

# DICOM Conformance Statement

Product Name:  
ACUSON Sequoia 4.0

Release: VD10

Date: March 2026

<https://www.siemens-healthineers.com/dicom>

## 1 CONFORMANCE STATEMENT OVERVIEW

This conformance statement applies to the following ACUSON Sequoia product version: VD10

For all DICOM Comprehensive Structured Reports generated by the above ACUSON Sequoia product, the following attribute values are applicable:

Software Versions (0018,1020)	VD10x
Manufacturer's Model Name (0008,1090)	ACUSON Sequoia

The **ACUSON Sequoia™ Ultrasound System** supports the following DICOM Application Entities:

- Verification:
  - o Verification AE
- Transfer:
  - o Storage AE
  - o Storage Commitment AE
- Query / Retrieve:
  - o Query AE
  - o Retrieve AE
- Workflow Management:
  - o Worklist AE
  - o MPPS AE
- Print Management
  - o Print AE

**Table 1-1:  
Network Services**

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
<b>VERIFICATION</b>		
<b>Verification AE</b>		
Verification	Yes	Yes
<b>TRANSFER</b>		
<b>Storage AE</b>		
Ultrasound Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Comprehensive SR	Yes	Yes
Digital Mammography X-Ray Image Storage - For Presentation	Yes	Yes
Digital Mammography X-Ray Image Storage - For Processing	Yes	Yes
CT Image Storage	Yes	Yes
MR Image Storage	Yes	Yes
<b>Storage Commitment AE</b>		
Storage Commitment Push Model	Yes	No

SOP Classes	Service Class User (SCU)	Service Class Provider (SCP)
<b>QUERY / RETRIEVE</b>		
<b>Query AE</b>		
Patient Root Query/Retrieve Information Model - FIND	Yes	No
<b>Retrieve AE</b>		
Study Root Query/Retrieve Information Model - MOVE	Yes	No
<b>WORKFLOW MANAGEMENT</b>		
<b>Worklist AE</b>		
Modality Worklist Information Model - FIND	Yes	No
<b>MPPS AE</b>		
Modality Performed Procedure Step	Yes	No
<b>PRINT MANAGEMENT</b>		
<b>Print AE</b>		
Basic Grayscale Print Management Meta SOP Class	Yes	No
Basic Color Print Management Meta SOP Class	Yes	No
Print Job SOP Class	Yes	No

**Table 1-2:  
UID Values**

SOP Class Name	SOP Class UID	Category
<b>Verification AE</b>		
Verification	1.2.840.10008.1.1	Verification
<b>Storage AE</b>		
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Transfer
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Transfer
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Transfer
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Transfer
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Transfer
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Transfer
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Transfer
<b>Storage Commitment AE</b>		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Transfer
<b>Query AE</b>		
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Query / Retrieve
<b>Retrieve AE</b>		
Study Root Query/Retrieve Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Query / Retrieve
<b>Worklist AE</b>		
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Workflow Management
<b>MPPS AE</b>		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Workflow Management
<b>Print AE</b>		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Print Management

SOP Class Name	SOP Class UID	Category
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Print Management
Print Job SOP Class	1.2.840.10008.5.1.1.14	Print Management

**Table 1-3:  
Media Services**

Media Storage Application Profile	Write Files		Read Files
	FSC	FSU	FSR
<b>DVD - Recordable</b>			
STD_GEN-DVD	Yes	No	Yes
STD-US-SC-MF-DVD			
STD-US-ID-MF-DVD			
<b>USB</b>			
General Purpose USB Media.	Yes	Yes	Yes

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### 3 INTRODUCTION

This document describes the conformance to the ACR-NEMA DICOM 3.0 Standard by the ACUSON Sequoia™ ultrasound system, version VD10 from Siemens Healthineers. It shall establish the conformance specifications for this system only, and does not apply to other products offered by Siemens Healthineers or its affiliates.

The ACUSON Sequoia system is a device that generates ultrasound images that can be sent using DICOM standard protocols and definitions to other DICOM compliant devices that support SOP classes as defined in Table 4-1: SOP Classes for Storage AE in this document.

The DICOM standard provides a well-defined set of structures and protocols that allow inter-operability of a wide variety of medical imaging devices. The Sequoia system provides support for essential services related to ultrasound scanning and connectivity to DICOM compliant devices. Sequoia systems will not support all features supported by the DICOM standard. This document clearly states the DICOM services and data classes that are supported by the applications included with the Sequoia system. The intent of this document is to allow users and other vendors who also conform to the DICOM standard to exchange information within the specific context of those elements of the DICOM standard that the Sequoia system supports.

This document is written with respect to the adopted portions of the DICOM standard, Version 3. The following sections of this document follow the outline specified in the DICOM Standard NEMA publication PS3.2.<sup>1</sup>

#### 3.1 Audience

This document is written for the people that need to understand how the Sequoia system will integrate into their healthcare facility. This includes both those responsible for overall imaging network policy and architecture, as well as integrators who need to have a detailed understanding of the DICOM features of the product. 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.

#### 3.2 Remarks

The scope of this DICOM Conformance Statement is to facilitate integration between the Sequoia system 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. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality as SCU and SCP, respectively.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Siemens Healthineers and other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM 3.0 Standard [1]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

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<sup>1</sup> Source: DICOM® Standards Publication Part 2, © NEMA. The DICOM Standard is under continuous maintenance. The current official version is available at <http://dicomstandard.org>

- The comparison of different conformance statements is the first step towards assessing interconnectivity.
- Test procedures should be defined and tests should be performed by the user to validate the connectivity desired. DICOM itself and the conformance parts do not specify this.
- The standard will evolve to meet the users' future requirements. Siemens Healthineers is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

Siemens Healthineers reserves the right to modify the design and specifications contained herein without prior notice. Please contact your local Siemens Healthineers representative for the most recent product information.

### 3.3 Terms and Definitions

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

**Abstract Syntax** – The information agreed to be exchanged between applications, generally equivalent to a Service/Object Pair (SOP) Class. Examples: Verification SOP Class, Modality Worklist Information Model Find SOP Class, Computed Radiography Image Storage SOP Class.

**ACUSON Sequoia™ system** – The ultrasound system of this conformance.

**Application Entity (AE)** – An end point of a DICOM information exchange, including the DICOM network or media interface software; i.e., the software that sends or receives DICOM information objects or messages. A single device may have multiple Application Entities.

**Application Entity Title** – The externally known name of an *Application Entity*, used to identify a DICOM application to other DICOM applications on the network.

**Application Context** – The specification of the type of communication used between *Application Entities*. Example: DICOM network protocol.

**Association** – A network communication channel set up between *Application Entities*.

**Attribute** – A unit of information in an object definition; a data element identified by a *tag*. The information may be a complex data structure (Sequence), itself composed of lower level data elements. Examples: Patient ID (0010,0020), Accession Number (0008,0050), Photometric Interpretation (0028,0004), Procedure Code Sequence (0008,1032).

**Attribute Macro** - A set of Attributes that are described in a single table that is referenced by multiple Module or other tables.

**Information Object Definition (IOD)** – A data abstraction of a class of similar Real-World Objects which defines the nature and attributes relevant to the class of Real-World objects represented. Examples: MR Image IOD, CT Image IOD, Print Job IOD.

**Integrating the Healthcare Enterprise (IHE)** – An initiative sponsored by the Radiological Society of North America (RSNA) to document and demonstrate standards-based methods of sharing information in support of optimal patient care. For additional information, see [www.rsna.org/ihe](http://www.rsna.org/ihe).

**Functional Group** - A set of logically related Attributes that are likely to vary together. May be used in Multi-frame IODs to describe parameters which change on a per frame basis.

**Joint Photographic Experts Group (JPEG)** – Joint Photographic Experts Group, The group was organized in 1986, issuing a standard in 1992, which was approved in 1994 as ISO 10918-1. The JPEG standard is used by DICOM applications.

**Media Application Profile** – The specification of DICOM information objects and encoding exchanged on removable media (e.g., CDs), see DICOM PS3.11.

**Module** – A set of *Attributes* within an *Information Object Definition* that are logically related to each other. Example: Patient Module includes (among others) Patient Name, Patient ID, Patient Birth Date, and Patient Sex.

**Negotiation** – First phase of *Association* establishment that allows *Application Entities* to agree on the types of data to be exchanged and how that data will be encoded.

**Picture Archiving and Communications Systems (PACS)** – A DICOM server that accepts medical images from another DICOM system and stores the images for later retrieval.

**Presentation Context** – The set of DICOM network services used over an *Association*, as negotiated between *Application Entities*; includes *Abstract Syntaxes* and *Transfer Syntaxes*.

**Protocol Data Unit (PDU)** – A packet (piece) of a DICOM message sent across the network. It contains protocol control information and user data. Devices must specify the maximum size packet they can receive for DICOM messages.

**Request (RQ)** – A request from one DICOM AE for service from another DICOM AE.

**Response (RSP)** – A response from one DICOM AE to the request for service from another DICOM AE.

**Security Profile** – A set of mechanisms, such as encryption, user authentication, or digital signatures, used by an *Application Entity* to ensure confidentiality, integrity, and/or availability of exchanged DICOM data.

**Service Class Provider (SCP)** – The role of an *Application Entity* that provides a DICOM network service; typically, a server that performs operations requested by another *Application Entity* (*Service Class User*). Examples: Picture Archiving and Communication System (image storage SCP, and image query/retrieve SCP), Radiology Information System (modality worklist SCP).

**Service Class User (SCU)** – The role of an *Application Entity* that uses a DICOM network service; typically, a client. Examples: imaging modality (image storage SCU, and modality worklist SCU), imaging workstation (image query/retrieve SCU).

**Service/Object Pair (SOP) Class** – The specification of the network or media transfer (service) of a particular type of data (object); the fundamental unit of DICOM interoperability specification. Examples: Ultrasound Image Storage Service, Basic Grayscale Print Management.

**Service/Object Pair (SOP) Instance** – An information object; a specific occurrence of information exchanged in a *SOP Class*. Examples: a specific x-ray image.

**Structured Report (SR)** – A DICOM object which contains measurement, calculations, diagnoses, image references, and other non-image information concerning a patient exam.

**Tag** – A 32-bit identifier for a data element, represented as a pair of four digit hexadecimal numbers, the “group” and the “element”. If the “group” number is odd, the tag is for a private (manufacturer-

specific) data element. Examples: (0010,0020) [Patient ID], (07FE,0010) [Pixel Data], (0019,0210) [private data element].

**Transfer Syntax** – The encoding used for exchange of DICOM information objects and messages. Examples: *JPEG* compressed (images), little endian explicit value representation.

**Unique Identifier (UID)** – A globally unique “dotted decimal” string that identifies a specific object or a class of objects; an ISO-8824 Object Identifier. Examples: Study Instance UID, SOP Class UID, SOP Instance UID.

**Value Representation (VR)** – The format type of an individual DICOM data element, such as text, an integer, a person’s name, or a code. DICOM information objects can be transmitted with either explicit identification of the type of each data element (Explicit VR), or without explicit identification (Implicit VR); with Implicit VR, the receiving application must use a DICOM data dictionary to look up the format of each data element.

### 3.4 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.

### 3.5 Abbreviations

ACR	American College of Radiology
AE	DICOM Application Entity
AET	DICOM Application Entity Title
ASCII	American Standard Code for Information Interchange
DB	Database
DCS	DICOM Conformance Statement
DSA	Digital Subtraction Angiography
IIDC	Image-Intensifier Distortion Correction
IOD	DICOM Information Object Definition
ISO	International Standard Organization
MPPS	Modality Performed Procedure Step
MWL	Modality Worklist
NEMA	National Electrical Manufacturers Association
O	Optional Key Attribute
PDU	DICOM Protocol Data Unit
R	Required Key Attribute
RIS	Radiology Information System
SC	Storage Commitment
SCU	DICOM Service Class User (DICOM client)
SCP	DICOM Service Class Provider (DICOM server)
SOP	DICOM Service-Object Pair
SR	Structured Report
U	Unique Key Attribute
US	Ultrasound

### 3.6 References

- [1] DICOM® Standards Publication, PS 3.1 – PS 3.18, © NEMA. The DICOM Standard is under continuous maintenance. The current official version is available at <http://www.dicomstandard.org>
- [2] IHE Radiology Technical Framework, Vol. I – III, [https://www.ihe.net/resources/technical\\_framework/](https://www.ihe.net/resources/technical_framework/)

## 4 NETWORKING

This section contains the Sequoia system networking related services.

### 4.1 Implementation Model

Sequoia system users can store images directly on the system hard drive. Images can also be transferred to DICOM workstations and archive servers on a network. Storage Commitment can be used to ensure that patient images and data are safely committed. The system is capable of querying a HIS/RIS, using DICOM Basic Worklist Management Service Class, for a list of scheduled patient procedures. Measurements from OB-GYN, Vascular, and Cardiac exams can be exported as DICOM SR Objects. Performed procedure status and other procedure information can be returned to the HIS/ RIS using Modality Performed Procedure Step (MPPS).

Sequoia system real world activities are indicated by “Real World Activity” name while “Sequoia AE” indicates the invoked Application Entity. Similarly, the activities associated with service providers are indicated as “Real World Service Activity.”

#### 4.1.1 Application Data Flow

Figure 4-1 and Figure 4-2 provides a functional overview of the Sequoia’ Application Entities (AE). Relationships are shown between user-invoked activities (in the circles at the left of the AEs) and the associated real-world activities provided by DICOM service providers (in the circles at the right of the AEs).

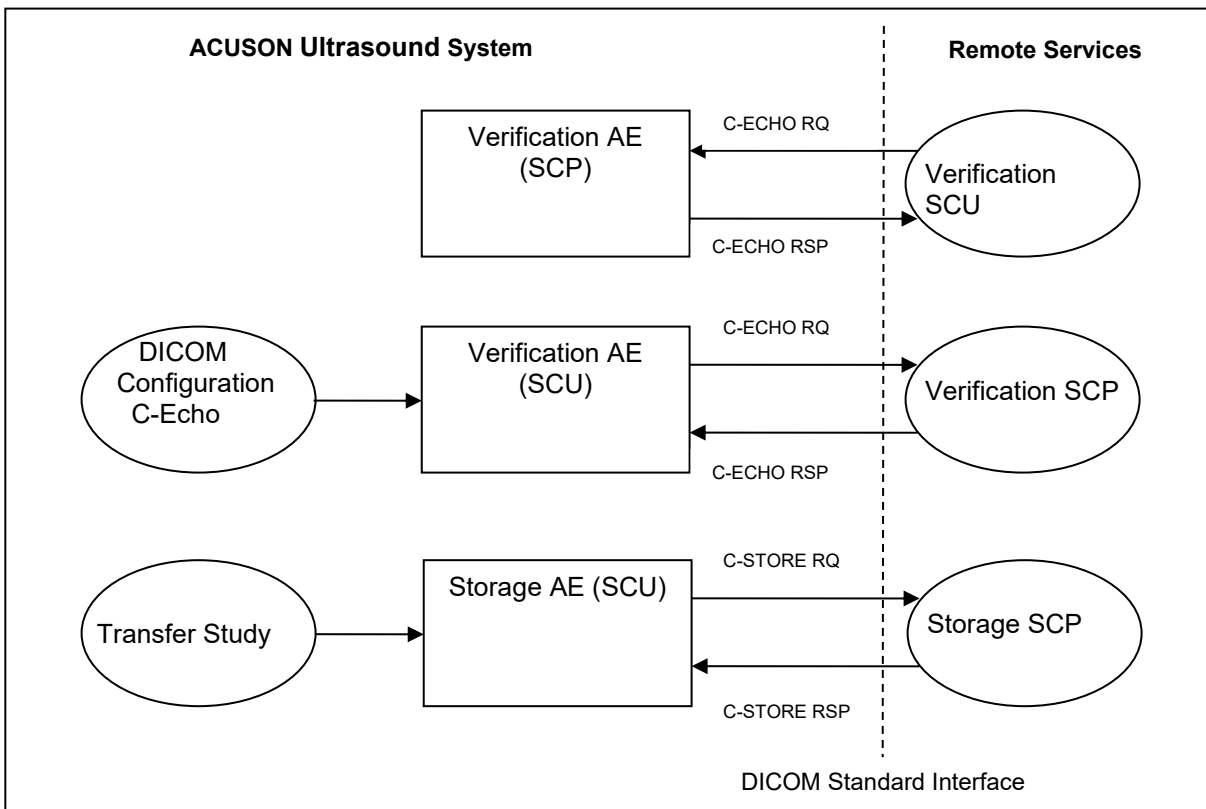


Figure 4-1 Functional Overview

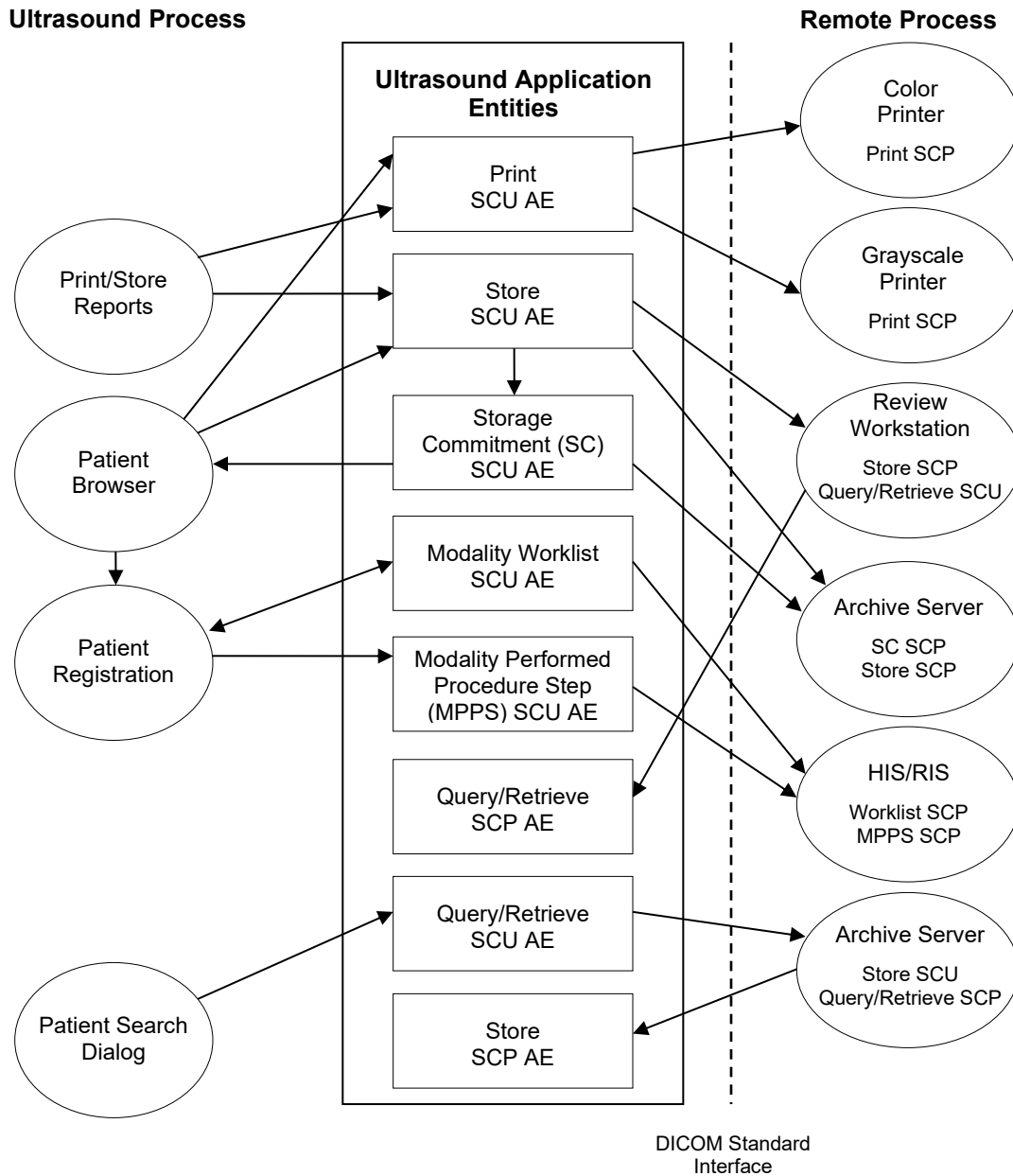


Figure 4-2. Functional Overview (Continued)

#### 4.1.2 Functional Definition of AEs

The SCP components of the Sequoia operate as background server processes. They exist as soon as the system is powered up and wait for association requests. Upon accepting an association with a negotiated Presentation Context they start to receive and process the request described in the following sections.

