

**TOSHIBA**

**DICOM CONFORMANCE STATEMENT  
FOR  
DIAGNOSTIC ULTRASOUND SYSTEM**

MODEL SSA-640A *Viamo*<sup>TM</sup> V2.1.000

**TOSHIBA MEDICAL SYSTEMS CORPORATION**

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## 1. CONFORMANCE STATEMENT OVERVIEW

Table 1-1 provides an overview of the network services supported by *Viamo™*.

**Table 1-1  
NETWORK SERVICES**

| <b>SOP Classes</b>                         | <b>User of Service (SCU)</b> | <b>Provider of Service (SCP)</b> |
|--------------------------------------------|------------------------------|----------------------------------|
| <b>Transfer</b>                            |                              |                                  |
| Secondary Capture Image Storage            | Yes                          | No                               |
| Ultrasound Image Storage                   | Yes                          | No                               |
| Ultrasound Multi-frame Image Storage       | Yes                          | No                               |
| <b>Workflow Management</b>                 |                              |                                  |
| Modality Worklist Information Model – Find | Yes                          | No                               |
| Modality Performed Procedure Step          | Yes                          | No                               |

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## 3. INTRODUCTION

### 3.1 AUDIENCE

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

### 3.2 REMARKS

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.

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 Toshiba Medical Systems and other vendors' Medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. 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:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between Toshiba Medical Systems and non-Toshiba Medical Systems equipment.
- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM standard will evolve to meet the users' future requirements. Toshiba Medical Systems is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

### 3.3 DEFINITIONS, TERMS AND ABBREVIATIONS

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard.

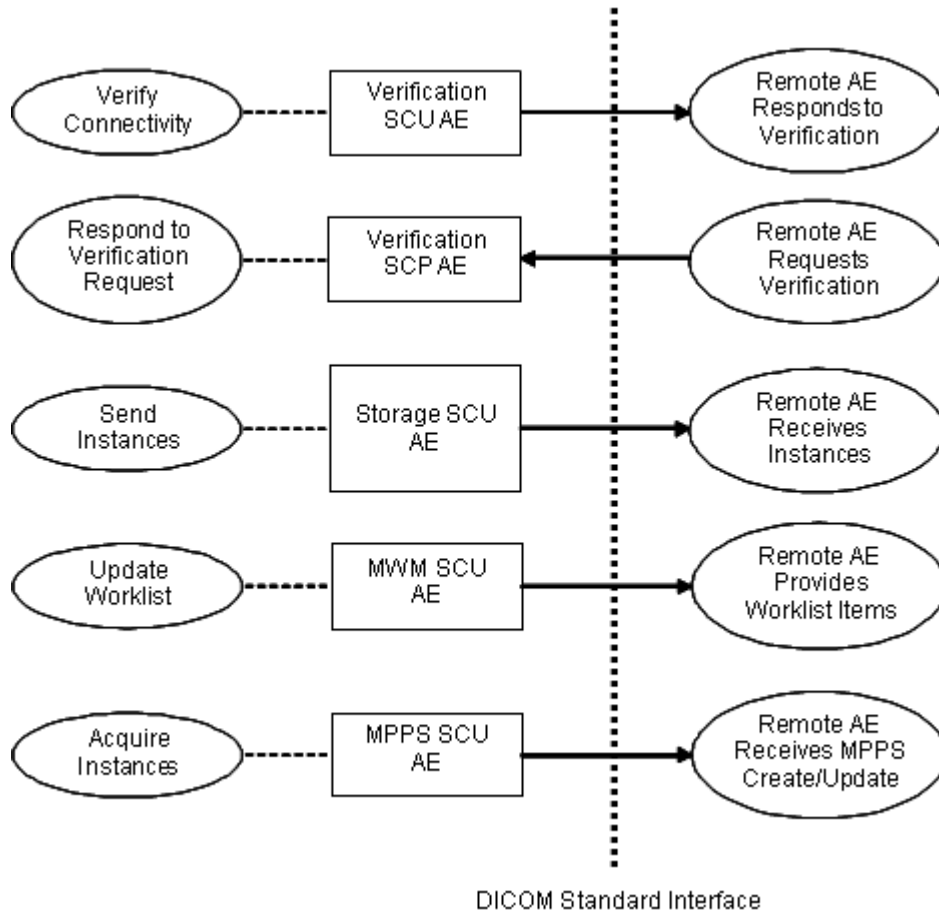
Abbreviations and terms are as follows:

|              |                                       |
|--------------|---------------------------------------|
| <b>AE</b>    | Application Entity                    |
| <b>ASCE</b>  | Association Control Service Element   |
| <b>DIMSE</b> | DICOM Message Service Element         |
| <b>IE</b>    | Information Entity                    |
| <b>IOD</b>   | Information Object Definition         |
| <b>ISO</b>   | International Standard Organization   |
| <b>MPPS</b>  | Modality Performed Procedure Step     |
| <b>MSPS</b>  | Modality Scheduled Procedure Step     |
| <b>MWM</b>   | Modality Worklist Management          |
| <b>PDU</b>   | Protocol Data Unit                    |
| <b>SCU</b>   | Service Class User (DICOM client)     |
| <b>SCP</b>   | Service Class Provider (DICOM server) |
| <b>SOP</b>   | Service-Object Pair                   |
| <b>UID</b>   | Unique Identifier                     |

