.1**

Web1000 contains no limitations for maximum PDU size. The default size is 100 000 bytes.

3.2.2 Number of Associations

[8] These event_type_id's do not initiate any action by the SCP, and will return an error.

The maximum number of simultaneous associations accepted by *Web1000* is configurable at run time, based on the system resources available. By default, the maximum number of associations is set at 32. There is no inherent limit to the number of associations other than limits imposed by the computer operating system.

3.2.3 Asynchronous Nature

Web1000 allows a single outstanding operation on any association. Therefore, *Web1000* does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

3.2.4 Implementation Identifying Information

Web1000 will respond with the following implementation identifying parameters:

> Implementation Class UID **1.2.124.113532.3510**

> Implementation Version Name

3.2.5 Called/Calling Titles

The default calling title that *Web1000* will use is the host name of the computer. This parameter can be configured using the Web1000 Service Tools. *Web1000* can be configured to validate the Called Title of the requesting SCU during association negotiation.

3.2.6 Association Acceptance Policy

3.2.6.1 Real World Activity - Verification

3.2.6.1.1 Associated Real World Activity - Verification

Web1000 will respond to **Verification** requests to provide an SCU with the ability to determine if *Web1000* is receiving DICOM requests.

3.2.6.1.2 Presentation Context Table - Verification

Web1000 will accept any of the Presentation Contexts listed in the table below for Verification.

SOP Class	Transfer Syntax	Role	Extended Negotiation
All from Table 2	All from Table 3	SCU	None

Table 16: Verification Presentation Contexts.

3.2.6.1.3 SOP Specific Conformance - Verification

Web1000 provides standard conformance to the DICOM **Verification** *Service Class. Web1000* returns one of the following status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description

Success	Success	0000		Operation performed properly.

Table 17: Verification Status Codes.

3.2.6.1.4 Presentation Context Acceptance Criterion - Verification

Web1000 will always accept a Presentation Context for the Verification SOP Class with the default DICOM transfer syntax listed in Table 16.

3.2.6.1.5 Transfer Syntax Selection Policies - Verification

Since no DICOM data object is associated with a **Verification** command, only the default DICOM transfer syntax is required/supported.

3.2.6.2 Real World Activity - Storage

3.2.6.2.1 Associated Real World Activity - Storage

Web1000 will store images that are sent to it from an *SCU*. Images are stored temporarily in the local cache. Image data in *Web1000* is considered inherently transient.

3.2.6.2.2 Presentation Context Table - Storage

Web1000 will accept any of the Presentation Contexts listed below for Storage.

SOP Class	Transfer Syntax	Role	Extended Negotiation
All from Table 3.4	All from Table 3.3	SCU	See Note below

Table 18: Storage Presentation Contexts.

Note:

Storage Extended Negotiation is supported. *Web1000* will respond with the information in Table 19.

Field Name	Value	Description of Field
Level of Support	2	Level 2 (FULL) SCP
Element Coercion	0	Does not coerce any element

Table 19: Storage Extended Negotiation.

3.2.6.2.3 SOP Specific Conformance - Storage

Web1000 conforms to the DICOM **Storage** Service Class at Level 2 (Full). No elements are discarded or coerced by *Web1000*. In the event of a successful **C-STORE** operation, the image has been written to internal storage.

Web1000 returns one of the following status codes.

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of resources	A700		Indicates that there was not enough storage space to store the image. Recovery from this condition is left to the administrative functions.
	SOP Class not supported	A800		Indicates that the SOP Class of the Image in the C-STORE operation did not match the Abstract Syntax negotiated for the Presentation Context.
Error	Data set does not match SOP Class	A900		Indicates that the Data Set does not encode an instance of the SOP Class specified.
	Failed	C000		The operation was not successful.
	Cannot understand	C005		Indicates that the Data Set cannot be parsed into elements.
Warning	Data set does not match SOP Class	B007		Indicates that the Data Set does not match the SOP Class, but that the image was stored anyway.
	Duplicate SOP Instance UID	D000		Indicates that the SOP Instance UID of the specified image is already stored in the database.
Success	Success	0000		Operation performed properly.