#### 4.1.2.1 Functional Definition of Verification Application Entity

The DICOM verification service can be used for diagnostic purposes. When used as a diagnostic tool, Verification will return the following messages to the user:

- Succeeded
- Failed

Verification is accessed through the pages of User Configuration.

The Sequoia supports the Verification service as a SCP and SCU. As a SCU, Verification is activated when the Verify button is selected on a service configuration page.

#### 4.1.2.2 Functional Definition of Storage Application Entity

Sequoia system Storage application entity performs all of the functions necessary to transmit images and associated data to DICOM network archive servers and/or workstations. Sequoia system Storage AE initiates separate associations to the storage SCP servers, each time the user selects “Send.”

#### 4.1.2.3 Functional Definition of Storage Commitment Application Entity

The Storage Commitment Push Model SCU (SC-SCU) uses the Storage Commitment Service Class to request commitment for one or more composite objects from the Storage Commitment Push Model SCP (SC-SCP). SC-SCU issues an N-ACTION-RQ to SC-SCP containing a list of references to composite objects, requesting that the SC-SCP takes responsibility for storage commitment of the composite objects. If the SC-SCP has determined that all the composite objects exist and it has successfully completed storage commitment for the set of composite objects, it issues an N-EVENT-REPORT-RQ with status successful and the list of stored images. SC-SCU now knows that the composite objects have been committed by SC-SCP and can delete its copies of composite objects. The information from the N\_EVENT-REPORT-RQ is propagated back to the user interface.

Sequoia system SCU shall receive the N\_EVENT\_REPORT-RQ on a different association on which N\_ACTION-RQ was sent.

#### 4.1.2.4 Functional Definition of Worklist Application Entity

Patient registration can be automated by using the ‘Worklist’ Real World Activity.

Pressing the Refresh button on the Worklist Tab of the Patient Registration UI initiates a manual Broad Worklist query. If no matches are found, a message will be presented to the operator indicating so. If one or more patients are found, the worklist will be updated with the scheduled procedures. The Worklist feature can be configured to query for either the procedures scheduled for the Local Site (Sequoia system Worklist SCU AE Title) or for Ultrasound scheduled procedures (Modality = US). Queries can be made for today’s scheduled procedures, or a user specified range of scheduled procedure dates and times. The system can also be configured to perform automatic Worklist queries at user specified intervals.

Patient based queries are supported in Sequoia system.

Selection of a patient from the list will cause all demographic information for that patient to be loaded in to the patient data fields in the Patient Registration screen.

#### 4.1.2.5 Functional Definition of Modality Performed Procedure Step Application Entity

Sequoia system supports the DICOM Modality Performed Procedure Step Service as SCU. The modality performed procedure step SCU informs the performed procedure step SCP about the procedure performed at the modality using the N-CREATE and N-SET DIMSE service.

Immediately after a new patient, study or scheduled procedure is registered (via Patient Registration) Sequoia system automatically performs an MPPS N-CREATE-RQ operation with a status of IN-PROGRESS for the newly created Performed Procedure Step. When the current patient procedure ends, (either with an End Exam, or new Patient / Study / Procedure) Sequoia system automatically performs an MPPS N-SET-RQ final operation with a status of COMPLETED. The user may also discontinue the current Performed Procedure Step by Discontinuing the study from the Patient Registration or Patient Browser UIs. An MPPS N-SET-RQ final operation is performed with the appropriate status of DISCONTINUED.

The modality performed procedure step SCP responds to the N-CREATE-RQ and N-SET-RQ and confirms that it received the information from the modality.

#### **4.1.2.6 Functional Definition of Query/Retrieve Application Entity**

The query/retrieve service class defines an application-level class of services which facilitates the management of images and patient data against the well-defined information model of DICOM and allows a DICOM AE to retrieve images from a remote DICOM node or to request a remote DICOM AE to initiate a transfer of images to another DICOM AE. The Sequoia system DICOM query/retrieve application supports the query/retrieve services to act as a SCU.

#### **4.1.3 Sequencing of Real-World Activities**

This section describes the sequencing of Real-World Activities performed by the Application Entities using a UML sequence diagram. Real-World Activities are depicted as vertical bars and arrows show the events exchanged between them.

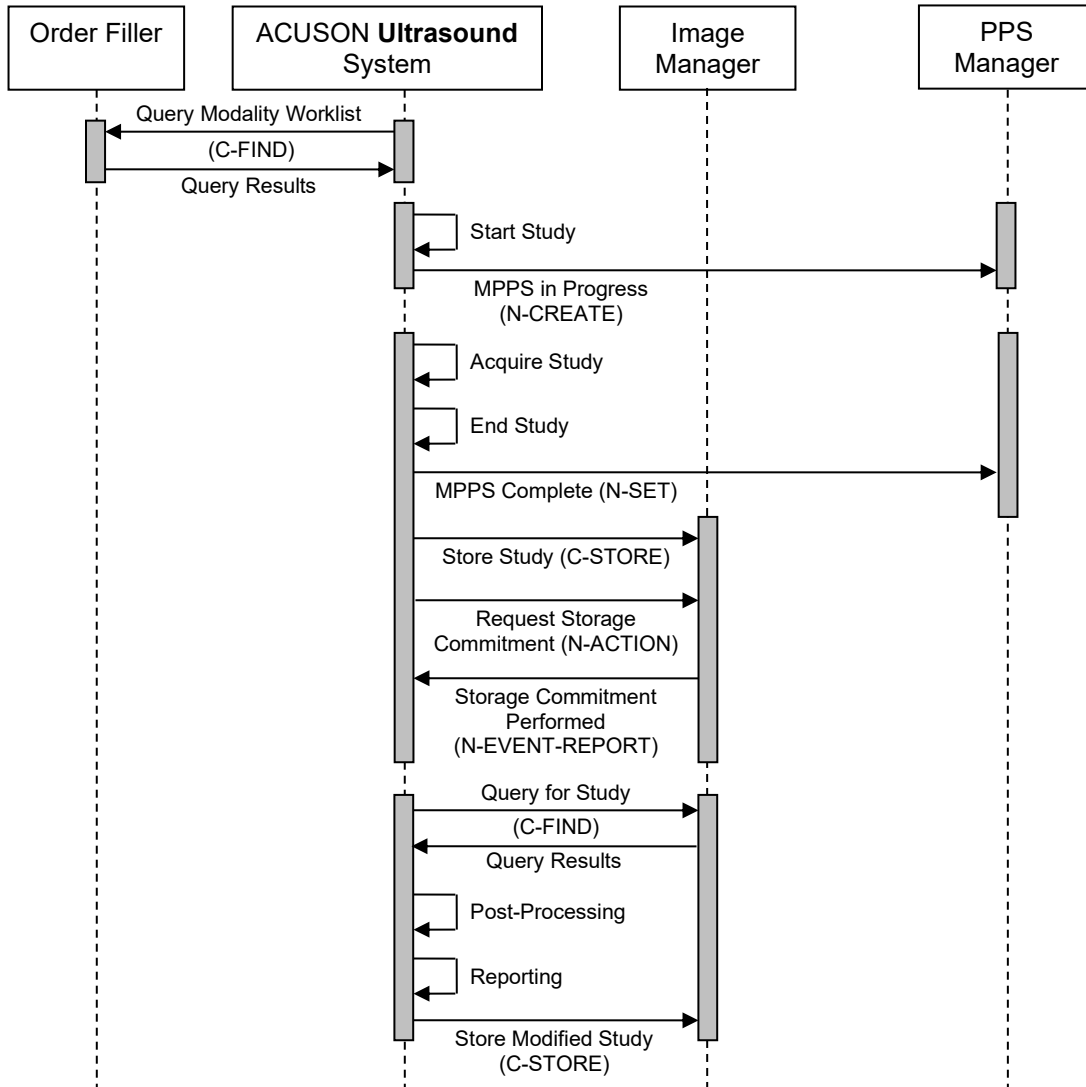


Figure 4-3. Sequence Diagram for Real-World Activities

## 4.2 AE Specifications

### 4.2.1 Storage Application Entity Specification

#### 4.2.1.1 SOP Classes

**Table 4-1:**  
SOP Classes for Storage AE

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported Storage SOP Classes</b>			
Verification	1.2.840.10008.1.1	Yes	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Ultrasound Multi-frame Image Storage †	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
Digital Mammography X-Ray Image Storage - For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes
Digital Mammography X-Ray Image Storage - For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No
Storage Commitment - Push Model	1.2.840.10008.1.20.1	Yes	No
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No
Query/Retrieve	1.2.840.10008.5.1.4.1.2.1.1 1.2.840.10008.5.1.4.1.2.1.2	Yes	No

#### 4.2.1.2 Association Policies

##### 4.2.1.2.1 General

**Table 4-2:**  
DICOM Application Context

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

#### 4.2.1.2.2 Number of Associations

**Table 4-3:  
Number of Associations as an Association Initiator for Storage AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**Table 4-4:  
Number of Associations as an Association Acceptor for Storage AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

#### 4.2.1.2.3 Asynchronous Nature

The Sequoia system DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4-5:  
Asynchronous Nature as an Association Initiator for Storage AE**

<b>Maximum number of outstanding asynchronous transactions</b>	0
--	---

#### 4.2.1.2.4 Implementation Identifying Information

**Table 4-6:  
DICOM Implementation Class and Version for Storage AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

#### 4.2.1.3 Association Initiation Policy (Storage SCU)

The Sequoia VD10 initiates associations while processing the service operations and internal messages as shown below.

<b>Operation or Real-World Activity</b>	<b>Association for</b>
Send	C-STORE

#### 4.2.1.3.1 Activity Send

##### 4.2.1.3.1.1 Description and Sequencing of Activities

Storage of a DICOM object to an external entity is triggered by a C-STORE request initiated either automatically by the system or interactively (manually) by the user.

If an association to a remote Application Entity could successfully be established, each image will be transferred one after another via the same open association.

The automatic retry mechanism shall retry the operation once every 5 minutes for 1 hour.

Retry is done if:

- a) The network connection has been lost from the SCU perspective. In this case, retry is performed as soon as the network connection is available again.
- b) The partner is not reachable for other reasons (e.g. partner node has broken down). For this case, a timeout has been implemented after which retry is performed.

#### 4.2.1.3.1.2 Proposed Presentation Contexts

For all supported images (see SOP Classes in Table 4-1: SOP Classes for Storage AE), the following Transfer Syntaxes are supported.

**Table 4-7:  
Store Presentation Context**

Abstract Syntax		Transfer Syntax	
Name	UID	Name List	UID List
All Image Classes	Multiple	Implicit VR Little Endian	1.2.840.10008.1.2
		Explicit VR Little Endian	1.2.840.10008.1.2.1
		JPEG Lossy (Baseline)	1.2.840.10008.1.2.4.50
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33	Implicit VR Little Endian	1.2.840.10008.1.2
		Explicit VR Little Endian	1.2.840.10008.1.2.1

#### 4.2.1.3.1.3 Photometric Interpretation

Photometric Interpretation (color mode of the pixel image data) is not a negotiable parameter in DICOM 3.0. The Photometric Interpretation Attribute (0028,0004) is set depending on the transfer syntax, and the system configuration:

**Table 4-8:  
Photometric Interpretation**

SOP Class		Transfer Syntax		Photometric Interpretation
Name	UID	Name List	UID List	
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian	1.2.840.10008.1.2	RGB or MONOCHROME2 (if RGB to MONOCHROME is configured)
		Explicit VR Little Endian	1.2.840.10008.1.2.1	
		JPEG Lossy (Baseline)	1.2.840.10008.1.2.4.50	YBR_FULL_422

SOP Class		Transfer Syntax		Photometric Interpretation
Name	UID	Name List	UID List	
Ultrasound Multi-frame Image Storage (Clips)	1.2.840.10008.5.1.4.1.1.3.1	JPEG Lossy (Baseline)	1.2.840.10008.1.2.4.50	YBR_FULL_422
		Implicit VR Little Endian	1.2.840.10008.1.2	RGB or MONOCHROME2 (if RGB to MONOCHROME is configured)
		Explicit VR Little Endian	1.2.840.10008.1.2.1	

#### 4.2.1.3.1.4 SOP Specific Conformance to SOP Classes

The DICOM images created by the Sequoia system DICOM application conform to the DICOM IOD definitions (Standard extended IODs). But they will contain additional private elements that may be discarded by a DICOM system when modifying the image.

Refer to section 8.1.1, Created SOP Instances, for a detailed list of attributes.

**Table 4-9:  
DICOM Command Response Status Handling Behavior**

Service Status	Further Meaning	Error Code	Behavior
Refused	Out of resources	A7xx	User Notified
Error	Data does not match SOP class Cannot Understand	A9xx Cxxx	User Notified
Warning	Coercion of Data elements Data sed does not match SOP Class  Elements Discarded	B000 B007 B006	User Notified
Success	Process completed	0000	User Notified

**Table 4-10:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure reported to user (Timeout configurable; default 30s). The system retries according to the configured retry parameters.
Association Aborted	Failure reported to user and the storage job is cancelled.

#### 4.2.1.4 Association Acceptance Policy

The Sequoia system DICOM application attempts to initiate a new association for DIMSE C-STORE operation. Activity "Receive Instances"

**4.2.1.4.1 Accepted Presentation Contexts**

1.2.840.10008.1.2.1	Explicit Value Representation Little Endian
1.2.840.10008.1.2	Implicit Value Representation Little Endian: Default Transfer Syntax for DICOM
1.2.840.10008.1.2.4.50	JPEG Baseline (Process 1): Default Transfer Syntax for Lossy JPEG 8 Bit Image Compression
1.2.840.10008.1.2.4.70	JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1]): Default Transfer Syntax for Lossless JPEG Image Compression

**4.2.1.4.1.1 SOP Specific Conformance to SOP Classes**

In case of a successful C-STORE operation, the image has successfully been written on disk either in Explicit Little Endian format or in the compression format received.

**Table 4-11:  
Storage C-STORE Response Status**

Service Status	Further Meaning	Error Code	Reason
Success	Success	0000	Success

**4.2.1.4.1.2 Consistent Presentation of Grayscale Images**

Sequoia supports the DICOM standard (PS 3-14) Grayscale Standard Display Function (GSDF) for Consistent Presentation of Displayed Images. The Image Consistency is achieved through the support of the Presentation LUT (transforming the image pixels value in to the Standard Presentation P-values) and then transforming the Image pixel values from the standard Presentation (P-value) space to the Optical Density space.

**4.2.2 Storage Commitment AE**

**4.2.2.1 SOP Classes**

**Table 4-12:  
SOP Classes for Storage Commitment AE**

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported Storage Commitment SOP Classes</b>			
Storage Commitment - Push Model	1.2.840.10008.1.20.1	Yes	No

#### 4.2.2.2 Association Policies

##### 4.2.2.2.1 General

**Table 4-13:**  
**DICOM Application Context**

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

##### 4.2.2.2.2 Number of Associations

**Table 4-14:**  
**Number of Associations as an Association Initiator for  
Storage Commitment AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**Table 4-15:**  
**Number of Associations as an Association Acceptor for  
Storage Commitment AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

##### 4.2.2.2.3 Asynchronous Nature

The Sequoia system Storage Commitment AE does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4-16:**  
**Asynchronous Nature as an Association Initiator for  
Storage Commitment AE**

<b>Maximum number of outstanding asynchronous transactions</b>	0
--	---

##### 4.2.2.2.4 Implementation Identifying Information

**Table 4-17:**  
**DICOM Implementation Class and Version for  
Storage Commitment AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

**4.2.2.3 Association Initiation Policy (Storage Commitment SCU)**

The Sequoia initiates associations while processing the service operations and internal messages as shown below.

Operation or Real-World Activity	Association for
Storage Commitment	N-ACTION, N-EVENT-REPORT

**4.2.2.3.1 Activity “Storage Commitment Request”**

**4.2.2.3.1.1 Description and Sequencing of Activities**

The user has sent (or archived) images to another DICOM node, which is configured as storage commitment SCP. The Sequoia system will automatically attempt to send a storage commitment request for these images.

**4.2.2.3.1.2 Proposed Presentation Contexts**

**Table 4-18:  
Proposed Presentation Contexts for Storage Commitment AE**

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	SCU	None

**4.2.2.3.1.3 SOP Specific Conformance to SOP Classes**

**Table 4-19:  
DICOM Command Response Status Handling Behavior**

Service Status	Further Meaning	Error Code	Behavior
Success	Storage is complete	0000	UI status is updated

**Table 4-20:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure Reported to User
Association Aborted	Failure Reported to User

#### 4.2.2.4 Association Acceptance Policy

The Sequoia system Storage Commitment AE accepts an association when acting as SCU to receive N-EVENT-REPORT on a separate association.