## 4. NETWORKING

### 4.1 IMPLEMENTATION MODEL

#### 4.1.1 Application Data Flow



DICOM Standard Interface

**Figure 4.1-1  
APPLICATION DATA FLOW DIAGRAM**

- The Verification SCU AE issues a C-ECHO to verify a DICOM connection to a remote AE. It is associated with the local real-world activity “Verify Connectivity”. “Verify Connectivity” is performed via the Service Tool.
- The Verification SCP AE responds successfully to C-ECHO requests from known AE Titles. It is associated with the local real-world activity “Respond to Verification Request”
- The Storage SCU AE sends instances to a remote AE. It is associated with the local real-world activity “Send Instances”. “Send Instances” is performed upon user request for specific instances selected.
- The MWM SCU AE receives worklist information from a remote AE. It is associated with the local real-world activity “Update Worklist”. When the “Update Worklist” is performed the MWM SCU AE queries a remote AE for worklist items and provides the set of worklist items matching the query request. “Update Worklist” is performed manually or automatically.
- The MPPS SCU AE sends MPPS information to a remote AE. It is associated with the local real-world activity “Acquire Instances”. When the “Acquire Instances” is performed the MPPS SCU AE creates and updates Modality Performed Procedure Step instances managed by a remote AE. Acquisition of instances will result in automated creation of an MPPS instance. Completion of the MPPS is performed as the result of an operator action.

## **4.1.2 Functional Definition of AEs**

### **4.1.2.1 Functional Definition of Verification SCU AE**

The Verification SCU AE issues a C-ECHO to verify a DICOM connection to a remote AE. It is performed via the Service Tool.

### **4.1.2.2 Functional Definition of Verification SCP AE**

The Verification SCP AE responds successfully to C-ECHO requests from known AE Titles.

### **4.1.2.3 Functional Definition of Storage SCU AE**

The existence of a send-job queue entry with associated network destination will activate the Storage SCU AE. An association request is sent to the destination AE and upon successful negotiation of a Presentation Context the image transfer is started. If the image transfer fails, the Storage SCU AE will retry this send-job automatically.

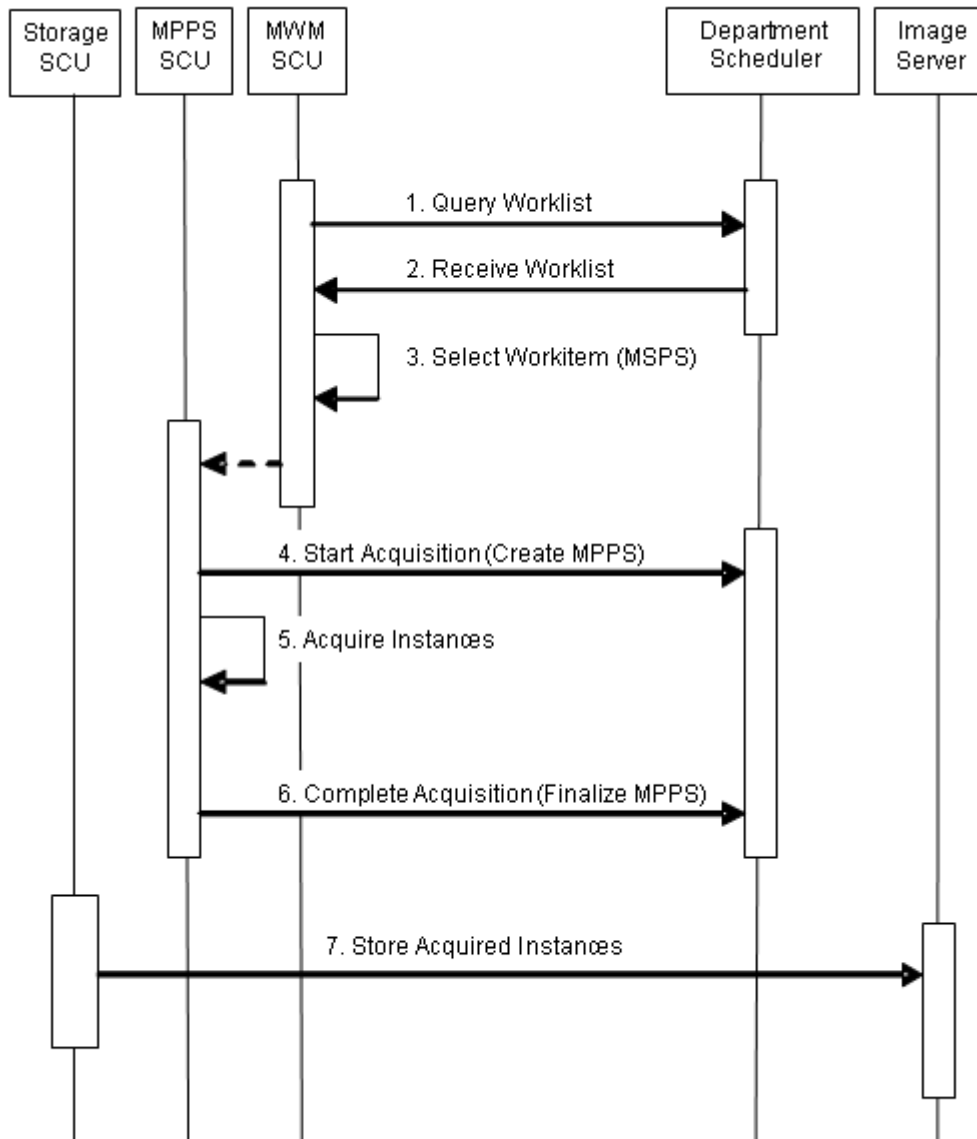
### **4.1.2.4 Functional Definition of MWM SCU AE**