Table 20: C-STORE Status Codes.

3.2.6.2.4 Presentation Context Acceptance Criterion - Storage

Web1000 will accept any number of **Storage** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.6.2.5 Transfer Syntax Selection Policies - Storage

Web1000 supports all transfer syntaxes listed in Table 4.

3.2.6.3 Real World Activity - Find

3.2.6.3.1 Associated Real World Activity - Find

Web1000 will negotiate requests to an *SCP*. *Web1000* negotiates all of the query models listed in Table 6.

3.2.6.3.2 Presentation Context Table - Find

Web1000 will initiate any of the Presentation Contexts list in Table 21 for Query.

SOP Class	Transfer Syntax	Role	Extended Negotiation
all Table 6 Find	all Table 3	SCU	See Note below

Table 21: Find Presentation Contexts.

Note:

C-Find Extended Negotiation will be supported. *Web1000* will respond with the information in Table 22.

Field Name	Value	Description of Field
Relational-queries	1	Relational queries supported

Table 22: Find Extended Negotiation.

3.2.6.3.3 SOP Specific Conformance - Find

SOP classes of the **Query/**Retrieve Service Class are implemented via the DIMSE C-FIND and C-MOVE services as defined in Part 7 of the DICOM standard.

3.2.6.3.4 Presentation Context Acceptance Criterion - Find

Web1000 will initiate one **Find** Presentation Context per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.6.3.5 Transfer Syntax Selection Policies - Find

Web1000 currently only supports the default transfer syntax of Implicit Little Endian.

3.2.6.4 Real World Activity - Move

3.2.6.4.1 Associated Real World Activity - Move

Web1000 will initiate retrieve requests to an SCP. Web1000 negotiates all of the query models listed in Table 21.

3.2.6.4.2 Presentation Context Table - Move

Web1000 will initiate any of the Presentation Contexts listed below for Move.

SOP Class	Transfer Syntax	Role	Extended Negotiation
All Table 6 Move	All Table 3	SCU and SCP	None

Table 23: Presentation contexts.

3.2.6.4.3 SOP Specific Conformance - Move

Web1000 will try to establish an association with the move destination specified in the **Move** request. One or more of the Presentation Contexts listed in the **Store** section of this document may be negotiated in this association.

3.2.6.4.4 Presentation Context Acceptance Criterion - Move

Web1000 will accept any number of **Move** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

3.2.6.4.5 Transfer Syntax Selection Policies - Move

Web1000 currently supports the transfer syntax that was used originally when the image was stored.

4 COMMUNICATIONS PROFILES

Web1000 provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

4.1 TCP/IP Stack

Web1000 inherits its TCP/IP stack from the computer system upon which it executes.

4.1.1 Physical Media Support

Web1000 is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

5 EXTENSIONS/SPECIALIZATIONS / PRIVATIZATIONS

5.1 Standard Extended/Specialized/Private SOP's

Web1000 supports the extended, specialized or private SOP classes listed in Table 3.23.

SOP Class	SOP Class UID
Private Detached Study Management	1.2.840.113532.3500.13
Private Detached Patient Management	1.2.840.113532.3500.13
Private Detached Interpretation Management	1.2.840.113532.3500.13

Table 24: Standard Extended/Specialized/Private SOP's.

5.1.1 Modality Worklist Query as an SCU

See section 3.1.6.

5.1.2 Private Detached Study Management SOP

See section 3.1.7.

5.1.3 Private Detached Patient Management SOP

See section 3.1.8.

5.1.4 Private Detached Interpretation Management SOP

See section 3.1.9.

5.1.5 HIS Verify as an SCU

See section 3.1.10.

5.2 Private Transfer Syntaxes

No private transfer syntaxes are supported.

6 CONFIGURATION

Web1000 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 *Web1000*.