### 4.2.3 Query AE

The Sequoia provides Standard Conformance to the following DICOM V3.0 SOP Classes as SCU.

#### 4.2.3.1 SOP Classes

**Table 4-21:  
SOP Classes for Query AE**

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported Query SOP Classes</b>			
Patient Root Query/Retrieve Information Model - FIND	1.2.840.10008.5.1.4.1.2.1.1	Yes	No

#### 4.2.3.2 Association Policies

##### 4.2.3.2.1 General

**Table 4-22:  
DICOM Application Context**

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

##### 4.2.3.2.2 Number of Associations

**Table 4-23:  
Number of Associations as an Association Initiator for Query AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**Table 4-24:  
Number of Associations as an Association Acceptor for Query AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

##### 4.2.3.2.3 Asynchronous Nature

The Sequoia system DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4-25:  
Asynchronous Nature as an Association Initiator for Query AE**

<b>Maximum number of outstanding asynchronous transactions</b>	0
--	---

#### 4.2.3.2.4 Implementation Identifying Information

**Table 4-26:  
DICOM Implementation Class and Version for Query AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

#### 4.2.3.3 Association Initiation Policy (Query SCU)

The Sequoia will initiate new associations for the following operations as an SCU.

<b>Operation or Real-World Activity</b>	<b>Association for</b>
Search	C-FIND

##### 4.2.3.3.1 Activity “Search”

##### 4.2.3.3.1.1 Description and Sequencing of Activities

The associated Real-World activity is to fill out a query form with search data and pass it as query to the network application which issues a C-FIND over a previously built association. The remote SCP will respond with related data-entries that will be passed to a browser application. When data transfer is finished the association is closed.

##### 4.2.3.3.1.2 Proposed Presentation Contexts

The Sequoia will propose Presentation Contexts as shown in the following table.

**Table 4-27:  
Proposed Presentation Contexts for Query AE**

<b>Abstract Syntax</b>		<b>Transfer Syntax</b>		<b>Role</b>	<b>Extended Negotiation</b>
<b>Name</b>	<b>UID</b>	<b>Name</b>	<b>UID</b>		
Study Root Query/Retrieve 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		

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		

#### 4.2.3.3.1.3 SOP Specific Conformance to SOP Classes

Refer to section 8.1.1, Created SOP Instances, for a detailed list of attributes.

The Sequoia checks for the following status codes in the Query SCP's C-Find-Response.

**Table 4-28:  
DICOM Command Response Status Handling Behavior**

Service Status	Further Meaning	Error Code	Behavior
Refused	Out of Resources	A700	Failure reported to user
Failed	Identifier Does not match SOP Class Unable to process	A900	Failure reported to user
Failed	Unable to process	CXX	Failure reported to user
Cancel	Matching terminated due to cancel request	FE00	Search is cancelled
Success	Matching is complete	0000	Success reported to user
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Status reported to user
Pending	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Failure reported to user

**Table 4-29:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure reported to user
Association Aborted	Failure reported to user

The Sequoia supports the following query levels:

- Study

**4.2.3.4 Association Acceptance Policy**

The system DICOM application does not accept Association requests.

**4.2.4 Retrieve AE**

**4.2.4.1 SOP Classes**

This Application Entity provides Standard Conformance to the following SOP Classes.

**Table 4-30:  
SOP Classes for Retrieve AE**

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported Query SOP Classes</b>			
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**

**Table 4-31:  
DICOM Application Context**

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

**4.2.4.2.2 Number of Associations**

**Table 4-32:  
Number of Associations as an Association Initiator for Retrieve AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**Table 4-33:  
Number of Associations as an Association Acceptor for Retrieve AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**4.2.4.2.3 Asynchronous Nature**

The Sequoia system DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4-34:  
Asynchronous Nature as an Association Initiator for Retrieve AE**

<b>Maximum number of outstanding asynchronous transactions</b>	0
--	---

#### 4.2.4.2.4 Implementation Identifying Information

**Table 4-35:  
DICOM Implementation Class and Version for Retrieve AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

#### 4.2.4.3 Association Initiation Policy

When requesting Import of related items the browser requests the retrieve application to send a C-MOVE request to the related remote node. Images will then be received by the Storage SCP as described in the related section.

##### 4.2.4.3.1 Activity “Move”

The associated Real-World activity is to respond to retrieve requests to an SCU. The SCP supports the query model Patient Root, Study Root and Patient/Study Only. The Storage Service Class Conformance Statement describes the C-STORE service, which is generated by the C-MOVE service. Relational retrieve operation is NOT supported.

Multiple C-MOVE requests over the same association are NOT supported.

##### 4.2.4.3.1.1 Description and Sequencing of Activities

The C-MOVE-RQs are used to retrieve the referenced instances.

##### 4.2.4.3.1.2 Accepted Presentation Contexts

**Table 4-36:  
Proposed Presentation Contexts for Retrieve AE and Activity “Move”**

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name	UID		
Study Root Query/Retrieve 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		

**4.2.4.3.1.3 SOP Specific Conformance to Move SCU Classes**

At association establishment time, the C-MOVE presentation context shall be negotiated. When the CMOVE-RQ is processed, the Move Destination attribute (receiver of images) is ignored. However, the Move Destination AE must conform to the DICOM conventions (value representation AE).

**Table 4-37:  
DICOM Command Response Status Handling Behavior**

Service Status	Further Meaning	Error Code	Behavior
Refused	Out of Resources	A700	Failure reported to user
Failed	Identifier Does not match SOP Class Unable to process	A900	Failure reported to user
Failed	Unable to process	CXX	Failure reported to user
Cancel	Matching terminated due to cancel request	FE00	Search is cancelled
Success	Matching is complete	0000	Success reported to user
Pending	Matches are continuing - Current Match is supplied and any Optional Keys were supported in the same manner as Required Keys	FF00	Status reported to user
Pending	Matches are continuing - Warning that one or more Optional Keys were not supported for existence and/or matching for this identifier	FF01	Failure reported to user

**Table 4-38:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure reported to user
Association Aborted	Failure reported to user

**4.2.4.4 Association Acceptance Policy**

The system DICOM application does not accept Association requests.

## 4.2.5 Worklist AE

### 4.2.5.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in the table below.

**Table 4-39:  
SOP Classes for Worklist AE**

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported Worklist SOP Classes</b>			
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	Yes	No

### 4.2.5.2 Association Policies

#### 4.2.5.2.1 General

The configuration of the Sequoia system DICOM modality worklist application defines the Application Entity Title, the port number, the host name and IP address.

**Table 4-40:  
DICOM Application Context**

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

#### 4.2.5.2.2 Number of Associations

**Table 4-41:  
Number of Associations as an Association Initiator for Worklist AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

**Table 4-42:  
Number of Associations as an Association Acceptor for Worklist AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

#### 4.2.5.2.3 Asynchronous Nature

The Sequoia system DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4-43:  
Asynchronous Nature as an Association Initiator for Worklist AE**

<b>Maximum number of outstanding asynchronous transactions</b>	0
--	---

#### 4.2.5.2.4 Implementation Identifying Information

**Table 4-44:  
DICOM Implementation Class and Version for Worklist AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

#### 4.2.5.3 Association Initiation Policy

The Sequoia initiates associations while processing the service operations and internal messages as shown below.

<b>Operation or Real-World Activity</b>	<b>Association for</b>
Query for Modality Worklist	C-FIND

#### 4.2.5.3.1 Activity “Query for Modality Worklist”

##### 4.2.5.3.1.1 Description and Sequencing of Activities

The associated Real-World activity is a C-Find request initiated by the user of the system. The user specifies some attributes which the remote Application should use to query its database. If the query user successfully establishes an association to the remote Application Entity, it will send a C-Find request (according to the query model) and will then return the results to the application.

##### 4.2.5.3.1.2 Proposed Presentation Contexts

**Table 4-45:  
Proposed Presentation Contexts for Worklist AE**

<b>Presentation Context Table</b>					
<b>Abstract Syntax</b>		<b>Transfer Syntax</b>		<b>Role</b>	<b>Extended Negotiation</b>
<b>Name</b>	<b>UID</b>	<b>Name List</b>	<b>UID List</b>		
Modality Worklist-FIND	1.2.840.10008.5.1.4.31	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	No
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

There is no extended negotiation as an SCU.

##### 4.2.5.3.1.3 SOP Specific Conformance to Modality Worklist Service SOP Class

The following table provides the list of user configurable matching attributes requested in the Broad Query of the Modality Worklist (C-FIND).

The broad query C-FIND-RQ is populated from the RIS Server configuration parameters. The broad query is always an automatic query, which is initiated by the system at intervals defined by the user, in the RIS Server configuration.

**Table 4-46:  
Modality Worklist Matching Key Attributes (Broad Query)**

RIS Server Configuration	Attribute Name	Tag	Query Value
None	Scheduled Procedure Step Sequence	(0040,0100)	None
Scheduled Station	>Scheduled Station AE Title	(0040,0001)	Is equal to the "Scheduled Station" setting in the RIS Server advanced configuration menu.
SPS Start Date Interval	>Scheduled Procedure Step Start Date	(0040,0002)	Today's date or user specified date range
Modality	>Modality	(0008,0060)	Is equal to the "Modality" setting in the RIS Server advanced configuration menu.

The following table provides the list of user configurable matching attributes requested in the Patient based Query of the Modality Worklist (C-FIND).

The patient based query C-FIND-RQ is populated from the query parameters specified for a particular RIS server on Sequoia Data View. The patient based query is interactively (manually) initiated by the user, after selecting the RIS server from the Data view "look in" drop down field and populating at least one of the Worklist Data View fields defined in the table below.

**Table 4-47:  
Modality Worklist Matching Key Attributes (Patient Based Query)**

Worklist Data View Field	Attribute Name	Tag	Query Value
Requested Procedure ID	Requested Procedure ID	(0040,1001)	As entered in the "Worklist Data View" UI - Requested Procedure ID.
Accession Number	Accession Number	(0008,0050)	As entered in the "Worklist Data View" UI - Accession Number.
Patient's Name	Patient's Name	(0010,0010)	As entered in the "Worklist Data View" UI - Patient's Name.
Patient ID	Patient ID	(0010,0020)	As entered in the "Worklist Data View" UI - Patient ID.
Referring Physician	Referring Physician's Name	(0008,0090)	As entered in the "Worklist Data View" UI - Referring Physician.

Worklist Data View Field	Attribute Name	Tag	Query Value
Scheduled Performing Physician	Scheduled Performing Physician's Name	(0040,0006)	As entered in the "Worklist Data View" UI - Scheduled Performing Physician
Scheduled Start Date	Scheduled Procedure Step Sequence >Scheduled Procedure Step Start Date	(0040,0100) >(0040,0002)	As entered in the "Worklist Data View" UI - Scheduled Start Date.

**Return Key Attributes used from the Worklist C\_FIND\_RSP**

The Sequoia system DICOM worklist SCU supports worklist queries with return key attributes of all types. The following table describes the return keys that the SCU supports or are needed to display the results on the Worklist view. Most attributes can be shown in the User Interface; Patient Registration or Data View. Attributes displayed on the Data View are configurable.

**Note:** Sequoia system will not display any of the query results, if even one of the results does not conform to the "Return Key Type" column according to the DICOM standard, in the table below. This means that the returning worklist results need to have all the Type 1 and Type 1C populated, for the Sequoia to be able to display the returned results. The returning Type 2 and 2C tags could remain empty, but need to be present. Type 3 tags are not mandatory.

**Table 4-48:  
Modality Worklist C\_FIND\_RSP Return Key Attributes**

Attribute Name	Tag	Return Key Type	Displayable on UI	Display Location
<b>SOP Common</b>				
Specific Character Set	(0008,0005)	1C	No	
<b>Scheduled Procedure Step</b>				
Scheduled Procedure Step Sequence	(0040,0100)	1		
>Scheduled Station AE Title	(0040,0001)	1	No	
>Scheduled Procedure Step Start Date	(0040,0002)	1	Yes	Patient Registration
>Scheduled Procedure Step Start Time	(0040,0003)	1	Yes	Patient Registration
>Scheduled Procedure Step End Date	(0040,0004)	3	No	
>Scheduled Procedure Step End Time	(0040,0005)	3	No	
>Modality	(0008,0060)	1	No	
>Scheduled Performing Physician's Name	(0040,0006)	2	Yes	Patient Registration
>Scheduled Procedure Step Description	(0040,0007)	1C	Yes	Patient Registration
>Scheduled Station Name	(0040,0010)	2	No	
>Scheduled Procedure Step Location	(0040,0011)	2	No	
>Scheduled Protocol Code Sequence	(0040,0008)	1C	No	
>>Code Value	(0008,0100)	1C	No	
>>Coding Scheme Designator	(0008,0102)	1C	No	
>>Coding Scheme Version	(0008,0103)	3	No	
>>Code Meaning	(0008,0104)	3	No	
>Pre-Medication	(0040,0012)	2C	No	

Attribute Name	Tag	Return Key Type	Displayable on UI	Display Location
>Scheduled Procedure Step ID	(0040,0009)	1	No	
>Requested Contrast Agent	(0032,1070)	2C	No	
>Scheduled Procedure Step Status	(0040,0020)	3	No	
>Comments on the Scheduled Procedure Step	(0040,0400)	3	No	
<b>Requested Procedure</b>				
Requested Procedure ID	(0040,1001)	1	Yes	Patient Registration
Requested Procedure Description	(0032,1060)	1C	Yes	Patient Registration
Requested Procedure Code Sequence	(0032,1064)	1C		
>Code Value	(0008,0100)	1C	No	
>Code Scheme Designator	(0008,0102)	1C	No	
>Code Scheme Version	(0008,0103)	3	No	
>Code Meaning	(0008,0104)	3	No	
Study Instance UID	(0020,000D)	1	No	
Referenced Study Sequence	(0008,1110)	2		
>Referenced SOP Class UID	(0008,1150)	1C	No	
>Referenced SOP Instance UID	(0008,1155)	1C	No	
Requested Procedure Priority	(0040,1003)	2	No	
Patient Transport Arrangements	(0040,1004)	2	No	
Reason for the Requested Procedure	(0040,1002)	3	No	
Confidentiality Code	(0040,1008)	3	No	
Reporting Priority	(0040,1009)	3	No	
Names of Intended Recipients of Results	(0040,1010)	3	No	
Requested Procedure Comments	(0040,1400)	3	No	
Requested Procedure Location	(0040,1005)	3	No	
<b>Imaging Service Request</b>				
Accession Number	(0008,0050)	2	Yes	Patient Registration / Report
Requesting Physician	(0032,1032)	2	No	
Referring Physician's Name	(0008,0090)	2	Yes	Patient Registration/ Report
Reason for the Imaging Service Request	(0040,2001)	3	No	
Imaging Service Request Comments	(0040,2400)	3	No	
Requesting Service	(0032,1033)	3	No	
Issuing Date of Imaging Service Request	(0040,2004)	3	No	
Issuing Time of Imaging Service Request	(0040,2005)	3	No	
Placer Order Number / Imaging Service Request	(0040,2016)	3	No	
Filler Order Number / Imaging Service Request	(0040,2017)	3	No	
Order entered by...	(0040,2008)	3	No	
Order Enterer's Location	(0040,2009)	3	No	

Attribute Name	Tag	Return Key Type	Displayable on UI	Display Location
Order Callback Phone Number	(0040,2010)	3	No	
<b>Visit Identification</b>				
Admission ID	(0038,0010)	2	No	
Issuer of Admission ID	(0038,0011)	3	No	
<b>Visit Status</b>				
Current Patient Location	(0038,0300)	2	No	
<b>Visit Relationship</b>				
Referenced Patient Sequence	(0008,1120)	2		
>Referenced SOP Class UID	(0008,1150)	2	No	
>Referenced SOP Instance UID	(0008,1155)	2	No	
<b>Visit Admission</b>				
Institution Name	(0008,0080)	3	Yes	Patient Registration/ Report
Institution Address	(0008,0081)	3	No	
Admitting Diagnoses Description	(0008,1080)	3	No	
<b>Patient Identification</b>				
Patient's Name	(0010,0010)	1	Yes	Patient Registration/ Report
Patient ID	(0010,0020)	1	Yes	Patient Registration/ Report
Other Patient IDs	(0010,1000)	3	No	
Other Patient Names	(0010,1001)	3	No	
<b>Patient Demographic</b>				
Patients Birth Date	(0010,0030)	2	Yes	Patient Registration/ Report
Patient's Sex	(0010,0040)	2	Yes	Patient Registration/ Report
Patient's Primary Language Code Sequence	(0010,0101)	3		
>Code Value	(0008,0100)	1	No	
>Coding Scheme Designator	(0008,0102)	1	No	
>Code Meaning	(0008,0104)	1	No	
>Patient's Primary Language Code Modifier Sequence	(0010,0102)	3	No	
>>Code Value	(0008,0100)	1	No	
>>Coding Scheme Designator	(0008,0102)	1	No	
>>Code Meaning	(0008,0104)	1	No	
Patient's Size	(0010,1020)	3	Yes	Patient Registration/ Report
Patient's Weight	(0010,1030)	2	Yes	Patient Registration/ Report
Confidentiality constraint on patient data	(0040,3001)	2	No	
Patient's Address	(0010,1040)	3	No	

Attribute Name	Tag	Return Key Type	Displayable on UI	Display Location
Military Rank	(0010,1080)	3	No	
Ethnic Group	(0010,2160)	3	No	
Patient Comments	(0010,4000)	3	No	
<b>Patient Medical</b>				
Patient State	(0038,0500)	2	No	
Pregnancy Status	(0010,21C0)	2	No	
Medical Alerts	(0010,2000)	2	No	
Contrast Allergies	(0010,2110)	2	No	
Special Needs	(0038,0050)	2	No	
Smoking Status	(0010,21A0)	3	No	
Last Menstrual Date	(0010,21D0)	3	Yes	Patient Registration/ Report
Additional Patient History	(0010,21B0)	3	Yes	Patient Registration

#### 4.2.5.3.1.4 SOP Specific Conformance to SOP Classes

Refer to section 8.1.1, Created SOP Instances, for a detailed list of attributes.

**Table 4-49:  
DICOM Command Response Status Handling Behavior**

Service Status	Further Meaning	Error Code	Behavior
Error	Error not logged to the job queue	Any zero Code	Failure reported to user
Success	Success not logged to the job queue	0000	Success reported to user

**Table 4-50:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure not reported to user
Association Aborted	Failure not reported to user

#### 4.2.5.4 Association Acceptance Policy

Worklist AE does not accept Association requests.