The MWM SCU AE attempts to download a worklist from a remote node. If the MWM SCU AE establishes an association to a remote AE, it will transfer patient's information and worklist items via the open association. The results will be displayed in a separate list. The patient's information will be used for the patient registration.

### **4.1.2.5 Functional Definition of MPPS SCU AE**

The MPPS SCU AE performs the creation of an MPPS Instance automatically when the user selects and starts a worklist item. Further updates on the MPPS data can be performed when the user completes the acquisition.

### 4.1.3 Sequencing of Real-World Activities



**Figure 4.1-2**  
**SEQUENCING CONSTRAINTS**



## 4.2 AE SPECIFICATIONS

### 4.2.1 Verification SCU AE Specification

#### 4.2.1.1 SOP Classes

The Verification SCU AE provides Standard Conformance to the following SOP Classes:

**Table 4.2-1**  
**SOP CLASSES FOR THE VERIFICATION SCU AE**

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

#### 4.2.1.2 Association Policies

##### 4.2.1.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4.2-2**  
**DICOM APPLICATION CONTEXT FOR THE VERIFICATION SCU AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

##### 4.2.1.2.2 Number of Associations

The Verification SCU AE initiates one association at a time.

**Table 4.2-3**  
**NUMBER OF ASSOCIATIONS INITIATED FOR THE VERIFICATION SCU AE**

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

##### 4.2.1.2.3 Asynchronous Nature

The Verification SCU AE does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4.2-4**  
**ASYNCHRONOUS NATURE FOR THE VERIFICATION SCU AE**

|                                                         |   |
|---------------------------------------------------------|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---------------------------------------------------------|---|

##### 4.2.1.2.4 Implementation Identifying Information

The implementation information for the Verification SCU AE is:

**Table 4.2-5**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE VERIFICATION SCU AE**

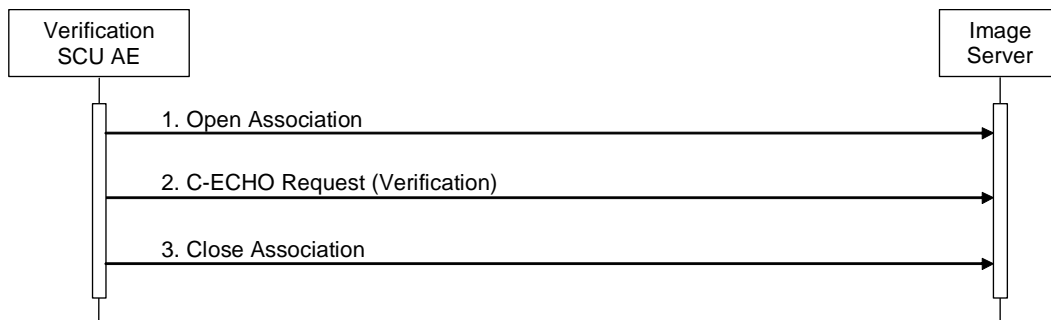
|                             |                                 |
|-----------------------------|---------------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.6.17.1000.1 |
| Implementation Version Name | TM_VIAMO_1.0                    |

### 4.2.1.3 Association Initiation Policy

#### 4.2.1.3.1 Activity – Verify Connectivity

##### 4.2.1.3.1.1 Description and Sequencing of Activities

The Verification SCU AE attempts to initiate a new association in order to issue a verification request (C-ECHO) if needed.



**Figure 4.2-1**  
**SEQUENCING OF ACTIVITY – VERIFY CONNECTIVITY**

A possible sequence of interactions between the Verification SCU AE and an Image Server (e.g. a storage or archive device supporting the Verification SOP Classes as an SCP) is illustrated in the Figure above:

1. The Verification SCU AE opens an association with the Image Server.
2. The Verification SCU AE issues a verification request (C-ECHO) and the Image Server replies with a C-ECHO response (status success).
3. The Verification SCU AE closes the association with the Image Server.