7 SUPPORT FOR EXTENDED CHARACTER SETS

Web1000 is known to support the following character sets:

ISO Encoding Code	Encoding Description
ISO-IR 100	Latin Alphabet No. 1
ISO-2022-JP	Japanese Character Encoding
ISO-2022-KR	Korean Character Encoding

Table 25: Standard Extended/Specialized/Private SOP's.

APPENDIX A

MWL Attribute Name	MWL DICOMTag	Image Attribute Name	Image DICOM Tag	Overwrite Image Values	Overwrite Image Nulls
accession_number	0008,0050	accession_number	0008,0050	Yes	
referring_physician_name	0008,0090	referring_physician_name	0008,0090	Yes	
referenced_patient_sequence	0008,1120				
referenced_sop_instance_uid	0008,1155	patient_instance_uid	0003,3000	Yes	
patient_name	0010,0010	patient_name	0010,0010	Yes	
patient_id	0010,0020	patient_id	0010,0020	Yes	
patient_birth_date	0010,0030	patient_birth_date	0010,0030	Yes	
patient_sex	0010,0040	patient_sex	0010,0040	Yes	
other_patient_ids	0010,1000	other_patient_ids	0010,1000	Yes	
(1)patient_age	0010,1010	patient_age	0010,1010	Yes	
(1)military_rank	0010,1080	military_rank	0010,1080	Yes	
(1)branch_of_service	0010,1081	branch_of_service	0010,1081	Yes	
study_instance_uid	0020,000d	study_instance_uid	0020,000d	Yes	
study_status_id	0032,000a	study_status_id	0032,000a	Yes	
study_priority_id	0032,000c	study_priority_id	0032,000c	Yes	
requesting_physician	0032,1032	requesting_physician	0032,1032	Yes	
requesting_service	0032,1033	requesting_service	0032,1033	Yes	
requested_procedure_description	0032,1060	(4)study_description	0008,1030	Yes	
requested_procedure_code_sequence	0032,1064				
code_value	0008,0100	requested_procedure_code	0008,0100	Yes	
coding_scheme_designator	0008,0102				
code_meaning	0008,0104	(4)study_description	0008,1030	Yes	
current_patient_location	0038,0300	current_patient_location	0038,0300	Yes	
scheduled_procedure_step_sequence modality	0040,0100 0008,0060	modality	0008,0060	No	No
scheduled_station_ae_title	0040,0001				
scheduled_procedure_step_start_date	0040,0002	study_date	0040,0002	No	Yes
scheduled_procedure_step_start_time	0040,0003	study_time	0040,0003	No	Yes
scheduled_performing_physician_name	0040,0006	performing_physician_name	0008,1050	Yes	
scheduled_station_name	0040,0010	station_name	0008,1010	No	Yes
comments_on_the_scheduled_procedure_step	0040,0400	(2)study_comments	0032,4000	No	Yes
requested_procedure_id	0040,1001	requested_procedure_id	0040,1001	Yes	
reason_for_the_requested_procedure	0040,1002	(3)additional_patient_history, reason_for_study	0010,21b0 0032,1030	No	Yes
requested_procedure_comments	0040,1400	(2)study_comments	0032,4000	No	Yes
reason_for_the_imaging_service_request	0040,2001	(3)additional_patient_history, reason_for_study	0010,21b0 0032,1030	No	Yes
imaging_service_request_comments	0040,2400	(2)study_comments	0032,4000	No	Yes

Table 26: Summary of Modality Worklist Mappings.