## 4.2.6 MPPS AE

### 4.2.6.1 SOP Classes

This Application Entity provides Standard Conformance to the SOP Classes listed in the table below.

**Table 4-51:  
SOP Classes for MPPS**

SOP Class Name	SOP Class UID	User of Service (SCU)	Provider of Service (SCP)
<b>Supported MPPS SOP Classes</b>			
MPPS (N-Create, N-Set)	1.2.840.10008.3.1.2.3.3	Yes	No

### 4.2.6.2 Association Policies

#### 4.2.6.2.1 General

**Table 4-52:  
DICOM Application Context**

<b>Application Context Name</b>	1.2.840.10008.3.1.1.1
---------------------------------	-----------------------

#### 4.2.6.2.2 Number of Associations

**Table 4-53:  
Number of Associations as an Association Initiator for MPPS AE**

<b>Maximum number of simultaneous associations</b>	1
--	---

#### 4.2.6.2.3 Asynchronous Nature

The Sequoia system DICOM software does not support asynchronous communication (multiple outstanding transactions over a single association).

#### 4.2.6.2.4 Implementation Identifying Information

**Table 4-54:  
DICOM Implementation Class and Version for MPPS AE**

<b>Implementation Class UID</b>	1.3.12.2.1107.5.8.11
<b>Implementation Version Name</b>	KINETDX

### 4.2.6.3 Association Initiation Policy

Sequoia initiates associations while processing the service operations and internal messages as shown below.

Operation or Real-World Activity	Association for
DIMSE N-CREATE, N-SET (forwarding MPPS)	N-CREATE, N-SET

#### 4.2.6.3.1 Activity “Send MPPS”

##### 4.2.6.3.1.1 Description and Sequencing of Activities

The Sequoia supports the DICOM Modality Performed Procedure Step Service as an SCU. The Modality Performed Procedure Step SCU informs the Performed Procedure Step SCP about the procedure performed at the modality using the N-CREATE and N-SET DIMSE service.

Immediately after a new patient, study, or scheduled procedure is registered (via Patient Registration), the Sequoia automatically performs an MPPS N-CREATE-RQ operation with a status of IN-PROGRESS for the newly created Performed Procedure Step. When the current patient procedure ends (either with an End Exam, or new Patient / Study / Procedure), the Sequoia automatically performs an MPPS N-SET-RQ final operation with a status of COMPLETED. The user may also manually discontinue the current Performed Procedure Step. An MPPS N-SET-RQ final operation is performed with the appropriate status of COMPLETED or DISCONTINUED.

##### 4.2.6.3.1.2 Proposed Presentation Contexts

Table 4-55:  
Proposed Presentation Contexts for MPPS AE

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

There is no extended negotiation as an SCU.

##### 4.2.6.3.1.3 SOP Specific Conformance to SOP classes

All Attributes listed in DICOM 3.0 Standard [1] PS3.4 in Table F8.2-1 are potentially supported the Sequoia. They will be part of the MPPS Message if set by the Application triggering the Service.

Refer to section 8.1.1, Created SOP Instances, for a detailed list of attributes.

Table 4-56:  
DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Error Code	Behavior
Failure	No Auto retry of failed jobs	Any none null Code	Failure not reported to user
Success	Success not logged to the job queue	0000	Logged to log file.

**Table 4-57:  
DICOM Command Communication Failure Behavior**

Exception	Behavior
Timeout	Failure reported to user
Association Aborted	Failure reported to user

#### **4.2.6.4 Association Acceptance Policy**

MPPS AE does not accept Association requests.

### **4.3 Network Interfaces**

#### **4.3.1 Physical Network Interface**

The Sequoia is independent from the physical medium over which TCP/IP executes; it inherits this from the OS system upon which it executes.

#### **4.3.2 Additional Protocols**

[See example in DICOM Standard, Part 2, section B.4.3.2.]

##### **4.3.2.1 DHCP**

[See example in DICOM Standard, Part 2, section B.4.3.2.1.]

##### **4.3.2.2 DNS**

[See example in DICOM Standard, Part 2, section B.4.3.2.2.]

##### **4.3.2.3 NTP**

[See example in DICOM Standard, Part 2, section B.4.3.2.3.]

##### **4.3.2.4 LDAP**

[See example in DICOM Standard, Part 2, section B.4.3.2.4.]

#### **4.3.3 IPv4 and IPv6 Support**

IPv4 supported, IPv6 not supported.

### **4.4 Configuration**

DICOM and networking parameters can be configured for both the local Sequoia and remote DICOM Service Class Providers through the User Configuration – Networking/Printing pages.

#### 4.4.1 Local Host - TCP/IP and General

The Sequoia's local network parameters are configurable. The following parameters can be configured for the Sequoia:

- Host Name
- IP address
- Network IP mask
- Router/Gateway IP addresses
- Application Entity Title
- Printers

##### 4.4.1.1 DICOM Storage Configuration

Remote DICOM Storage and Storage Commitment Service Class Providers are configured through the Store Configuration or Storage Commitment Configuration of the User Configuration – Networking/Printing pages. The following parameters can be configured for each device:

- Host name
- IP address
- AET - Application Entity Title
- Port number

##### 4.4.1.2 DICOM HIS/RIS Configuration

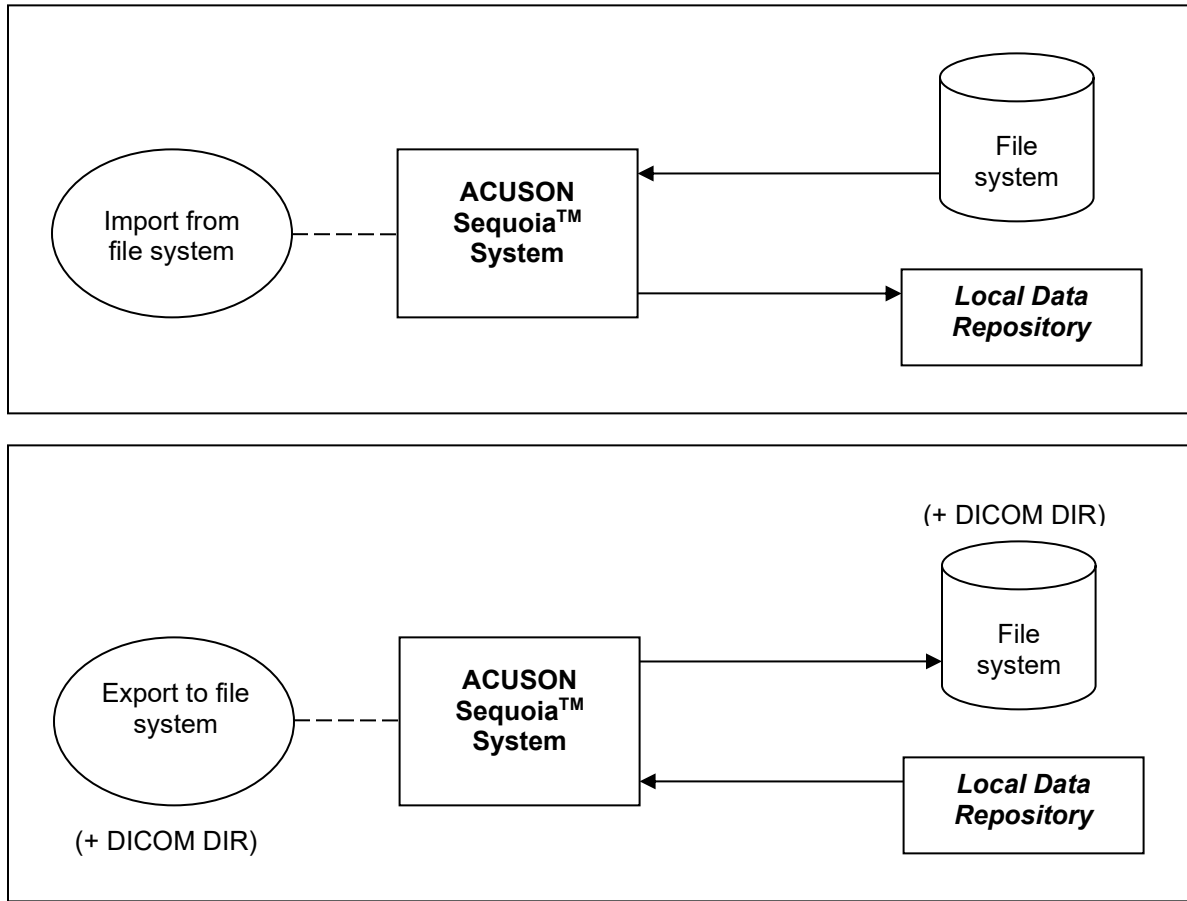
Remote DICOM Worklist and Modality Performed Procedure Step Service Class Providers are configured through the RIS Server Configuration of the User Configuration – Networking/Printing pages. The following parameters can be configured for each Worklist/MPPS server:

- Host name
- IP address
- AET - Application Entity Title
- Port number
- Query waiting time (in seconds)
- Maximum number of matching results
- Automatic Worklist query interval (in minutes)

## 5 MEDIA INTERCHANGE

### 5.1 Implementation Model

#### 5.1.1 Application Data Flow



**Figure 5-1. Media Application Data Flow Diagram**

The Sequoia provides the functionality to Import or Export DICOM Instances to and from the File System. During exportation, a DICOMDIR may also be generated. A complete ISO Image ready-to-burn can be generated. All SOP Classes defined in Table 4-1: SOP Classes for Storage AE are supported for the Import/Export functionality.

#### 5.1.2 Functional Definition of AEs

The Sequoia is capable of

- Creating a new File-set in the File System (Export to ...)
- Importing SOP Instances from the File System onto local storage

#### 5.1.3 Sequencing of Real-World Activities

Not applicable.

### 5.1.4 File Meta Information for Implementation Class and Version

**Table 5-1:**  
**Implementation Class/Version Name – Media Interchange**

File Meta Information Version	0x0001
Implementation Class UID	1.3.12.2.1107.5.8.11
Implementation Version Name	KINETDX

## 5.2 AE Specifications

### 5.2.1 Media Storage AE Specification

The Sequoia system Media Storage AE provides conformance to the following DICOM SOP Classes as an FSC. The following specifications apply to the AE.

When configuring an uncompressed Transfer Syntax, the STD-US and STD-GEN application profile classes will be extended to store instances of the following SOP classes in compressed format.

**Table 5-2:**  
**Application Profiles, Activities, and Roles for DICOM Exchange Media**

Application Profiles Supported	Real World Activity	Role
STD_GEN-DVD STD-US-SC-MF-DVD STD-US-ID-MF-DVD	Create DVD-R	FSC

### 5.2.2 Implementation Identifying Information

**Table 5-3:**  
**DICOM Implementation Class and Version for Media Storage AE**

Implementation Class UID	1.3.12.2.1107.5.8.11
Implementation Version Name	KINETDX

## 5.3 Media Storage Application Profile

### 5.3.1 DICOMDIR Keys

The DICOMDIR file will contain the following attributes for the levels Patient - Study - Series - Image (valid for all Application profiles described in this section).

**Table 5-4:**  
**DICOMDIR Keys**

Attribute Name	Tag	Type	Notes
<b>File-Set Identification</b>			

Attribute Name	Tag	Type	Notes
File-set ID	(0004,1130)	2	Volume label of media
<b>Directory Information</b>			
Offset of the First Directory Record of the Root Directory Entry	(0004,1200)	1	
Offset of the Last Directory Record of the Root Directory Entity	(0004,1202)	1	
File-set Consistency Flag	(0004,1212)	1	0000H
Directory Record Sequence	(0004,1220)	2	
> Offset of the Next Directory Record	(0004,1400)	1C	
> Record In-use flag	(0004,1410)	1C	FFFFH
> Offset of Referenced Lower-Level Directory Entity	(0004,1420)	1C	
> Directory Record Type	(0004,1430)	1C	PATIENT, STUDY, SERIES, IMAGE, SR DOCUMENT
> Referenced File ID	(0004,1500)	1C	contains the filename on media for the Directory Records of Type IMAGE, SR DOCUMENT
> Referenced SOP Class UID in File	(0004,1510)	1C	for the Directory Records of Type IMAGE, SR DOCUMENT
> Referenced SOP Instance UID in File	(0004,1511)	1C	for the Directory Records of Type IMAGE, SR DOCUMENT
> Referenced Transfer Syntax UID in File	(0004,1512)	1C	for the Directory Records of Type IMAGE, SR DOCUMENT
> Record Selection Keys	see below	-	
<b>Patient Keys</b>			<b>Directory Record Type PATIENT</b>
Specific Character Set	(0008,0005)	1C	
Patient's Name	(0010,0010)	2	
Patient ID	(0010,0020)	1	
Date Of Birth	(0010,0030)	3	
Patient's Sex	(0010,0040)	3	
<b>Study Keys</b>			<b>Directory Record Type STUDY</b>
Specific Character Set	(0008,0005)	1C	
Study Date	(0008,0020)	1	
Study Time	(0008,0030)	1	
Accession Number	(0008,0050)	2	
Study Description	(0008,1030)	2	
Study Instance UID	(0020,000D)	1C	
Study ID	(0020,0010)	1	From Requested Procedure ID or System Generated
Requested Procedure ID	(0040,1001)	3	
<b>Series Keys</b>			<b>Directory Record Type SERIES</b>
Specific Character Set	(0008,0005)	1C	
Modality	(0008,0060)	1	
Series Instance UID	(0020,000E)	1	

Attribute Name	Tag	Type	Notes
Series Number	(0020,0011)	1	
Station Name	(0008,1010)	3	Set to system Host Name
Series Description	(0008,103E)	3	
Protocol Name	(0018,1030)	3	
<b>Image Keys</b>			<b>Directory Record Type IMAGE</b>
Specific Character Set	(0008,0005)	1C	
Image Type	(0008,0008)	3	
Instance Number	(0020,0013)	1	
<b>SR Document Keys</b>			<b>Directory Record Type SR Document</b>
Specific Character Set	(0008,0005)	1C	
Content Date	(0008,0023)	1	
Content Time	(0008,0033)	1	
Instance Number	(0020,0013)	1	
Concept Name Code Sequence	(0040,A043)	1	
>Include Code Sequence Macro			
Completion Flag	(0040,A491)	1	
Verification Flag	(0040,A493)	1	

### 5.3.2 Compliance to STD-US-SC-MF-DVD

For media conforming to the STD-US-SC-MF-DVD profiles the following SOP Classes and transfer syntaxes will be supported as an FSC.

**Table 5-5:  
STD-US-SC-MF-DVD Supported SOP Classes**

IOD	SOP Class UID	Transfer Syntax and UID	FSC	FSR	FSU
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Explicit VR Little Endian 1.2.840.10008.1.2.1	Yes	Yes	No
		JPEG Lossy (Baseline) 1.2.840.10008.1.2.4.50			
Ultrasound Multi-frame Image Storage (Clips)	1.2.840.10008.5.1.4.1.1.3.1	JPEG Lossy (Baseline) 1.2.840.10008.1.2.4.50	Yes	Yes	No

The following Photometric Interpretations are supported by FSC:

- RGB - Ultrasound Image Storage only
- YBR\_FULL\_422 - Ultrasound Multi-frame Image Storage (Clips) only

## 6 SUPPORT OF CHARACTER SETS

### 6.1 Character Sets for Sequoia System

The Sequoia system supports the ISO 8859 Latin 1 (ISO-IR 100) character set.

## 7 SECURITY

### 7.1 Security Profiles

- PS 3.15 Annex F: Network Address Management Profiles: DHCP Client, DNS Client supported
- PS 3.15 Annex G: Time Synchronization Profiles supported

### 7.2 Association Level Security

It is possible to configure whether the DICOM Server will only answer to known AETs or to any AET.

### 7.3 Application Level Security

- For configuration and maintenance, the Service Technician must login with a separate password.

## 8 ANNEXES

### 8.1 IOD Contents

#### 8.1.1 Created SOP Instances

##### 8.1.1.1 US Image IOD Attributes

The system shall comply with the DICOM standard for the storage and transmission of the US Image IOD objects. In the following table is a list of fields that are user editable on the system.