##### 4.2.1.3.1.2 Proposed Presentation Contexts

The Verification SCU AE will propose the Presentation Contexts shown in the following table:

**Table 4.2-6**  
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY VERIFY CONNECTIVITY**

| Presentation Context Table |                   |                           |                     |      |           |
|----------------------------|-------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax            |                   | Transfer Syntax           |                     | Role | Ext. Neg. |
| Name                       | UID               | Name List                 | UID List            |      |           |
| Verification               | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCU  | None      |
|                            |                   | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |      |           |

#### 4.2.1.3.1.3 SOP Specific Conformance for Verification SOP Class

The Verification SCU AE provides standard conformance to the Verification Service Class as an SCU.

The behavior of Verification SCU AE when encountering status codes in a C-ECHO response is summarized in the table below:

**Table 4.2-7  
VERIFICATION RESPONSE STATUS HANDLING BEHAVIOR**

| <b>Service Status</b> | <b>Further Meaning</b> | <b>Status Code</b> | <b>Behavior</b>                                                                    |
|-----------------------|------------------------|--------------------|------------------------------------------------------------------------------------|
| Success               | Success                | 0000               | The Verification SCU AE judges the remote AE is present and active on the network. |

The behavior of Verification SCU AE during communication failure is summarized in the table below:

**Table 4.2-8  
VERIFICATION COMMUNICATION FAILURE BEHAVIOR**

| <b>Exception</b>                                 | <b>Behavior</b>                                                                       |
|--------------------------------------------------|---------------------------------------------------------------------------------------|
| Timeout                                          | The association is aborted and the failure reason is logged and reported to the user. |
| Association aborted by the SCP or network layers | The failure reason is logged and reported to the user.                                |

## 4.2.2 Verification SCP AE Specification

### 4.2.2.1 SOP Classes

The Verification SCP AE provides Standard Conformance to the following SOP Classes:

**Table 4.2-9**  
**SOP CLASSES FOR THE VERIFICATION SCP AE**

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

### 4.2.2.2 Association Policies

#### 4.2.2.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4.2-10**  
**DICOM APPLICATION CONTEXT FOR THE VERIFICATION SCP AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

#### 4.2.2.2.2 Number of Associations

**Table 4.2-11**  
**NUMBER OF ASSOCIATIONS ACCEPTED FOR THE VERIFICATION SCP AE**

|                                             |           |
|---------------------------------------------|-----------|
| Maximum number of simultaneous associations | Unlimited |
|---------------------------------------------|-----------|

#### 4.2.2.2.3 Asynchronous Nature

The Verification SCP AE does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4.2-12**  
**ASYNCHRONOUS NATURE FOR THE VERIFICATION SCP AE**

|                                                         |   |
|---------------------------------------------------------|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---------------------------------------------------------|---|

#### 4.2.2.2.4 Implementation Identifying Information

The implementation information for the Verification SCP AE is:

**Table 4.2-13**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE VERIFICATION SCP AE**

|                             |                                 |
|-----------------------------|---------------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.6.17.1000.1 |
| Implementation Version Name | TM_VIAMO_1.0                    |

### 4.2.2.3 Association Initiation Policy

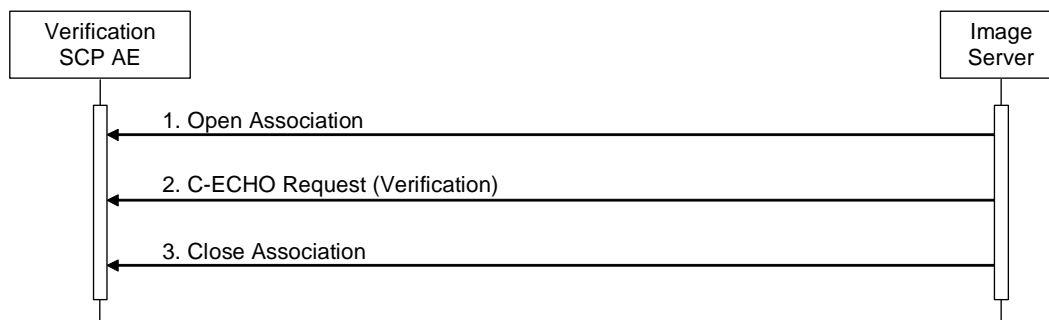
The Verification SCP AE does not initiate associations.

### 4.2.2.4 Association Acceptance Policy

#### 4.2.2.4.1 Activity – Respond to Verification Request

##### 4.2.2.4.1.1 Description and Sequencing of Activities

When the Verification SCP AE accepts an association, it will respond to a verification request (C-ECHO).