Group Element Length	DICOM attribute	VR	VM	Sample value
0008 0005 10	specific_character_set	CS	1-n	"ISO_IR 100"
0008 0020 0	study_date	DA	1	""
0008 0030 0	study_time	TM	1	""
0008 0050 4	accession_number	SH	1	"cb2"
0008 1060 0	name_of_physicians_reading_study	PN	1-n	""
0008 1100 undef	referenced_results_sequence	SQ	1	
0008 1111 undef	referenced_study_component_sequence	SQ	1	
0008 1120 undef	referenced_patient_sequence	SQ	1	
0008 1150 24	referenced_sop_class_uid	UI	1	"1.2.840.10008.3.1.2.1.1"
0008 1155 54	referenced_sop_instance_uid	UI	1	"1.3.46.670589.16.2.2.192.168.7.219.2000011 8.61505.1403"
0008 1125 undef	referenced_visit_sequence	SQ	1	
0008 1150 24	referenced_sop_class_uid	UI	1	"1.2.840.10008.3.1.2.2.1"
0008 1155 54	referenced_sop_instance_uid	UI	1	"1.3.46.670589.16.2.2.192.168.7.219.2000011 8.61505.1404"
0010 0010 16	patient_name	PN	1	"CHARLIE^BROWN^^^"
0010 0020 4	patient_id	LO	1	"cb1"
0010 0021 0	issuer_of_patient_id	LO	1	""
0010 0030 8	patient_birth_date	DA	1	"19771201"
0010 0040 2	patient_sex	CS	1	"F"
0010 1000 0	other_patient_ids	LO	1-n	""
0010 1001 0	other_patient_names	PN	1-n	""
0010 1030 0	patient_weight	DS	1	""
0010 1040 46	patient_address	LO	1	"^5486 KATIE HILL ROAD^WADMALAW ISLAND^SC^29487"
0010 2000 0	medical_alerts	LO	1-n	""
0010 2110 0	contrast_allergies	LO	1-n	""
0010 2154 0	patient_telephone_numbers	SH	1-n	""
0010 2160 0	ethnic_group	SH	1	""
0010 21c0 2	pregnancy_status	US	1	0x0004 4
0010 21f0 0	patient_religious_preference	LO	1	""
0020 000d 54	study_instance_uid	UI	1	"1.3.46.670589.16.2.2.192.168.7.219.2000011 8.61505.1405"
0020 0010 4	study_id	SH	1	"cb2"
0032 000a 10	study_status_id	CS	1	"SCHEDULED"
0032 000c 4	study_priority_id	CS	1	"LOW"
0032 0012 0	study_id_issuer	LO	1	""
0032 0032 8	study_verified_date	DA	1	"19970206"
0032 0033 6	study_verified_time	TM	1	"105000"
0032 0034 8	study_read_date	DA	1	"19970206"
0032 0035 6	study_read_time	TM	1	"105000"
0032 1000 8	scheduled_study_start_date	DA	1	"20000117"
0032 1001 6	scheduled_study_start_time	TM	1	"164402"
0032 1010 0	scheduled_study_stop_date	DA	1	""
0032 1011 0	scheduled_study_stop_time	TM	1	""
0032 1020 4	scheduled_study_location	LO	1	"MCB1"
0032 1021 0	scheduled_study_location_ae_titles	AE	1-n	""
0032 1030 16	reason_for_study	LO	1	"AM STIFFNESS"
0032 1032 20	requesting_physician	PN	1	"CUMMINS^FUZZY^SWEATER"
0032 1033 0	requesting_service	LO	1	""
0032 1040 0	study_arrival_date	DA	1	""
0032 1041 0	study_arrival_time	TM	1	""
0032 1050 0	study_completion_date	DA	1	""

Group Element Length	DICOM attribute	VR	VM	Sample value
0032 1051 0	study_completion_time	TM	1	""
0032 1060 4	requested_procedure_description	LO	1	"Code"
0032 1064 undef	requested_procedure_code_sequence	SQ	1	
0008 0100 4	code_value	SH	1	"Code"
0008 0102 6	coding_scheme_designator	SH	1	"BROKER"
0008 0104 4	code_meaning	LO	1	"Code"
0038 0050 0	special_needs	LO	1	""
0038 0500 0	patient_state	LO	1	""
0040 3001 0	patient_data_confidentiality_constraint _description	LO	1	""

Table 27: Structure of Private Composite Study Object.