**Table 8-1:  
US Image IOD Attributes**

Module	Attribute	Tag	Type	VR	VM	Value/Description
Patient	Patient's Name	(0010,0010)	2	PN	1	Patient's full name. (from MWL or user input)
	Patient ID	(0010,0020)	2	LO	1	Primary hospital identification number or code for the patient (from MWL or user input)
	Issuer of Patient ID	(0010,0021)	3	LO	1	Identifier of the assigning authority. (from MWL)
	Patient's Birth Date	(0010,0030)	2	DA	1	Birth date of the patient. (from MWL or user input)
	Patient's Birth Time	(0010,0032)	3	TM	1	Birth time of the patient. (from MWL)
	Patient's Sex	(0010,0040)	2	CS	1	Sex of the patient. M = male F = female O = other (from MWL or user input)
	Other Patient Names	(0010,1001)	3	PN	1-n	Other names used to identify the patient. (from MWL)
	Patient's Birth Name	(0010,1005)	3	PN	1	Patient's birth name.
	Ethnic Group	(0010,2160)	3	SH	1	Ethnic group or race of the patient. (from MWL)
	Patient Comments	(0010,4000)	3	LT	1	User-defined additional information about the patient. (from MWL)
	Patient Mother's Birth Name	(0010,1060)	3	PN	1	Birth name of Patient's mother (from MWL)
Patient Demographic	Patient's Address	(0010,1040)	3	LO	1	Legal address of the named patient. (from MWL)
	Patient Telephone Numbers	(0010,2154)	3	SH	1..n	Telephone Number(s) of Patient (from MWL)
	Military Rank	(0010,1080)	3	LO	1	Military rank of patient. (from MWL)
	Branch of Service	(0010,1081)	3	LO	1	Branch of the military. The country allegiance may also be included (e.g. U.S. Army). (from MWL)
	Country of Residence	(0010,2150)	3	LO	1	Country in which patient currently resides (from MWL)
	Region of Residence	(0010,2152)	3	LO	1	Region within patient's country of residence (from MWL)

	Patient's Religious Preference	(0010,21F0)	3	LO	1	The religious preference of the patient (from MWL)
	Occupation	(0010,2180)	3	SH	1	Occupation of the Patient. (from MWL)
Patient Medical	Medical Alerts	(0010,2000)	3	LO	1..n	Conditions to which medical staff should be alerted. (from MWL)
	Contrast Allergies	(0010,2110)	3	LO	1..n	Description of prior reaction to contrast agents, or other patient allergies or adverse reactions. (from MWL)
	Smoking Status	(0010,21A0)	3	CS	1	Indicates whether patient smokes. Enumerated Values: - YES - NO - UNKNOWN (from MWL)
	Pregnancy Status	(0010,21C0)	3	US	1	Describes pregnancy state of patient. Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown (from MWL)
	Last Menstrual Date	(0010,21D0)	3	DA	1	Date of onset of last menstrual period. (from MWL or user input)
	Special Needs	(0038,0050)	3	LO	1	Medical and social needs (e.g. wheelchair, oxygen, translator, etc.) (from MWL)
	Patient State	(0038,0500)	3	LO	1	Description of Patient state (comatose, disoriented, vision impaired, etc.) (from MWL)
General Study	Study Instance UID	(0020,000D)	1	UI	1	(from MWL or created)
	Study Date	(0008,0020)	2	DA	1	Date the study started.
	Study Time	(0008,0030)	2	TM	1	Time the study started.
	Referring Physician's Name	(0008,0090)	2	PN	1	Name of the patient's referring physician. (from MWL or user input)
	Study ID	(0020,0010)	2	SH	1	From Requested Procedure ID or System Generated
	Accession Number	(0008,0050)	2	SH	1	A number that identifies the order for the study. (from MWL or user input)
	Study Description	(0008,1030)	3	LO	1	From MWL- Requested procedure description. Exam Presets for local exams.
Patient Study	Admitting Diagnoses Description	(0008,1080)	3	LO	1..n	Description of the admitting diagnosis (from MWL or user input)
	Patient's Age	(0010,1010)	3	AS	1	Age of patient at time of study. Calculated from DOB
	Patient's Size	(0010,1020)	3	DS	1	Length or size of the patient, in meters. (from MWL or user input)
	Patient's Weight	(0010,1030)	3	DS	1	Weight of the patient, in kilograms. (from MWL or user input)
	Additional Patient History	(0010, 21B0)	3	LT	1	Additional info regarding Patient History (user input)
Study Scheduling	Requesting Physician	(0032,1032)	3	PN	1	(from MWL)
	Requesting Service	(0032,1033)	3	LO	1	(from MWL)
	Requested Procedure Description	(0032,1060)	3	LO	1	(from MWL)
General Series	Modality	(0008,0060)	1	CS	1	Set to US
	Series Instance UID	(0020,000E)	1	UI	1	A newly created UID if new series is created. Value copied from existing series if image is added to existing series
	Series Number	(0020,0011)	2	IS	1	Set to 1...n This can be used to influence placement of the series in Browser sort orders.

	Series Date	(0008,0021)	3	DA	1	Date of series creation
	Series Time	(0008,0031)	3	TM	1	Time of series creation
	Series Description	(0008,103E)	3	LO	1	Same as Study Description
	Performing Physicians' Name	(0008,1050)	3	PN	1..n	(from MWL or user input) (used by teampay)
	Protocol Name	(0018,1030)	3	LO	1	User selected protocol for the exam
	Operators' Name	(0008,1070)	3	PN	1.	(input by user)
	Referenced Performed Procedure Step Sequence	(0008,1111)	3	SQ	1	Created (if MPPS is supported)
	>Referenced SOP Class UID	(0008,1150)	1C	UI	1	1.2.840.10008.3.1.2.3.3 (MPPS SOP Class)
	>Referenced SOP Instance UID	(0008,1155)	1C	UI	1	MPPS SOP Instance UID
	Request Attributes Sequence	(0040,0275)	3	SQ	1	From MWL or zero length
	>Requested Procedure ID	(0040,1001)	1C	SH	1	
	>Requested Procedure Description	(0032,1060)	3	LO	1	
	>Scheduled Procedure Step ID	(0040,0009)	1C	SH	1	
General Equipment	Manufacturer	(0008,0070)	2	LO	1	Set to "SIEMENS Healthineers"
	Institution Name	(0008,0080)	3	LO	1	User Configured.
	Station Name	(0008,1010)	3	SH		Set to system Host Name
	Manufacturer's Model Name	(0008,1090)	3	LO	1	Set to system Model Name
	Device Serial Number	(0018,1000)	3	LO	1	Set to System serial number
	Software Versions	(0018,1020)	3	LO	1	Product software version
General Image	Instance Number	(0020,0013)	2	IS	1	1...n Can influence sort order in browser and review
	Content Date	(0008,0023)	2C	DA	1	Image creation date <yyyymmdd>
	Content Time	(0008,0033)	2C	TM	1	Image creation time <hhmmss.ffffff>. The fffff component (fractional part of a second), if present, shall contain 1 to 6 digits.
	Image Comments	(0020,4000)	3	LT	1	For single frame image store: IMAGE PANORAMIC CINE PANORAMIC COMPOSITE Single Volumes: 3D
	Lossy Image Compression	(0028,2110)	3	CS	1	00 or Attribute Absent: Image is not compressed 01: Image is subject to Lossy Compression Set to 01 for compressed clips.
	Lossy Image Compression Ratio	(0028,2112)	3	DS	1	Only used with JPEG Lossy compression
	Burnt in Annotation	(0028,0301)	3	CS	1	YES – Graphics burned in pixel NO – Graphics saved as overlays.
	Image Type	(0008,0008)	3	CS	4	Value 1: ORIGINAL (DERIVED for Panoramic) Value2: PRIMARY (SECONDARY for re-capture) Value3: Exam Preset (REPORTDATA for Store Report) Value 4: Modality bits Screen Shot = 0x0000 Two D = 0x0001 M Mode = 0x0002 CW Doppler = 0x0004 PW Doppler = 0x0008 Color Doppler = 0x0010 Color M Mode = 0x0020 Three D = 0x0040

						Color Power Mode = 0x0100 Nonstandard items used a a bitmask to denote workflow: General Imaging = 0x0400 Cardio Vascular = 0x0800
	Presentation LUT Shape	(2050, 0020)	3	CS	1	Set to IDENTITY, when GSDF conversion is applied, attribute not present otherwise.
	Primary Anatomic Structure Sequence	(0008, 2228)	3	SQ	1	Set for AI Assist Enabled Cardiac Exams
General Reference	Source Image Sequence	(0008, 2112)	3	SQ	1	Set to SOP Class/ Instance pairs of Images that were used to derive this image. Set if image is captured from another image/clip. Not set for capture from acquisition.
	>Referenced SOP Class UID	(0008,1150)	3	UI	1	Uniquely identifies the SOP class of source Image/Clip
	>Referenced SOP Instance UID	(0008,1155)	3	UI	1	Uniquely identifies the SOP Instance of source Image/Clip
Image Pixel	Rows	(0028,0010)	1	US	1	Number of rows in the image
	Columns	(0028,0011)	1	US	1	Number of columns in the image
	Samples Per Pixel	(0028,0002)	1	US	1	Set to 3 (Set to 1 if RGB to MONOCHROME2 conversion applied when export)
	Photometric Interpretation	(0028,0004)	1	CS	1	Set to YBR_FULL_422 for compressed clips
	Bits Allocated	(0028,0100)	1	US	1	Set to 8
	Bits Stored	(0028,0101)	1	US	1	Set to 8
	High Bit	(0028,0102)	1	US	1	Set to 7
	Planar Configuration	(0028,0006)	1C	US	1	Set to 0 (color-by-pixel)
	Pixel Representation	(0028,0103)	1	US	1	Set to 0 (unsigned integer)
	Pixel Data	(7FE0,0010)	1	OW	1	A data stream of the pixel samples that comprise the image.
Contrast Bolus	Contrast/Bolus Agent	(0018,0010)	2	LO	1	APPLIED for Contrast Images (Used by teamply)
US Image	Ultrasound Color Data Present	(0028,0014)	3	US	1	Set to 01 if Color Flow, Pseudo Color in image, Elasticity or ARFI, else 00
	View Name	(0008,2127)	3	SH	1	Name of view, a particular combination of the position and orientation when a set of images are acquired Present when protocol is on during acquisition
	Heart Rate	(0018,1088)	3	IS	1	Beats per minute
	Transducer Data	(0018,5010)	3	LO	2	Probe name and serial number (Used by teamply)
	Transducer Type	(0018,6031)	3	CS	1	SECTOR_PHASED SECTOR_MECH SECTOR_ANNULAR LINEAR CURVED LINEAR SINGLE CRYSTAL SPLIT XTAL CWD_IV_PHASED_IV_ROT_XTAL IV_ROT MIRROR ENDOCAV_PA ENDOCAV_MECH ENDOCAV_CLA ENDOCAV_AA ENDOCAV_LINEAR VECTOR_PHASED
	Mechanical Index	(0018,5022)	3	DS	1	B-mode
	Bone Thermal Index	(0018,5024)	3	DS	1	Doppler, M-mode & Color Flow only
	Cranial Thermal Index	(0018,5026)	3	DS	1	Cranial Doppler only
	Soft Tissue Thermal Index	(0018,5027)	3	DS	1	Doppler, M-mode & Color Flow only
	Stage Name	(0008,2120)	3	SH	1	
	Stage Number	(0008,2122)	3	IS	1	
	Number of Stages	(0008,2124)	2C	IS	1	
	Number of Views in Stage	(0008,212A)	2C	IS	1	
US Region Calibration	Sequence of Ultrasound Regions	(0018,6011)	1	SQ	1	One created for each US region displayed

	>Region Spatial Format	(0018,6012)	1	SQ	1	Spatial Organization of data within the region
	>Region Data Type	(0018,6014)	1	US	1	Type of data within the region
	>Region Flags	(0018,6016)	1	UL	1	Flag indicating characteristic of region
	>Region Location Min x0	(0018,6018)	1	UL	1	Location of region
	>Region Location Min y0	(0018,601A)	1	UL	1	Location of region
	>Region Location Max x1	(0018,601C)	1	UL	1	Location of region
	>Region Location Max y1	(0018,601E)	1	UL	1	Location of region
	>Reference Pixel x0	(0018,6020)	3	SL	1	Location of virtual reference pixel
	>Reference Pixel y0	(0018,6022)	3	SL	1	Location of virtual reference pixel
	>Physical Units X Direction	(0018,6024)	1	US	1	Physical units of dimension of region
	>Physical Units Y Direction	(0018,6026)	1	US	1	Physical units of dimension of region
	>Ref. Pixel Physical Value X	(0018,6028)	3	FD	1	Physical Value at Reference pixel x location
	>Ref. Pixel Physical Value Y	(0018,602A)	3	FD	1	Physical Value at Reference pixel y location
	>Physical Delta X	(0018,602C)	1	FD	1	Physical Value increment per positive X pixel increment
	>Physical Delta Y	(0018,602E)	1	FD	1	Physical Value increment per positive Y pixel increment
	>Pulse Repetition Frequency	(0018,6032)	3	UL	1	Frequency used to collect data in the region, For Color Flow and Doppler regions only (Hertz)
SOP Common	SOP Class UID	(0008,0016)	1	UI	1	1.2.840.10008.5.1.4.1.1.6.1
	SOP Instance UID	(0008,0018)	1	UI	1	Unique ID created.
	Instance Number	(0020,0013)	3	IS	1	Set to 1...n
	Specific Character Set	(0008,0005)	1C	CS	1..n	From MWL or set to ISO_IR 100
	Instance Creation Date	(0008,0012)	3	DA	1	Date the SOP instance was created
	Instance Creation Time	(0008,0013)	3	TN	1	Time the SOP instance was created

### 8.1.1.2 US Multi-frame Image IOD Attributes

**Table 8-2:  
US Multi-frame Image IOD Attributes**

Module	Attribute	Tag	Type	VR	V M	Value/Description
Patient	Patient's Name	(0010,0010)	2	PN	1	Patient's full name. (from MWL or user input)
	Patient ID	(0010,0020)	2	LO	1	Primary hospital identification number or code for the patient (from MWL or user input)
	Issuer of Patient ID	(0010,0021)	3	LO	1	Identifier of the assigning authority. (from MWL)
	Patient's Birth Date	(0010,0030)	2	DA	1	Birth date of the patient. (from MWL or user input)
	Patient's Birth Time	(0010,0032)	3	TM	1	Birth time of the patient. (from MWL)
	Patient's Sex	(0010,0040)	2	CS	1	Sex of the patient. M = male F = female O = other (from MWL or user input)
	Other Patient Names	(0010,1001)	3	PN	1..n	Other names used to identify the patient. (from MWL)
	Patient's Birth Name	(0010,1005)	3	PN	1	Patient's birth name.

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	Ethnic Group	(0010,2160)	3	SH	1	Ethnic group or race of the patient. (from MWL)
	Patient Comments	(0010,4000)	3	LT	1	User-defined additional information about the patient. (from MWL)
	Patient Mother's Birth Name	(0010,1060)	3	PN	1	Birth name of Patient's mother (from MWL)
Patient Demographic	Patient's Address	(0010,1040)	3	LO	1	Legal address of the named patient. (from MWL)
	Patient Telephone Numbers	(0010,2154)	3	SH	1..n	Telephone Number(s) of Patient (from MWL)
	Military Rank	(0010,1080)	3	LO	1	Military rank of patient. (from MWL)
	Branch of Service	(0010,1081)	3	LO	1	Branch of the military. The country allegiance may also be included (e.g. U.S. Army). (from MWL)
	Country of Residence	(0010,2150)	3	LO	1	Country in which patient currently resides (from MWL)
	Region of Residence	(0010,2152)	3	LO	1	Region within patient's country of residence (from MWL)
	Patient's Religious Preference	(0010,21F0)	3	LO	1	The religious preference of the patient (from MWL)
	Occupation	(0010,2180)	3	SH	1	Occupation of the Patient. (from MWL)
Patient Medical	Medical Alerts	(0010,2000)	3	LO	1..n	Conditions to which medical staff should be alerted. (from MWL)
	Contrast Allergies	(0010,2110)	3	LO	1..n	Description of prior reaction to contrast agents, or other patient allergies or adverse reactions. (from MWL)
	Smoking Status	(0010,21A0)	3	CS	1	Indicates whether patient smokes. Enumerated Values: - YES - NO - UNKNOWN (from MWL)
	Pregnancy Status	(0010,21C0)	3	US	1	Describes pregnancy state of patient. Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown (from MWL)
	Last Menstrual Date	(0010,21D0)	3	DA	1	Date of onset of last menstrual period. (from MWL or user input)
	Special Needs	(0038,0050)	3	LO	1	Medical and social needs (e.g. wheelchair, oxygen, translator, etc.) (from MWL)
	Patient State	(0038,0500)	3	LO	1	Description of Patient state (comatose, disoriented, vision impaired, etc.) (from MWL)
General Study	Study Instance UID	(0020,000D)	1	UI	1	(from MWL or created)
	Study Date	(0008,0020)	2	DA	1	Date the study started.
	Study Time	(0008,0030)	2	TM	1	Time the study started.
	Referring Physician's Name	(0008,0090)	2	PN	1	Name of the patient's referring physician. (from MWL or user input)
	Study ID	(0020,0010)	2	SH	1	From Requested Procedure ID or System Generated
	Accession Number	(0008,0050)	2	SH	1	A number that identifies the order for the study. (from MWL or user input)

	Study Description	(0008,1030)	3	LO	1	From MWL- Requested procedure description. Exam Presets for local exams.
Patient Study	Admitting Diagnoses Description	(0008,1080)	3	LO	1..n	Description of the admitting diagnosis (from MWL or user input)
	Patient's Age	(0010,1010)	3	AS	1	Age of patient at time of study. Calculated from DOB
	Patient's Size	(0010,1020)	3	DS	1	Length or size of the patient, in meters. (from MWL or user input)
	Patient's Weight	(0010,1030)	3	DS	1	Weight of the patient, in kilograms. (from MWL or user input)
	Additional Patient History	(0010, 21B0)	3	LT	1	Additional info regarding Patient History (user input)
Study Scheduling	Requesting Physician	(0032,1032)	3	PN	1	(from MWL)
	Requesting Service	(0032,1033)	3	LO	1	(from MWL)
	Requested Procedure Description	(0032,1060)	3	LO	1	(from MWL)
General Series	Modality	(0008,0060)	1	CS	1	Set to US
	Series Instance UID	(0020,000E)	1	UI	1	A newly created UID if new series is created. Value copied from existing series if image is added to existing series
	Series Number	(0020,0011)	2	IS	1	Set to 1...n This can be used to influence placement of the series in Browser sort orders.
	Series Date	(0008,0021)	3	DA	1	Date of series creation
	Series Time	(0008,0031)	3	TM	1	Time of series creation
	Series Description	(0008,103E)	3	LO	1	Same as Study Description
	Performing Physicians' Name	(0008,1050)	3	PN	1..n	(from MWL or user input) (used by teamplay)
	Protocol Name	(0018,1030)	3	LO	1	User selected protocol for the exam
	Operators' Name	(0008,1070)	3	PN	1.	(input by user)
	Referenced Performed Procedure Step Sequence	(0008,1111)	3	SQ	1	Created (if MPPS is supported)
	>Referenced SOP Class UID	(0008,1150)	1C	UI	1	1.2.840.10008.3.1.2.3.3 (MPPS SOP Class)
	>Referenced SOP Instance UID	(0008,1155)	1C	UI	1	MPPS SOP Instance UID
	Request Attributes Sequence	(0040,0275)	3	SQ	1	From MWL or zero length
	>Requested Procedure ID	(0040,1001)	1C	SH	1	From MWL or zero length
	>Requested Procedure Description	(0032,1060)	3	LO	1	From MWL or zero length
	>Scheduled Procedure Step ID	(0040,0009)	1C	SH	1	From MWL or zero length
	>Scheduled Protocol Code Sequence	(0040,0008)	3	SQ	1	From MWL or zero length
General Equipment	Manufacturer	(0008,0070)	2	LO	1	Set to "SIEMENS Healthineers"
	Institution Name	(0008,0080)	3	LO	1	User Configured.
	Institution Address	(0008,0081)	3	LO	1	From MWL
	Station Name	(0008,1010)	3	SH		Set to system Host Name
	Manufacturer's Model Name	(0008,1090)	3	LO	1	Set to system Model Name
	Device Serial Number	(0018,1000)	3	LO	1	Set to System serial number
	Software Versions	(0018,1020)	3	LO	1	Product software version
General Image	Instance Number	(0020,0013)	2	IS	1	1...n Can influence sort order in browser and review
	Content Date	(0008,0023)	2C	DA	1	Image creation date <yyyymmdd>
	Content Time	(0008,0033)	2C	TM	1	Image creation time <hhmmss.ffffff>. The fffff component (fractional part of a second), if present, shall contain 1 to 6 digits.
	Acquisition Date time	(0008,002A)	3	DT	1	The date and time of the acquisition of data. Can influence sort order in browser and review