**Figure 4.2-2**  
**SEQUENCING OF ACTIVITY – RESPOND TO VERIFICATION REQUEST**

A possible sequence of interactions between the Verification SCP AE and an Image Server (e.g. a storage or archive device supporting the Verification SOP Classes as an SCU) is illustrated in the Figure above:

1. The Image Server opens an association with the Verification SCP AE.
2. The Image Server issues a verification request (C-ECHO) and the Verification SCP AE replies with a C-ECHO response (status success).
3. The Image Server closes the association with the Verification SCP AE.

The Verification SCP AE may reject association attempts as shown in the table below. The Result, Source and Reason/Diag columns represent the values returned in the appropriate fields of an ASSOCIATE-RJ PDU (see PS 3.8, Section 9.3.4). The contents of the Source column is abbreviated to save space and the meaning of the abbreviations are:

**Table 4.2-14**  
**ASSOCIATION REJECTION REASONS**

| Result                 | Source                                            | Reason/Diag                         | Explanation                                                                                                                                                                                                                                                                                                                                     |
|------------------------|---------------------------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 – rejected-permanent | DICOM UL service-user                             | 3 – calling-AE-title-not-recognized | The association request contained an unrecognized calling AE Title. An association request with the same parameters will not succeed at a later time unless configuration changes are made. This rejection reason normally occurs when the association acceptor has not been configured to recognize the AE Title of the association initiator. |
| 1 – rejected-permanent | DICOM UL service-provider (ASCE related function) | 1 – no-reason-given                 | The association request could not be parsed. An association request with the same format will not succeed at a later time.                                                                                                                                                                                                                      |

#### 4.2.2.4.1.2 Accepted Presentation Contexts

The default behavior of the Verification SCP AE supports the Implicit VR Little Endian and Explicit VR Little Endian transfer syntaxes. If the both transfer syntaxes are proposed per presentation context then the Verification SCP AE will select Explicit VR Little Endian transfer syntax.

**Table 4.2-15**

#### **PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY RESPOND TO VERIFICATION REQUEST**

| <b>Presentation Context Table</b> |                   |                           |                     |             |                  |
|-----------------------------------|-------------------|---------------------------|---------------------|-------------|------------------|
| <b>Abstract Syntax</b>            |                   | <b>Transfer Syntax</b>    |                     | <b>Role</b> | <b>Ext. Neg.</b> |
| <b>Name</b>                       | <b>UID</b>        | <b>Name List</b>          | <b>UID List</b>     |             |                  |
| Verification                      | 1.2.840.10008.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP         | None             |
|                                   |                   | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |             |                  |

#### 4.2.2.4.1.3 SOP Specific Conformance for Verification SOP Class

The Verification SCP AE provides standard conformance to the Verification Service Class as an SCP.

## 4.2.3 Storage SCU AE Specification

### 4.2.3.1 SOP Classes

The Storage SCU AE provides Standard Conformance to the following SOP Classes:

**Table 4.2-16**  
**SOP CLASSES FOR THE STORAGE SCU AE**

| SOP Class Name                       | SOP Class UID               | SCU | SCP |
|--------------------------------------|-----------------------------|-----|-----|
| Secondary Capture Image Storage      | 1.2.840.10008.5.1.4.1.1.7   | Yes | No  |
| Ultrasound Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1 |     |     |
| Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 |     |     |

### 4.2.3.2 Association Policies

#### 4.2.3.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4.2-17**  
**DICOM APPLICATION CONTEXT FOR THE STORAGE SCU AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

#### 4.2.3.2.2 Number of Associations

The Storage SCU AE initiates one association at a time for a transfer request.

**Table 4.2-18**  
**NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE SCU AE**

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

#### 4.2.3.2.3 Asynchronous Nature

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

**Table 4.2-19**  
**ASYNCHRONOUS NATURE FOR THE STORAGE SCU AE**

|                                                         |   |
|---------------------------------------------------------|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---------------------------------------------------------|---|

#### 4.2.3.2.4 Implementation Identifying Information

The implementation information for the Storage SCU AE is:

**Table 4.2-20**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE SCU AE**

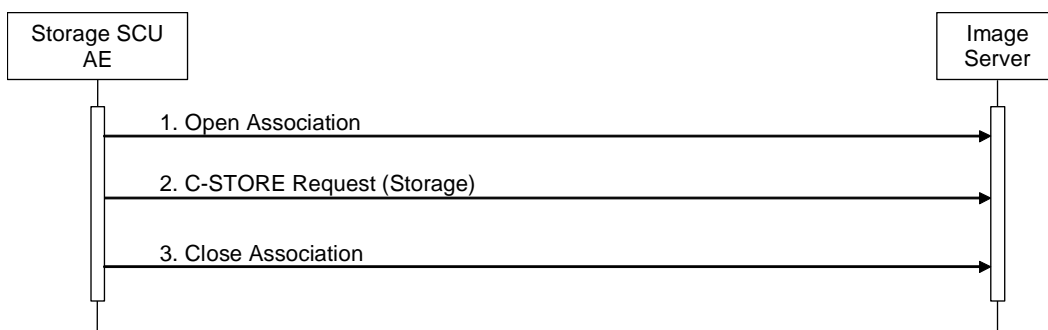
|                             |                                 |
|-----------------------------|---------------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.6.17.1000.1 |
| Implementation Version Name | TM_VIAMO_1.0                    |

### 4.2.3.3 Association Initiation Policy

#### 4.2.3.3.1 Activity – Send Images

##### 4.2.3.3.1.1 Description and Sequencing of Activities

The Storage SCU AE attempts to initiate a new association in order to issue a storage request (C-STORE). If the image transfer fails, the Storage SCU AE will retry this send-job automatically.



**Figure 4.2-3**  
**SEQUENCING OF ACTIVITY – SEND IMAGES**

A possible sequence of interactions between the Storage SCU AE and an Image Server (e.g. a storage or archive device supporting the Storage SOP Classes as an SCP) is illustrated in the Figure above:

1. The Storage SCU AE opens an association with the Image Server.
2. Acquired images are transmitted to the Image Server using a storage request (C-STORE) and the Image Server replies with a C-STORE response (status success).
3. The Storage SCU AE closes the association with the Image Server.

##### 4.2.3.3.1.2 Proposed Presentation Contexts

The Storage SCU AE will propose the Presentation Contexts shown in the following table:

**Table 4.2-21**  
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND IMAGES**

| Presentation Context Table           |                             |                           |                        |      |           |
|--------------------------------------|-----------------------------|---------------------------|------------------------|------|-----------|
| Abstract Syntax                      |                             | Transfer Syntax           |                        | Role | Ext. Neg. |
| Name                                 | UID                         | Name List                 | UID List               |      |           |
| Secondary Capture Image Storage      | 1.2.840.10008.5.1.4.1.1.7   | Implicit VR Little Endian | 1.2.840.10008.1.2      | SCU  | None      |
|                                      |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1    |      |           |
|                                      |                             | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |      |           |
| Ultrasound Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1 | Implicit VR Little Endian | 1.2.840.10008.1.2      |      |           |
|                                      |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1    |      |           |
|                                      |                             | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |      |           |
| Ultrasound Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2      |      |           |
|                                      |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1    |      |           |
|                                      |                             | JPEG Baseline (Process 1) | 1.2.840.10008.1.2.4.50 |      |           |



#### 4.2.3.3.1.3 SOP Specific Conformance for Storage SOP Classes

The Storage SCU AE provides standard conformance to the Storage Service Class as an SCU.

The behavior of Storage SCU AE when encountering status codes in a C-STORE response is summarized in the table below:

**Table 4.2-22**  
**STORAGE C-STORE RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning                   | Status Code           | Behavior                                                                                                                                                                   |
|----------------|-----------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Success        | Success                           | 0000                  | The SCP has successfully stored the SOP Instance. If all SOP Instances in a send job have status success then the job is marked as complete.                               |
| Refused        | Out of Resources                  | A7xx                  | The association is aborted and the send job is marked as failed. The status meaning is logged and the job failure is reported to the user via the job control application. |
| Error          | Data Set does not match SOP Class | A9xx                  |                                                                                                                                                                            |
| Error          | Cannot Understand                 | Cxxx                  |                                                                                                                                                                            |
| Warning        | Coercion of Data Elements         | B000                  |                                                                                                                                                                            |
| Warning        | Data Set does not match SOP Class | B007                  |                                                                                                                                                                            |
| Warning        | Elements Discarded                | B006                  |                                                                                                                                                                            |
| *              | *                                 | Any other status code |                                                                                                                                                                            |

The behavior of Storage SCU AE during communication failure is summarized in the table below:

**Table 4.2-23**  
**STORAGE COMMUNICATION FAILURE BEHAVIOR**

| Exception                                        | Behavior                                                                                                                                                           |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Timeout                                          | The association is aborted and the send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application. |
| Association aborted by the SCP or network layers | The send job is marked as failed. The reason is logged and the job failure is reported to the user via the job control application.                                |

If the image transfer fails, the Storage SCU AE will retry this send-job automatically. The number of retries is configurable.

The contents of Image Storage SOP Instances created by the Storage SCU AE conform to the DICOM Image IOD definitions and are described in section 8.1.

## 4.2.4 MWM SCU AE Specification

### 4.2.4.1 SOP Classes

The MWM SCU AE provides Standard Conformance to the following SOP Classes:

**Table 4.2-24**  
**SOP CLASSES FOR THE MWM SCU AE**

| SOP Class Name                             | SOP Class UID          | SCU | SCP |
|--------------------------------------------|------------------------|-----|-----|
| Modality Worklist Information Model – FIND | 1.2.840.10008.5.1.4.31 | Yes | No  |

### 4.2.4.2 Association Policies

#### 4.2.4.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4.2-25**  
**DICOM APPLICATION CONTEXT FOR THE MWM SCU AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

#### 4.2.4.2.2 Number of Associations

The MWM SCU AE initiates one association at a time for a worklist request.