	Image Comments	(0020,4000)	3	LT	1	CLIP VolumeSequence : 4D
	Lossy Image Compression	(0028,2110)	3	CS	1	00 or Attribute Absent: Image is not compressed 01: Image is subject to Lossy Compression Set to 01 for compressed clips.
	Lossy Image Compression Ratio	(0028,2112)	3	DS	1..n	Only used with JPEG Lossy compression
	Burnt in Annotation	(0028,0301)	3	CS	1	YES – Graphics burned in pixel NO – Graphics saved as overlays.
	Image Type	(0008,0008)	3	CS	4	Value 1: ORIGINAL (DERIVED for Panoramic) Value2: PRIMARY (SECONDARY for re-capture) Value3: Exam Preset Value 4: Modality bits Screen Shot = 0x0000 Two D = 0x0001 M Mode = 0x0002 CW Doppler = 0x0004 PW Doppler = 0x0008 Color Doppler = 0x0010 Color M Mode = 0x0020 Three D = 0x0040 Color Power Mode = 0x0100 Nonstandard items used a a bitmask to denote workflow: General Imaging = 0x0400 Cardio Vascular = 0x0800
	Presentation LUT Shape	(2050, 0020)	3	CS	1	Set to IDENTITY, when GSDF conversion is applied, attribute not present otherwise.
General Reference	Source Image Sequence	(0008, 2112)	3	SQ	1	Set to SOP Class/ Instance pairs of Images that were used to derive this image Set to SOP Class/ SOP Instance UID in case clip is captured from another clip. Not set for capture from acquisition.
	>Referenced SOP Class UID	(0008,1150)	3	UI	1	Uniquely identifies the SOP class of source Clip
	>Referenced SOP Instance UID	(0008,1155)	3	UI	1	Uniquely identifies the SOP Instance of source Clip
Image Pixel	Rows	(0028,0010)	1	US	1	Number of rows in the image
	Columns	(0028,0011)	1	US	1	Number of columns in the image
	Samples Per Pixel	(0028,0002)	1	US	1	Set to 3 (Set to 1 if RGB to MONOCHROME2 conversion applied when export)
	Photometric Interpretation	(0028,0004)	1	CS	1	Set to YBR_FULL_422 for compressed clips
	Bits Allocated	(0028,0100)	1	US	1	Set to 8
	Bits Stored	(0028,0101)	1	US	1	Set to 8
	High Bit	(0028,0102)	1	US	1	Set to 7
	Planar Configuration	(0028,0006)	1C	US	1	Set to 0 (color-by-pixel)
	Pixel Representation	(0028,0103)	1	US	1	Set to 0 (unsigned integer)
	Pixel Data	(7FE0,0010)	1	OW	1	A data stream of the pixel samples that comprise the image.
Contrast Bolus	Contrast/Bolus Agent	(0018,0010)	2	LO	1	APPLIED for Contrast Images (Used by teamplay)
US Image	Ultrasound Color Data Present	(0028,0014)	3	US	1	Set to 01 if Color Flow, Pseudo Color in image, Elasticity or ARFI, else 00
	View Name	(0008,2127)	3	SH	1	Name of view, a particular combination of the position and orientation when a set of images are acquired. Present when protocol is on during acquisition
	View Number	(0008,2128)	3	IS	1	A number that identifies the View. View Number starts at one. . Present when protocol is on during acquisition

	Heart Rate	(0018,1088)	3	IS	1	Beats per minute
	Transducer Data	(0018,5010)	3	LO	2	Probe name and serial number (Used by teamplay)
	Transducer Type	(0018,6031)	3	CS	1	SECTOR_PHASED SECTOR_MECH SECTOR_ANNULAR LINEAR CURVED LINEAR SINGLE CRYSTAL SPLIT XTAL CWD_IV_PHASED_IV_ROT_XTAL IV_ROT MIRROR ENDOCAV_PA ENDOCAV_MECH ENDOCAV_CLA ENDOCAV_AA ENDOCAV_LINEAR VECTOR_PHASED
	Mechanical Index	(0018,5022)	3	DS	1	B-mode
	Bone Thermal Index	(0018,5024)	3	DS	1	Doppler, M-mode & Color Flow only
	Cranial Thermal Index	(0018,5026)	3	DS	1	Cranial Doppler only
	Soft Tissue Thermal Index	(0018,5027)	3	DS	1	Doppler, M-mode & Color Flow only
	R Wave Time Vector	(0018,6060)	3	FL	1..n	The time offset(s) of the reported R Wave peaks, each relative to the time of the start of the acquisition of the first frame (m sec).
	Stage Name	(0008,2120)	3	SH	1	
	Stage Number	(0008,2122)	3	IS	1	
	Number of Stages	(0008,2124)	2C	IS	1	
	Number of Views in Stage	(0008,212A)	2C	IS	1	
US Region Calibration	Sequence of Ultrasound Regions	(0018,6011)	1	SQ	1	One created for each US region displayed
	>Region Spatial Format	(0018,6012)	1	SQ	1	Spatial Organization of data within the region
	>Region Data Type	(0018,6014)	1	US	1	Type of data within the region
	>Region Flags	(0018,6016)	1	UL	1	Flag indicating characteristic of region
	>Region Location Min x0	(0018,6018)	1	UL	1	Location of region
	>Region Location Min y0	(0018,601A)	1	UL	1	Location of region
	>Region Location Max x1	(0018,601C)	1	UL	1	Location of region
	>Region Location Max y1	(0018,601E)	1	UL	1	Location of region
	>Reference Pixel x0	(0018,6020)	3	SL	1	Location of virtual reference pixel
	>Reference Pixel y0	(0018,6022)	3	SL	1	Location of virtual reference pixel
	>Physical Units X Direction	(0018,6024)	1	US	1	Physical units of dimension of region
	>Physical Units Y Direction	(0018,6026)	1	US	1	Physical units of dimension of region
	>Ref. Pixel Physical Value X	(0018,6028)	3	FD	1	Physical Value at Reference pixel x location
	>Ref. Pixel Physical Value Y	(0018,602A)	3	FD	1	Physical Value at Reference pixel y location
	>Physical Delta X	(0018,602C)	1	FD	1	Physical Value increment per positive X pixel increment
	>Physical Delta Y	(0018,602E)	1	FD	1	Physical Value increment per positive Y pixel increment
Cine	Frame Time Vector	(0018,1065)	1C	DS	1..n	Array containing the time increments between images for triggered clips (in milli seconds)
	Preferred Playback sequencing	(0018,1244 )	3	US	1	0 (Looping)
Multi-frame	Number of Frames	(0028,0008)	1	IS	1	Set to 1...n
	Frame Increment Pointer	(0028,0009)	1	AT	1	Sequencing by Frame Time Vector (0018,1065)
SOP Common	SOP Class UID	(0008,0016)	1	UI	1	1.2.840.10008.5.1.4.1.1.3.1
	SOP Instance UID	(0008,0018)	1	UI	1	Unique ID created.
	Instance Number	(0020,0013)	3	IS	1	Set to 1...n
	Specific Character Set	(0008,0005)	1C	CS	1..n	From MWL or set to ISO_IR 100
	Instance Creation Date	(0008,0012)	3	DA	1	Date the SOP instance was created
	Instance Creation Time	(0008,0013)	3	TN	1	Time the SOP instance was created
Waveform	Waveform Sequence	(5400,0100)	1C	SQ	1	
	>Trigger Time Offset	(0018,1069)	1C	DS	1	
	>Waveform Originality	(003A,0004)	1	CS	1	

>Number of Waveform Channels	(003A,0005)	1	US	1	
>Number of Waveform Samples	(003A,0010)	1	UL	1	
>Sampling Frequency	(003A,001A)	1	DS	1	
>Waveform Sample Interpretation	(5400,1006)	1	CS	1	
>Channel Definition Sequence	(003A,0200)	1	SQ	1	
>>Channel Source Sequence	(003A,0208)	1	SQ	1	
>>>Code Sequence Macro					
>>Channel Sensitivity	(003A,0210)	1C	DS	1	
>>Channel Sensitivity Units Sequence	(003A,0211)	1C	SQ	1	
>>>Code Sequence Macro					
>>Waveform Bits Stored	(003A,021A)	1	US	1	Always 16
>Waveform Bits Allocated	(5400,1004)	1	US	1	
>Waveform Data	(5400,1010)	1	OW	1	OW because Bits Stored is 16

### 8.1.1.3 Comprehensive SR IOD Attributes

Table 8-3:  
Comprehensive SR IOD Attributes

Module Name	Attribute	Tag	Type	Notes
Patient	Patient's Name	(0010,0010)	2	
	Patient ID	(0010,0020)	2	
	Patient's Birth Date	(0010,0030)	2	
	Patient's Sex	(0010,0040)	2	
	Other Patient IDs	(0010,1000)	3	
	Other Patient Names	(0010,1001)	3	
	Ethnic Group	(0010,2160)	3	
	Military Rank	(0010,1080)	3	
	Patient Comments	(0010,4000)	3	As Additional Info
General Study	Study Instance UID	(0020,000D)	1	
	Study Date	(0008,0020)	2	
	Study Time	(0008,0030)	2	
	Referring Physician's Name	(0008,0090)	2	
	Study ID	(0020,0010)	2	From Requested Procedure ID or System Generated
	Accession Number	(0008,0050)	2	
	Study Description	(0008,1030)	3	
Patient Study	Patient's Age	(0010,1010)	3	
	Patient's Size	(0010,1020)	3	

Module Name	Attribute	Tag	Type	Notes
	Patient's Weight	(0010,1030)	3	
	Admitting Diagnosis Description	(0008,1080)	3	
	Requesting Physician	(0032,1032)	3	
General Equipment	Manufacturer	(0008,0070)	2	
	Institution Name	(0008,0080)	3	
	Station Name	(0008,1010)	3	Set to system Host Name
	Manufacturer's Model Name	(0008,1090)	3	Set to system Model Name
	Device Serial Number	(0018,1000)	3	
	Software Versions	(0018,1020)	3	Set to "VD10x"
SR Document Series	Modality	(0008,0060)	1	Defined term "SR" used
	Series Instance UID	(0020,000E)	1	
	Series Number	(0020,0011)	1	
	Reference Performed Procedure Step Sequence	(0008,1111)	2	
	>Referenced SOP Class UID	(0008,1150)	1C	
	>Reference SOP Instance UID	(0008,1155)	1C	
	Operators' Name	(0008,1070)	3	
	Performed Procedure Step ID	(0040,0253)	3	
	Performed Procedure Step Start Date	(0040,0244)	3	
	Performed Procedure Step Start Time	(0040,0245)	3	
	Performed Procedure Step Description	(0040,0254)	3	
	Operators' Name	(0008,1070)	3	
SR Document General	Instance Number	(0020,0013)	1	
	Completion Flag	(0040,A491)	1	
	Verification Flag	(0040,A493)	1	
	Content Date	(0008,0023)	1	
	Content Time	(0008,0033)	1	
	Predecessor Document Sequence	(0040,A360)	1C	
	Referenced Request Sequence	(0040, A370)	1C	
	>Study Instance UID	(0020,000D)	1	
	>Accession Number	(0008,0050)	2	
	>Requested Procedure ID	(0040,1001)	2	
	>Requested Procedure Description	(0032,1060)	2	
SR Document Content	Value Type	(0040,A040)	1	CONTAINER
	Concept Name Code Sequence	(0040,A043)	1C	
	>Code Value	(0008,0100)	1	Set to "125200" for Adult Echocardiography Procedure Report or "125100" for Vascular Ultrasound Procedure Report
	>Coding Scheme Designator	(0008,0102)	1	Set to "DCM"
	>Code Meaning	(0008,0104)	1	Set to "Adult Echocardiography Procedure Report" or "Vascular Ultrasound Procedure Report"
	Continuity of Content	(0040,A050)	1	SEPARATE

Module Name	Attribute	Tag	Type	Notes
	Content Template Sequence	(0040,A504)	1C	
	>Mapping Resource	(0008,0105)	1	Set to "DCMR"
	>Template Identifier	(0040,DB00)	1	Set to "5200" for Adult Echocardiography Procedure Report or "5100" for Vascular Ultrasound Procedure Report
	Content Sequence	(0040,A730)	1C	See Appendix for content of "Adult Echocardiography Procedure Report" or "Vascular Ultrasound Procedure Report"
SOP Common	SOP Class UID	(0008,0016)	1	1.2.840.10008.5.1.4.1.1.88.33
	SOP Instance UID	(0008,0018)	1	
	Specific Character Set	(0008,0005)	1C	

### 8.1.1.4 MPPS: N-CREATE

The Sequoia VD10 DICOM Performed Procedure Step SCU informs the remote SCP when the examination of a scheduled procedure step will be performed. The N-CREATE message is sent when the examination is started. The following table describes the supported attributes for a N-CREATE message.

Table 8-4:  
MPPS N-CREATE Attributes

Attribute Name	Tag	Required Type	Value
<b>SOP Common</b>			
Specific Character Set	(0008,0005)	1C	From MWL or created
<b>Performed Procedure Step Relationship</b>			
Scheduled Step Attribute Sequence	(0040,0270)	1	
>Study Instance UID	(0020,000D)	1	From MWL or created
>Accession Number	(0008,0050)	2	From MWL or user input
>Requested Procedure ID	(0040,1001)	2	From MWL or user input
>Requested Procedure Description	(0032,1060)	2	From MWL or zero length
>Scheduled Procedure Step ID	(0040,0009)	2	From MWL or zero length
>Scheduled Procedure Step Description	(0040,0007)	2	From MWL or zero length
Patient's Name	(0010,0010)	2	From MWL or user input
Patient ID	(0010,0020)	2	From MWL or user input or created
Patients Birth Date	(0010,0030)	2	From MWL or user input
Patient's Sex	(0010,0040)	2	From MWL or user input
<b>Performed Procedure Step Information</b>			
Performed Procedure Step ID	(0040,0253)	1	From SPS ID or created
Performed Station AE Title	(0040,0241)	1	Own AE Title
Performed Station Name	(0040,0242)	2	Own hostname
Performed Location	(0040,0243)	2	From SPS Location or zero length
Performed Procedure Step Start Date	(0040,0244)	1	Created
Performed Procedure Step Start Time	(0040,0245)	1	Created

Attribute Name	Tag	Required Type	Value
Performed Procedure Step Status	(0040,0252)	1	IN PROGRESS
Performed Procedure Step Description	(0040,0254)	2	From SPS Description or zero length
Performed Procedure Type Description	(0040,0255)	2	Zero length
Performed Procedure Step End Date	(0040,0250)	2	Zero length
Performed Procedure Step End Time	(0040,0251)	2	Zero length
<b>Image Acquisition Results</b>			
Modality	(0008,0060)	1	US
Study ID	(0020,0010)	2	From Requested Procedure ID or System Generated
Performed Series Sequence	(0040,0340)	2	
>Performing Physician's Name	(0008,1050)	2C	From MWL or user input
>Protocol Name	(0018,1030)	1C	Set to "unknown"
>Operator's Name	(0008,1070)	2C	User input
>Series Instance UID	(0020,000E)	1C	Created
>Retrieve AE Title	(0008,0054)	2C	Zero length

### 8.1.1.5 MPPS: N-SET

The Sequoia DICOM Performed Procedure Step SCU informs the remote SCP about the performed examination and its status. The N-SET message is only sent once when the exam is ended with status "COMPLETED" or when the examination could not be completed with status "DISCONTINUED". The following table describes the supported attributes for a N-SET message.

Table 8-5:  
MPPS N-SET Attributes

Attribute name	Tag	Required Type	Value
<b>Performed Procedure Step Information</b>			
Performed Procedure Step Status	(0040,0252)	3	COMPLETED or DISCONTINUED
Performed Procedure Step Description	(0040,0254)	3	From SPS Description or user input
Performed Procedure Type Description	(0040,0255)	3	User input
Performed Procedure Step End Date	(0040,0250)	3	Created
Performed Procedure Step End Time	(0040,0251)	3	Created
<b>Image Acquisition Results</b>			
Performed Series Sequence	(0040,0340)	3	
>Performing Physician's Name	(0008,1050)	2C	From MWL or user input
>Protocol Name	(0018,1030)	1C	User input or set to "unknown"
>Operator's Name	(0008,1070)	2C	User input
>Series Instance UID	(0020,000E)	1C	Created
>Retrieve AE Title	(0008,0054)	2C	From Storage Commitment RSP or zero length
>Referenced Image Sequence	(0008,1140)	2C	Created
>>Referenced SOP Class UID	(0008,1150)	1C	

Attribute name	Tag	Required Type	Value
>>Referenced SOP Instance UID	(0008,1155)	1C	

**8.1.1.6 Query: C-FIND**

The Sequoia DICOM Query/Retrieve SCU supports hierarchical queries with all mandatory search keys. The interactive querying of attributes on IMAGE level is not supported by the Query SCU, nor is the retrieval of individual Objects possible. The following table describes the search keys for the different query models that the SCU supports. Matching is either wildcard, which means that the user can supply a string containing wildcards, or universal, which means that the attribute is requested as return value.