**Table 4.2-26**  
**NUMBER OF ASSOCIATIONS INITIATED FOR THE MWM SCU AE**

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

#### 4.2.4.2.3 Asynchronous Nature

The MWM SCU AE does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4.2-27**  
**ASYNCHRONOUS NATURE FOR THE MWM SCU AE**

|                                                         |   |
|---------------------------------------------------------|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---------------------------------------------------------|---|

#### 4.2.4.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

**Table 4.2-28**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MWM SCU AE**

|                             |                                 |
|-----------------------------|---------------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.6.17.1000.1 |
| Implementation Version Name | TM_VIAMO_1.0                    |

### 4.2.4.3 Association Initiation Policy

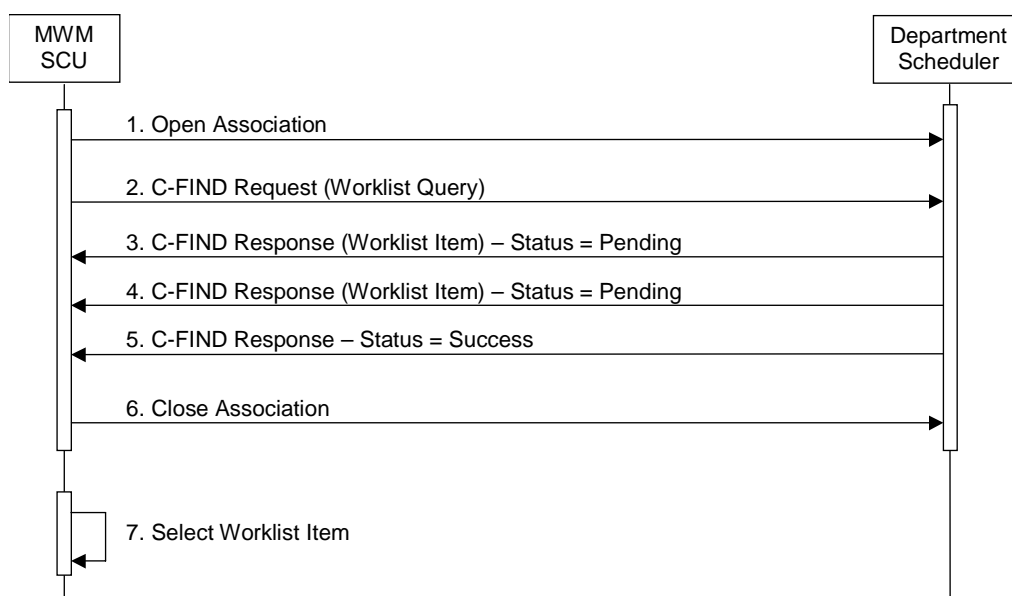
#### 4.2.4.3.1 Activity – Update Worklist

##### 4.2.4.3.1.1 Description and Sequencing of Activities

The request for an “Update Worklist” is initiated by user interaction, i.e. pressing the buttons “Get Worklist” or automatically at the time of patient registration.

Upon initiation of the request, the MWM SCU AE will build an Identifier for the C-FIND request, will initiate an association to send the request and will wait for worklist responses. After retrieval of all responses, the MWM SCU AE will access the local database to add or update patient demographic data. The results will be displayed in a separate list.

The MWM SCU AE will initiate an association in order to issue a C-FIND request according to the Modality Worklist Information Model.



**Figure 4.2-4**  
**SEQUENCING OF ACTIVITY – UPDATE WORKLIST**

A possible sequence of interactions between the MWM SCU AE and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the Modality Worklist SOP Class as an SCP) is illustrated in the Figure above:

1. The MWM SCU AE opens an association with the Department Scheduler
2. The MWM SCU AE sends a C-FIND request to the Department Scheduler containing the Worklist Query attributes.
3. The Department Scheduler returns a C-FIND response containing the requested attributes of the first matching worklist item.
4. The Department Scheduler returns another C-FIND response containing the requested attributes of the second matching worklist item.
5. The Department Scheduler returns another C-FIND response with status Success indicating that no further matching worklist items exist. This example assumes that only 2 worklist items match the Worklist Query.
6. The MWM SCU AE closes the association with the Department Scheduler.
7. The user selects a worklist item from the Worklist and prepares to acquire new instances.

#### 4.2.4.3.1.2 Proposed Presentation Contexts

The MWM SCU AE will propose Presentation Contexts shown in the following table:

**Table 4.2-29**  
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY UPDATE WORKLIST**

| Presentation Context Table                 |                        |                           |                     |      |           |
|--------------------------------------------|------------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax                            |                        | Transfer Syntax           |                     | Role | Ext. Neg. |
| Name                                       | UID                    | Name List                 | UID List            |      |           |
| Modality Worklist Information Model – FIND | 1.2.840.10008.5.1.4.31 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None      |
|                                            |                        | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |      |           |

#### 4.2.4.3.1.3 SOP Specific Conformance for Modality Worklist SOP Class

The MWM SCU AE provides standard conformance to the Modality Worklist SOP Class as an SCU.