Table 8-6:  
C-FIND Attributes

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
<b>Patient Level</b>					
Patient Name	(0010,0010)	R	Wildcard	Enter value	Yes
Patient ID	(0010,0020)	U	Wildcard	Enter value	Yes
Patient's Birth date	(0010,0030)	O	Universal (Null)	-	Yes
Patient's Sex	(0010,0040)	O	Universal (Null)	-	Yes
<b>Study Level</b>					
Patient Name	(0010,0010)	R	Wildcard	Enter value	Yes
Patient ID	(0010,0020)	R	Wildcard	Enter value	Yes
Patient's Birth date	(0010,0030)	O	Universal (Null)	-	Yes
Patient's Sex	(0010,0040)	O	Universal (Null)	-	Yes
Study Instance UID	(0020,000D)	U	Universal (Null)	-	No
Study ID	(0020,0010)	R	Universal (Null)	-	No
Study Date	(0008,0020)	R	Universal (Null)	Enter value	Yes
Study Time	(0008,0030)	R	Universal (Null)	-	Yes
Accession Number	(0008,0050)	R	Universal (Null)	Enter value	Yes
Study Description	(0008,1030)	O	Universal (Null)	-	Yes
Referring Physician's Name	(0008,0090)	O	Universal (Null)	Enter value	Yes
Name of Physician Reading Study	(0008,1060)	O	Universal (Null)	-	No
Modalities in Study	(0008,0061)	O	Universal (Null)	Enter value	No
Retrieve AE Title	(0008,0054)	O	Universal (Null)	-	No
Number of Study related Series	(0020,1206)	O	Universal (Null)	-	No
Number of Study related Instances	(0020,1208)	O	Universal (Null)	-	No
<b>Series Level</b>					
Series Instance UID	(0020,000E)	U	Universal (Null)	-	No
Series Number	(0020,0011)	R	Universal (Null)	-	Yes
Modality	(0008,0060)	R	Universal (Null)	Enter value	Yes
Performing Physician	(0008,1050)	O	Universal (Null)	-	Yes
Retrieve AE Title	(0008,0054)	O	Universal (Null)	-	Yes
Protocol Name	(0018,1030)	O	Universal (Null)	-	No
Performed Procedure Step Start Date	(0040,0244)	O	Universal (Null)	-	Yes

Attribute Name	Tag	Type	Matching	User Input	Return Value Display
Performed Procedure Step Start Time	(0040,0245)	O	Universal (Null)	-	Yes
Requested Attribute Sequence	(0040,0275)	O	Universal (Null)	-	Yes
> Requested Procedure ID	(0040,1001)	O	Universal (Null)	-	Yes
> Scheduled Procedure ID	(0040,0009)	O	Universal (Null)	-	Yes
Number of Series related Instances	(0020,1209)	O	Universal (Null)	-	Yes
<b>Image Level</b>					
SOP Instance UID	(0008,0018)	U	Single value	-	No
Image Number	(0020,0013)	R	Universal (Null)	-	No
Retrieve AE Title	(0008,0054)	O	Universal (Null)	-	No
Instance Date	(0008,0023)	O	Universal (Null)	-	No
Instance Time	(0008,0033)	O	Universal (Null)	-	No
Number of Frames	(0028,0008)	O	Universal (Null)	-	No
Content Date	(0008,0023)	O	Single value, Range matching, Universal	-	No
Content Time	(0008,0033)	O	Single value, Range matching, Universal	-	No
Referenced Request Sequence	(0040,A370)	O	Sequence matching	-	No
>Accession Number	0008,0050)	O	Single value, Universal	-	No
>Requested Procedure ID	(0040,1000)	O	Single value, Universal	-	No

## 8.2 Data Dictionary of private Attributes

The Sequoia system creates various private tags that contain proprietary information. These private tags may or may not be present on any given object type depending on the system state. The below table contains the Private Creator of private tag ranges that can be created by the system. Specific tags are listed here for reference purpose if the value shall be known externally.

Attribute	Tag	VR	VM	Value
Private Creator	(0019,0010)	LO	1	SIEMENS <Manufacturer Model Name>
Private Creator Version	(0019,1000)	LO	1	Product Version
Shadow Measurement Flag	(0019,1010)	US	1	1 if shadow measurement was performed on the image 0 or tag not present if not performed Applicable only when image is in dual mode
Doppler Tissue Imaging	(0019, 106E)	US	1	1 if the Doppler Tissue Imaging submode was captured. 0 or tag not present if other submode was captured.
Elastography Display Format	(0019,100e)	US	1	0 Elasticity Imaging Full Display 1 Elasticity Imaging Dual Display 2 ARFI Full Display 3 ARFI Dual Display

Compression Level	(0019,1029)	US	1	0 Compress Level None 1 Compress Level Low, 2 Compress Level Med, 3 Compress Level High
MMR reference in pixel	(0019,100F)	US	3	Set to 1 if image is saved in MMR mode.
Exam Review Flag	(0019,103A)	US	1	Set to 1 if image was flagged in review
Exam Workflow Type	(0019,102F)	US	1	Set to 0 for GI and Set to 1 for Cardiac exam types.
Overlay Xml	(0019,103D)	UT	1	Overlay data in xml format
Clarify Index	(0019,102E)	SH	1	Clarify index. Set to 'Off' or index if mode is on.
PHI in Image	(0019, 1095)	US	1	Specifies whether PHI is burned into the image,
Keyed Private Data	(0019,103C)	UT	1	Contains the Protocol Data with assigned measurements.
B ROI points	(0149,1001)	IS	1..n	Array of B Roi points
Min Max locations	(0149,1002)	UV	1..n	Start/End timestamps of strip stream in Spectral Doppler or M-mode. Used for Spectral Doppler auto-measurements.
Visible R Waves	(0149,1003)	UV	1..n	Timestamps of visible R-waves in strip modes. Used for Spectral Doppler auto-measurements.
ED Time Vector	(0149,1010)	DS	1..n	Time vector of all captured ED's each relative to the time of the start of the acquisition of the first frame in microsec.
ES Time Vector	(0149,1011)	DS	1..n	Time vector of all captured ES's each relative to the time of the start of the acquisition of the first frame in microsec.
Physio Capture ROI	(0139,1001)	US	1	Contains the ECG trace information important for Stress Echo Review
Overlay Xml	(0019,103D)	UT	1	Overlay data in xml format

Acoustic data related information is stored in private sequence in the following format

Attribute	Tag	VR	VM	Value
Acoustic Sequence	(0029, 1040)	SQ	1	Private sequence containing Acoustic information.
>Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
>Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
>Data ID	(0029, 1042)	LO	1	Identifier of the acoustic data element. Values possible in this attribute are AcousticData AcousticDataDescriptor AcousticPresentationState AcousticState PostProcessingBookmark
>Data version	(0029, 1043)	LO	1	<version of the data element>
>Data	(0029, 1044)	OB	1	Data buffer associated with the data element

Following private attributes are used by Bracco software application VueBox.

Attribute	Tag	VR	VM	Value
Private Creator Data Elements	(8FF1,0060)	LO	1	Siemens Contrast Quantification
Private Creator Data Version	(8FF1,6001)	LO	1	1.0
Log-compression dynamic range	(8FF1,6030)	DS	1	Log-compression of dynamic range. Unit: dB
Total Gain	(8FF1,6031)	DS	1	Overall contrast gain. Unit: dB

Anti-log law vector	(8FF1,6032)	DS	256	Inverse log-compression law for data linearization
TGC contrast gain vector	(8FF1,6034)	DS	256	TGC contrast gain vector. Unit: DB
Palette name	(8FF1,6035)	LO	1	
Contrast Red Palette Data	(8FF1,6036)	IS	256	Contrast palette R values
Contrast Green Palette Data	(8FF1,6037)	IS	256	Contrast palette G values
Contrast Blue Palette Data	(8FF1,6038)	IS	256	Contrast palette B values
Transducer name	(8FF1,6040)	LO	1	The name of transducer used
Transducer frequency	(8FF1,6041)	DS	1	The transducer frequency. Unit: MHz
Vector of destruction-frame numbers	(8FF1,6050)	IS	1..n	The frame numbers associated to the destruction frames
Number of destruction frames (n)	(8FF1,6051)	IS	1	Number of destruction frames
Nonlinear Contrast Mode	(8FF1,6052)	CS	1	Operating Mode (i.e. Imaging mode name)
Allow Quantification	(8FF1,6053)	LO	1	Set to "False" if gain, TGC or dynamic range is changed during the course of the acquisition or "True" otherwise

Attribute	Attribute	Tag	VR	VM	Value
Acoustic Data Sequence (SQ) (0029, 1040)	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	AcousticData
	Data version	(0029, 1043)	LO	1	AcousticData Version
	Data	(0029, 1044)	OB	1	Acoustic Data
	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	AcousticDataDescriptor
	Data version	(0029, 1043)	LO	1	AcousticDataDescriptor "Version"
	Data	(0029, 1044)	OB	1	Acoustic Data Descriptor
	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	AcquisitionPresentationState
	Data version	(0029, 1043)	LO	1	AcquisitionPresentationState Version
	Data	(0029, 1044)	OB	1	Acquisition Presentation State
	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	AcquisitionState
Data version	(0029, 1043)	LO	1	AcquisitionState Version	

	Data	(0029, 1044)	OB	1	Acquisition State Parameter
	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	PostProcessingBookmark
	Data version	(0029, 1043)	LO	1	PostProcessingBookmark Version
	Data	(0029, 1044)	OB	1	Post Processing Parameters
	Private Creator	(0029, 0010)	LO	1	SIEMENS MEDCOM HEADER
	Data Type	(0029, 1041)	CS	1	US_ACOUSTIC
	Data ID	(0029, 1042)	LO	1	AcousticDataVersionDescriptor
	Data version	(0029, 1043)	LO	1	AcousticDataVersionDescriptor version
	Data	(0029, 1044)	OB	1	Acoustic Data Version Descriptor

### 8.3 DICOM Standard Overlay

The overlay presentation shall be stored as the DICOM Overlay plane which is commonly accessible and redisplay-able on common PACS viewer for compatibility.

The following table elaborates DICOM Standard Overlay plane attribute, which may be stored separately from 2D pixel data and can be reconstructed to graphical presentation to be over-laid on the pixel data by general PACS viewers which has capability to support DICOM Standard 1-bit overlay plane display.

Attribute	Tag	VR	Value
Overlay Rows	(6000, 0010)	US	Number of rows in the image
Overlay Columns	(6000, 0011)	US	Number of columns in the image
Number of Frames in Overlay	(6000, 0015)	IS	Number of Frames in Overlay
Overlay Origin	(6000, 0050)	SS	Set to 1/1
Overlay Data	(6000, 3000)	OW	Overlay data as 1-bit plane (black and white presentation)
Overlay Bits Allocated	(6000, 0100)	US	Set to 1
Overlay Bit Position	(6000, 0102)	US	Set to 0
Image Frame Origin	(6000, 0051)	US	Set to 1

## 9 APPENDICES

Sequoia system supports the following Templates for Structured Report.

Template ID (TID)	Template Name
5000	OB-GYN Ultrasound Procedure Report
5100	Vascular Ultrasound Procedure Report
5200	Adult Echocardiography Procedure Report
5220	Pediatric, Fetal, and Congenital Cardiac Ultrasound Reports

For all the measurements details supported by above templates, kindly refer to the document “VD10 DCS Measurements List.xlsx” available on the Global website.

Derivation method supported for a label is as below.

Coding Scheme Designator	Code Value	Code Meaning
SRT	R-00317	Mean
SRT	G-A437	Maximum
SRT	R-404FB	Minimum

## 9.1 Appendix A: OB-GYN Structured Report

### 9.1.1 Patient Characteristics

Label	Measurement	Modifier	Unit
Comments	Comment (DCM, 121106)		
Age	Subject Age (DCM, 121033)		a
BP	Diastolic Blood Pressure (SRT, F-008ED)		mm[Hg]
BP	Systolic Blood Pressure (SRT, F-008EC)		mm[Hg]
Height	Patient Height (LN, 8302-2)		m
Weight	Patient Weight (LN, 29463-7)		kg
Aborta	Aborta (LN, 11612-9)		unitless
Ectopics	Ectopic Pregnancies (LN, 33065-4)		unitless
Gravida	Gravida (LN, 11996-6)		unitless
Para	Para (LN, 11977-6)		unitless

### 9.1.2 Summary

Label	Measurement	Modifier	Unit
Summary	Container: Summary (DCM, 121111)		
Summary Comments	Comment (DCM, 121106)		
DOC	Conception date (LN, 33067-0)		
EDD	EDD (LN, 11778-8)		
LMP	LMP (LN, 11955-2)		
Num of Fetuses	Number of Fetuses (LN, 11878-6)		unitless

### 9.1.3 OB Assessments

#### 9.1.3.1 OB Fetal Assessment

Label	Measurement	Modifier
OB Fetal Assessment	Container: Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): OB Fetal Assessment Performed (99SIEMENS, OBFetalAssessmt) Subject ID (DCM, 121030)
Overall Comments	OB Fetal Assessment Comment (99SIEMENS, OBFAsmtComment)	
Placenta	Container: Placenta (SRT, T-F1100)	
Anterior	Anterior (SRT, G-A105)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Posterior	Posterior (SRT, G-A106)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Fundal	Fundal Placenta (99SIEMENS, FundalPlacenta)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Mid	Mid (SRT, R-404D6)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Right Lateral	Right Lateral (SRT, R-10232)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Left Lateral	Left Lateral (SRT, R-10236)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked

Label	Measurement	Modifier
Low Lying	Low Lying Placenta (SRT, F-05227)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Marginal Previa	Marginal Placenta Previa (SRT, D4-F3061)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Partial Previa	Partial Placenta Previa (SRT, D4-F3063)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Complete Previa	Total Placenta Previa (SRT, D4-F3062)	Possible Assessment Values: Seen (99SIEMENS, Seen) when checked Not present when unchecked
Placenta Grade	Fetal Placenta Grade US (LN, 11946-1)	Possible Assessment Values: 0, 1, 2, 3
Placenta Cord Insertion	Fetal Umbilical Cord Insertion site US (LN, 11952-9)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Marginal insertion of umbilical cord (SRT, D4-F5010) Velamentous insertion of umbilical cord (SRT, D4-F5020) Marginal velamentous (99SIEMENS, UmbCrdMrgnlVelam) Eccentric (SRT, R-40416) Peripheral (SRT, G-A111) Central (SRT, G-A110)
Placenta Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
Amniotic Fluid	Condition of Amniotic Fluid (SRT, F-00A32)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Marginal insertion of umbilical cord (SRT, D4-F5010) Velamentous insertion of umbilical cord (SRT, D4-F5020) Marginal velamentous (99SIEMENS, UmbCrdMrgnlVelam) Eccentric (SRT, R-40416) Peripheral (SRT, G-A111) Central (SRT, G-A110)
3 Vessel Cord	Umbilical Cord Normal (SRT, F-03C2F)	Possible Assessment Values: Yes (SRT, R-0038D) No (SRT, R-00339) Presence Undetermined (SRT, R-40271)
Prenatal State of Fetus	Container: Prenatal State of Fetus (SRT, F-88020)	
Fetal Position	Fetal position US (LN, 11875-2)	Possible Assessment Values: Position of vertex presentation (SRT, F-047C3) Frank breech presentation (SRT, F-87300) Footling breech presentation (SRT, F-87283) Transverse presentation (SRT, D8-20226) Oblique presentation (SRT, D8-20225) Variable (SRT, R-4040A)
Fetal Spine	Fetal Spine Study observation US (LN, 12110-3)	Possible Assessment Values: Right (SRT, G-A100) Left (SRT, G-A101) Anterior (SRT, G-A105) Posterior (SRT, G-A106) Superior (SRT, G-A116) Inferior (SRT, G-A115) Variable (SRT, R-4040A)

Label	Measurement	Modifier
Gender	Fetus Sex US (LN, 11882-8)	Possible Assessment Values: Male (DCM, M) Female (DCM, F) Undetermined sex (DCM, 121103)
Fetal Head	Fetal Head (SRT, T-F6B00)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Nose/Lips	Nose/Lips (99SIEMENS, FetusNoseLips)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Fetal Cord Insertion	Fetal Cord Insertion (99SIEMENS, FetalCordInsert)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Fetal Brain	Container: Fetal Brain (SRT, T-D0110)	
Lateral Ventricles	Lateral Ventricle (SRT, T-A1650)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Cist Magna	Cisterna Magna (SRT, T-A1520)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Cerebellum	Cerebellum (SRT, T-A6000)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

Label	Measurement	Modifier
Posterior Fossa	Posterior fossa of cranial cavity (SRT, T-D1450)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Choroid	Choroid (SRT, T-AA31B)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
CSP	Cavum septi pellucidi (SRT, T-A1630)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Nuchal Translucency	Nuchal Translucency (99SIEMENS, NuchalTranslucency)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Spine	Container: Structure of Fetal Vertebral Column (SRT, T-F7400)	
Cervical Spine	Cervical Spine (SRT, T-11501)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Thoracic Spine	Thoracic Spine (SRT, T-11502)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lumbar Spine	Lumbar Spine (SRT, T-11503)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

Label	Measurement	Modifier
Sacrum	Sacrum (SRT, R-FB417)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Abdomen	Container: Fetal Abdomen Contents (SRT, T-F6B20)	
Stomach	Stomach (SRT, T-57000)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Bladder	Bladder (SRT, T-74000)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt Kidney	Right Kidney (SRT, T-71010)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt Kidney	Left Kidney (SRT, T-71020)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Diaphragm	Diaphragm (SRT, T-D3400)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Bowel Pattern	Bowel Pattern (99SIEMENS, BowelPattern)	Possible Assessment Values: Echogenic (99SIEMENS, EtEchogenic) Non-echogenic (99SIEMENS, EtNonEchogenic)
Lt All Extremities	Container: All Extremities (SRT, T-D0308)	Laterality (SRT, G-C171): Left (SRT, G-A101)

Label	Measurement	Modifier
Lt Upper Extremity	Upper Extremity Region (SRT, T-D0667)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt Lower Extremity	Lower Extremity (99SIEMENS, FetusLwrExtrem)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt 5-Fingers Hand	All fingers (SRT, T-D8891)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt Ankle/Foot	Structure of ankle and foot (SRT, T-D0838)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt 5-Toes Foot	All toes (SRT, T-D9891)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt All Extremities	Container: All Extremities (SRT, T-D0308)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Upper Extremity	Upper Extremity Region (SRT, T-D0667)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt Lower Extremity	Lower Extremity (99SIEMENS, FetusLwrExtrem)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

Label	Measurement	Modifier
Rt 5-Fingers Hand	All fingers (SRT, T-D8891)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt Ankle/Foot	Structure of ankle and foot (SRT, T-D0838)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt 5-Toes Foot	All toes (SRT, T-D9891)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

### 9.1.3.2 OB Maternal Assessment

Label	Measurement	Modifier
OB Maternal Assessment	Container: Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): OB Maternal Assessment Performed (99SIEMENS, OBMaterAssesmt)
Overall Comments	OB Maternal Assessment Comment (99SIEMENS, OBMAmtComment)	
Lt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)
Lt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
Lt Ovarian Doppler	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Rt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)
Rt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Ovarian Doppler	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Lt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
Lt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
Rt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
Vaginal Cervix	Container: Vaginal Cervix (SRT, T-8320B)	
Cervix	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cervicitis with Nabothian cyst (SRT, D7-71503) Bulky Cervix (99SIEMENS, BulkyCervix)
Cervix Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

### 9.1.4 Early OB Assessments

#### 9.1.4.1 Early OB Fetal Assessment

Label	Measurement	Modifier
Early OB Fetal Assessment	Container: Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Early OB Fetal Assessment Performed (99SIEMENS, EOBFAssessment) Subject ID (DCM, 121030)
Overall Comments	Early OB Fetal Assessment Comment (99SIEMENS, EOBFAsmtComment)	
Gestational Sac	Observation of gestational sac (SRT, F-03FC9)	Possible Assessment Values: Intrauterine (SRT, R-40983) Extrauterine (99SIEMENS, Extrauterine) Dichorionic diamniotic twin pregnancy (SRT, D8-2019F) Monochorionic diamniotic twin pregnancy (SRT, D8-201A1) Multiple (SRT, R-40350) Not seen (SRT, G-A613)

Label	Measurement	Modifier
Fetal Pole	Fetal Pole (99SIEMENS, FetalPole)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Multiple (SRT, R-40350)
Yolk Sac	Yolk sac (SRT, T-F1400)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613)
Cardiac Activity	Fetal Heart Activity US (LN, 11615-2)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613)
Gestational Sac Location	Gestational Sac location (99SIEMENS, GestationSacLoc)	Possible Assessment Values: Fundal (99SIEMENS, Fundal) Low Lying (99SIEMENS, LowLying) Cornual pregnancy (SRT, D8-02050)

#### 9.1.4.2 Early OB Maternal Assessment

Label	Measurement	Modifier
Early OB Maternal Assessment	Container: Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Early OB Maternal Assessment Performed (99SIEMENS, EOBMAssessment)
Overall Comments	Early OB Maternal Assessment Comment (99SIEMENS, EOBMAsmtComment)	
Lt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)

Label	Measurement	Modifier
Lt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Lt Ovarian Doppler	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Rt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)
Rt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Ovarian Doppler	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Lt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
Lt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)

Label	Measurement	Modifier
Rt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Vaginal Cervix	Container: Vaginal Cervix (SRT, T-8320B)	
Cervix	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cervicitis with Nabothian cyst (SRT, D7-71503) Bulky Cervix (99SIEMENS, BulkyCervix)
Cervix Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Uterus	Container: Uterus (SRT, T-83000)	
Uterus	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Anteflexed uterus (SRT, F-80149) Retroflexed uterus (SRT, D7-75664) Atrophic uterus (99SIEMENS, AtrophicUterus) Bicornuate uterus (SRT, D4-82014) Septate uterus (99SIEMENS, SeptateUterus) Fibroid uterus (SRT, D7-F1000) Not seen (SRT, G-A613)
Uterus Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Free Fluid in Cul-de-sac	Container: Free fluid in Cul-de-sac (99SIEMENS, FreeFluidCulDSac)	
Free Fluid in Cul-de-sac	Free fluid in Cul-de-sac (99SIEMENS, FreeFluidCulDSac)	Possible Assessment Values: Large (SRT, R-404AA) Medium (SRT, R-404A9) Small (SRT, R-404A8) Not seen (SRT, G-A613)

### 9.1.5 GYN Assessment

Label	Measurement	Modifier
Gynecological Assessment	Container: Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Gynecological Assessment Performed (99SIEMENS, GynAssesmt)
Overall Comments	GYN Assessment Comment (99SIEMENS, GynAsmtComment)	
Lt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)
Lt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Lt Ovarian Doppler Comments	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Number of Lt Follicles	Number of follicles in left ovary (LN, 11879-4)	
Rt Ovary	Container: Ovary (SRT, T-87000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Ovary	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cystic (SRT, G-A300) Not seen (SRT, G-A613)
Rt Ovary Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Ovarian Doppler Comments	Ovarian Doppler (99SIEMENS, OvarianDopAssess)	
Number of Rt Follicles	Number of follicles in right ovary (LN, 11880-2)	
Lt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Left (SRT, G-A101)

Label	Measurement	Modifier
Lt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
Lt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Kidney	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7-11061) Hydronephrosis (SRT, D7-14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
Rt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Vaginal Cervix	Container: Vaginal Cervix (SRT, T-8320B)	
Cervix	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Cervicitis with Nabothian cyst (SRT, D7-71503) Bulky Cervix (99SIEMENS, BulkyCervix)
Cervix Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Uterus	Container: Uterus (SRT, T-83000)	

Label	Measurement	Modifier
Uterus	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Anteflexed uterus (SRT, F-80149) Retroflexed uterus (SRT, D7-75664) Atrophic uterus (99SIEMENS, AtrophicUterus) Bicornuate uterus (SRT, D4-82014) Septate uterus (99SIEMENS, SeptateUterus) Fibroid uterus (SRT, D7-F1000) Not seen (SRT, G-A613)
Uterus Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Endometrium	Container: Endometrium (SRT, T-83400)	
Endometrium	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Endometrium Normal (SRT, M-00004) Irregular (SRT, G-A402) Endometrium Thickened (SRT, F-8025A) Focal Thickening (99SIEMENS, EndomFocalThickn) Fluid Filled (99SIEMENS, EndomFluidFilled) Polyp (SRT, M-76800)
Endometrium Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Lt Uterine Adnexa	Container: Uterine Adnexa (SRT, T-88900)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Adnexa	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Ascites (SRT, DF-00AEF) Mass (SRT, M-03000)
Lt Adnexa Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Uterine Adnexa	Container: Uterine Adnexa (SRT, T-88900)	Laterality (SRT, G-C171): Right (SRT, G-A100)

Label	Measurement	Modifier
Rt Adnexa	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Ascites (SRT, DF-00AEF) Mass (SRT, M-03000)
Rt Adnexa Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Cul-de-sac	Container: Cul-de-sac (SRT, T-D6407)	
Cul-de-sac	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Fluid seen (99SIEMENS, FluidSeen) No fluid seen (99SIEMENS, NoFluidSeen)
Cul-de-sac Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Pelvic Floor	Container: Pelvic Floor (SRT, T-D6236)	
Funneling of Internal Urethral Meatus	Funneling of Internal Urethral Meatus (99SIEMENS, FunnlUrethralMea)	Possible Assessment Values: Present (SRT, G-A203) Absent (SRT, R-4089B) Presence Undetermined (SRT, R-40271)
Urethral Diverticuli	Urethral Diverticuli (99SIEMENS, UrethralDvrtculi)	Possible Assessment Values: Present (SRT, G-A203) Absent (SRT, R-4089B) Presence Undetermined (SRT, R-40271)

## 9.2 Appendix B: Vascular Structured Report

### 9.2.1 Patient Characteristics

Label	Measurement	Modifier	Unit
Patient Characteristics (DCM, 121118)			
Comments	Comment (DCM, 121106)		
Age	Subject Age (DCM, 121033)		a
BP	Diastolic Blood Pressure (SRT, F-008ED)		mm[Hg]
BP	Systolic Blood Pressure (SRT, F-008EC)		mm[Hg]
Sex	Subject Sex (DCM, 121032)		

### 9.2.2 Summary

Label	Measurement	Modifier	Unit
Summary	Container: Summary (DCM, 121111)		
Summary Comments	Comment (DCM, 121106)		unitless

### 9.2.3 Assessments

#### 9.2.3.1 Abdominal Assessment

Label	Measurement	Modifier
Abdominal Assessment	Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Abdominal Assessment (99SIEMENS, AbdAssesmt)
Overall Comments	Abdominal Assessment Comment (99SIEMENS, AbdAsmtComment)	
	Container: Liver (SRT, T-62000)	

Label	Measurement	Modifier
Liver Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Liver Portal Vein	Portal Vein (SRT, T-48810)	Possible Assessment Values: Normal (SRT, G-A460) Portal Vein Thrombosis (SRT, D3-87510) Partially Thrombosed (99SIEMENS, PartialThrombosd) Dilated blood vessel (SRT, F 3A002) Reversed vascular flow (SRT, F 39250) Normal vascular flow (SRT, F 39201)
Liver Focal Lesions	Focal Lesions (99SIEMENS, LvrFocalLesions)	Possible Assessment Values: Single (SRT, G-A224) Multiple (SRT, R-40350) Absent (SRT, R-4089B)
Liver Lesion Elasticity	Lesion Elasticity (99SIEMENS, LvrLesionElast)	Possible Assessment Values: Stiff (99SIEMENS, LESTiff) Isoelastic (99SIEMENS, LEIsoelastic) Soft (SRT, G0A546)
Liver	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Seen (99SIEMENS, Seen)
Liver Echotexture	Echotexture (99SIEMENS, LvrEchotexture)	Possible Assessment Values: Normal (SRT, G-A460) Hyperechoic (99SIEMENS, EtHyperechoic) Hypoechoic (99SIEMENS, EtHypoechoic) Coarse (SRT, G-A280) Heterogenous (99SIEMENS, EtHeterogenous)

Label	Measurement	Modifier
Liver Fatty Infiltration	Fatty Infiltration (99SIEMENS, LvrFatInfiltr)	Possible Assessment Values: Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Venous Congestion (99SIEMENS, FIVenCongestn) Present (SRT, G-A203) Absent (SRT, R-4089B)
Liver Portal Hypertension	Portal Hypertension (99SIEMENS, LvrPortalHypertn)	Possible Assessment Values: Distended (99SIEMENS, PHDistended) Enlargement of spleen (SRT, DC-80050) Varices (99SIEMENS, PHVarices) Absent (SRT, R-4089B)
	Container: Gallbladder (SRT, T-63000)	
GB Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
GB	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Gallstones (99SIEMENS, GBGallstones) Thick Walled (99SIEMENS, GBThickWalled) Sludge (SRT, M-30290) Not seen (SRT, G-A613)
	Container: Common Bile Duct (SRT, T-64500)	
CBD Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
CBD	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Dilated duct (99SIEMENS, DilatedDuct) Not seen (SRT, G-A613)
	Container: Common Hepatic Duct (SRT, T-64100)	

Label	Measurement	Modifier
CHD Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
CHD	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Dilated duct (99SIEMENS, DilatedDuct) Not seen (SRT, G-A613)
	Container: Pancreas (SRT, T-65000)	
Pancreas Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Pancreas	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Hyperechoic (99SIEMENS, EtHyperechoic) Hypoechoic (99SIEMENS, EtHypoechoic) Not seen (SRT, G-A613)
	Container: Spleen (SRT, T-C3000)	
Spleen Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Spleen	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Not seen (SRT, G-A613)
	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
Lt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7 11061) Hydronephrosis (SRT, D7 14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
	Container: Kidney (SRT, T-71000)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Kidney Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Rt Kidney	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Enlarged (SRT, R-40750) Kidney stone (SRT, D7 11061) Hydronephrosis (SRT, D7 14100) Absent (SRT, R-4089B) Not seen (SRT, G-A613)
	Container: Bladder (SRT, T-74000)	
Bladder Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Bladder	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Not seen (SRT, G-A613)
	Container: Aorta (SRT, T-42000)	
Aorta Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
Aorta	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Atherosclerosis of Aorta (SRT, D3-83200) Aneurysmal (SRT, R-40411) Not seen (SRT, G-A613)
	Container: Inferior Vena Cava (SRT, T-48710)	
IVC Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
IVC	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Normal (SRT, G-A460) Thrombosis of Inferior Vena Cava (SRT, D3-87531) Partially Thrombosed (99SIEMENS, PartialThrombosd) Abnormal (SRT, R-42037) Not seen (SRT, G-A613)
	Container: Ascites (SRT, DF-00AEF)	
Ascites Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
Ascites	Assessment (99SIEMENS, AssessmtObsrvtn)	Possible Assessment Values: Present (SRT, G-A203) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Absent (SRT, R-4089B)
	Container: Bowel (SRT, T-50500)	
Bowel Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

**9.2.3.2 Carotid Assessment**

Label	Measurement	Modifier
<b>Carotid Assessment</b>	Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Carotid Assessment (99SIEMENS, CarotidAssessmt)
Overall Comments	Carotid Assessment Comment (99SIEMENS, CarotidAssmtComment)	
	Container: Carotid Bifurcation (SRT, T-45160)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt BIF Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Lt BIF Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Lt BIF Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Carotid Bifurcation (SRT, T-45160)	Laterality (SRT, G-C171): Right (SRT, G-A100)

Label	Measurement	Modifier
Rt BIF Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Rt BIF Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Rt BIF Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Common Carotid Artery (SRT, T-45100)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt CCA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)

Label	Measurement	Modifier
Lt CCA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Lt CCA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Common Carotid Artery (SRT, T-45100)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt CCA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Rt CCA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Rt CCA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: External Carotid Artery (SRT, T-45200)	Laterality (SRT, G-C171): Left (SRT, G-A101)

Label	Measurement	Modifier
Lt ECA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Lt ECA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Lt ECA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: External Carotid Artery (SRT, T-45200)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt ECA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)

Label	Measurement	Modifier
Rt ECA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Rt ECA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Internal Carotid Artery (SRT, T-45300)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt ICA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Lt ICA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Lt ICA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Internal Carotid Artery (SRT, T-45300)	Laterality (SRT, G-C171): Right (SRT, G-A100)

Label	Measurement	Modifier
Rt ICA Diameter Reduction	Vessel lumen diameter reduction (SRT, R-101BB)	Possible Assessment Values: None (SRT, R-40775) Mild (SRT, R-404FA) Moderate (SRT, G-A002) Severe (SRT, G-A003) Pre-occlusive (99SIEMENS, DRPreocclusive) Occluded (SRT, R-420B4)
Rt ICA Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Rt ICA Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Vertebral Artery (SRT, T-45700)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Vert A Flow Direction	Flow Direction (SRT, G-C048)	Possible Assessment Values: Not seen (SRT, G-A613) Antegrade Flow (SRT, R-42047) Retrograde Flow (SRT, R-42E61) Intermittent (SRT, G-A397)

Label	Measurement	Modifier
Lt Vert A Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Lt Vert A Comments	Assessment Comment (99SIEMENS, AssessmtComment)	
	Container: Vertebral Artery (SRT, T-45700)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Vert A Flow Direction	Flow Direction (SRT, G-C048)	Possible Assessment Values: Not seen (SRT, G-A613) Antegrade Flow (SRT, R-42047) Retrograde Flow (SRT, R-42E61) Intermittent (SRT, G-A397)
Rt Vert A Plaque Description	Plaque (SRT, M-01470)	Possible Assessment Values: None (SRT, R-40775) Homogeneous (99SIEMENS, PlqHomogeneous) Intimal Thickening (99SIEMENS, PlqIntmlThickng) Calcified (99SIEMENS, PlqCalcified) Complex (SRT, G-A540) Smooth (SRT, G-A545) Irregular (SRT, G-A402)
Rt Vert A Comments	Assessment Comment (99SIEMENS, AssessmtComment)	

Label	Measurement	Modifier
	Container: Subclavian Artery (SRT, T-46100)	Laterality (SRT, G-C171): Left (SRT, G-A101)
Lt Subclav A	Doppler Waveform (99SIEMENS, VesDopplerWfm)	Possible Assessment Values: Monophasic (SRT, G-A253) Biphasic (SRT, G-A250) Triphasic (SRT, G-A251)
	Container: Subclavian Artery (SRT, T-46100)	Laterality (SRT, G-C171): Right (SRT, G-A100)
Rt Subclav A	Doppler Waveform (99SIEMENS, VesDopplerWfm)	Possible Assessment Values: Monophasic (SRT, G-A253) Biphasic (SRT, G-A250) Triphasic (SRT, G-A251)
	Container: Brachiocephalic Artery (SRT, T-46010)	
Brachiocephalic A	Doppler Waveform (99SIEMENS, VesDopplerWfm)	Possible Assessment Values: Monophasic (SRT, G-A253) Biphasic (SRT, G-A250) Triphasic (SRT, G-A251)

### 9.3 Appendix C: Echocardiography Structured Report

#### 9.3.1 Patient Characteristics

Label	Measurement	Modifier	Unit
Age	Subject Age (DCM, 121033)		a
BP	Diastolic Blood Pressure (SRT, F-008ED)		mm[Hg]
BP	Systolic Blood Pressure (SRT, F-008EC)		mm[Hg]
BSA	Body Surface Area (LN, 8277-6)	Body Surface Area Formula (LN, 8278-4): BSA=0.007184*WT^0.425*HT^0.725 (DCM, 122241)	m2

## 9.4 Appendix D: Fetal Echo Structured Report

### 9.4.1 Patient Characteristics

Label	Measurement	Modifier	Unit
Patient Characteristics	Container: Patient Characteristics (DCM, 121118)		
Comments	Comment (DCM, 121106)		
Age	Subject Age (DCM, 121033)		a
BP	Diastolic Blood Pressure (SRT, F-008ED)		mm[Hg]
BP	Systolic Blood Pressure (SRT, F-008EC)		mm[Hg]
Height	Patient Height (LN, 8302-2)		m
Weight	Patient Weight (LN, 29463-7)		kg

### 9.4.2 Summary

Label	Measurement	Modifier	Unit
Summary (DCM, 121111)			
DOC	Conception date (LN, 33067-0)		
Summary Comments	Finding (DCM, 121071)		
LMP	LMP (LN, 11955-2)		
Num of fetuses	Number of Fetuses (LN, 11878-6)		unitless

### 9.4.3 Fetal Echo Assessment

Label	Measurement	Modifier
Fetal Echo Assessment	Supplementary Data (DCM, 111414)	Exam Assessment (99SIEMENS, ExamAssessment): Fetal Echo Assessment Performed (99SIEMENS, FEAssessmt)
Overall Comments	Fetal Echo Assessment Comment (99SIEMENS, FEAsmtComment)	Assessment Value: [Text]

Label	Measurement	Modifier
Rt Ventricle	Right Ventricle (SRT, T-32500)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt Ventricle	Left Ventricle (SRT, T-32600)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Rt Atrium	Right Atrium (SRT, T-32200)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Lt Atrium	Left Atrium (SRT, T-32300)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
RVOT	Right Ventricle Outflow Tract (SRT, T-32550)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
LVOT	Left Ventricle Outflow Tract (SRT, T-32650)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

Label	Measurement	Modifier
Aortic Arch	Aortic Arch (SRT, T-42300)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Ductal Arch	Ductal Arch (99SIEMENS, FetalDuctalArch)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
4 Chamber Heart	All chambers of the heart (SRT, T-32080)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Echogenic Focus	Echogenic Focus (99SIEMENS, FetalEEchogFocus)	Possible Assessment Values: Right Ventricle (SRT, T-32500) Left Ventricle (SRT, T-32600) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
3 Vessel	Umbilical Cord Normal (SRT, F-03C2F)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Fetal Heart Rhythm	Fetal Heart Rhythm (SRT, F-00A5F)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)

Label	Measurement	Modifier
Situs inversus	Situs inversus (SCT, 27317008)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Pericardial fluid	Pericardial fluid (SCT, 34429004)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)
Pulmonary veins	Pulmonary veins (SCT, 64401006)	Possible Assessment Values: Present (SRT, G-A203) Not seen (SRT, G-A613) Abnormal (SRT, R-42037)