The behavior of the MWM SCU when encountering status codes in a Modality Worklist C-FIND response is summarized in the table below.

**Table 4.2-30**  
**MODALITY WORKLIST C-FIND RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning      | Status Code           | Behavior                                                                                           |
|----------------|----------------------|-----------------------|----------------------------------------------------------------------------------------------------|
| Success        | Matching is complete | 0000                  | The SCP has completed the matches. Worklist items are available for display or further processing. |
| *              | *                    | Any other status code | The association is aborted using A-ABORT and the status meaning is logged.                         |

The behavior of the MWM SCU AE during communication failure is summarized in the table below.

**Table 4.2-31**  
**MODALITY WORKLIST COMMUNICATION FAILURE BEHAVIOR**

| Exception                                        | Behavior                                                           |
|--------------------------------------------------|--------------------------------------------------------------------|
| Timeout                                          | The association is aborted using A-ABORT and the reason is logged. |
| Unsupported character sets                       |                                                                    |
| Association aborted by the SCP or network layers | The reason is logged.                                              |

Acquired instances will always use the Study Instance UID specified for the Scheduled Procedure Step (if available). If an acquisition is unscheduled, a Study Instance UID will be generated locally.

The table below provides a description of the MWM SCU AE Worklist Request Identifier and specifies the attributes that are copied into the instances. Unexpected attributes returned in a C-FIND response are ignored.

**Table 4.2-32**  
**WORKLIST REQUEST IDENTIFIER**

| Module Name<br>Attribute Name          | Tag         | VR | M   | R | D | IOD |
|----------------------------------------|-------------|----|-----|---|---|-----|
| <b>SOP Common</b>                      |             |    |     |   |   |     |
| Specific Character Set                 | (0008,0005) | CS |     |   |   | X   |
| <b>Scheduled Procedure Step</b>        |             |    |     |   |   |     |
| Scheduled Procedure Step Sequence      | (0040,0100) | SQ |     |   |   |     |
| >Modality                              | (0008,0060) | CS | S   | X | X | X   |
| >Requested Contrast Agent              | (0032,1070) | LO |     | X |   |     |
| >Scheduled Station AE Title            | (0040,0001) | AE | S   | X | X |     |
| >Scheduled Procedure Step Start Date   | (0040,0002) | DA | S/R | X | X |     |
| >Scheduled Procedure Step Start Time   | (0040,0003) | TM | S/R | X | X |     |
| >Scheduled Performing Physician's Name | (0040,0006) | PN |     | X | X |     |
| >Scheduled Procedure Step Description  | (0040,0007) | LO |     | X | X |     |
| >Scheduled Station Name                | (0040,0010) | SH |     | X |   |     |
| >Scheduled Procedure Step Location     | (0040,0011) | SH |     | X |   |     |
| >Scheduled Protocol Code Sequence      | (0040,0008) | SQ |     |   |   |     |
| >>Code Value                           | (0008,0100) | SH |     | X | X |     |
| >>Coding Scheme Designator             | (0008,0102) | SH |     | X | X |     |
| >>Coding Scheme Version                | (0008,0103) | SH |     | X |   |     |
| >>Code Meaning                         | (0008,0104) | LO |     | X | X |     |
| >Pre-Medication                        | (0040,0012) | LO |     | X |   |     |
| >Scheduled Procedure Step Status       | (0040,0020) | CS |     | X |   |     |
| >Scheduled Procedure Step ID           | (0040,0009) | SH |     | X | X |     |
| <b>Requested Procedure</b>             |             |    |     |   |   |     |
| Referenced Study Sequence              | (0008,1110) | SQ |     |   |   |     |
| >Referenced SOP Class UID              | (0008,1150) | UI |     | X |   |     |
| >Referenced SOP Instance UID           | (0008,1155) | UI |     | X |   |     |
| Study Instance UID                     | (0020,000D) | UI |     | X |   | X   |
| Requested Procedure Description        | (0032,1060) | LO |     | X | X |     |
| Requested Procedure Code Sequence      | (0032,1064) | SQ |     |   |   |     |
| >Code Value                            | (0008,0100) | SH |     | X | X |     |
| >Coding Scheme Designator              | (0008,0102) | SH |     | X | X |     |
| >Coding Scheme Version                 | (0008,0103) | SH |     | X |   |     |
| >Code Meaning                          | (0008,0104) | LO |     | X | X |     |
| Requested Procedure ID                 | (0040,1001) | SH | S   | X | X |     |
| Requested Procedure Priority           | (0040,1003) | SH |     | X |   |     |

|                                         |             |    |   |   |   |   |
|-----------------------------------------|-------------|----|---|---|---|---|
| Patient Transport Arrangements          | (0040,1004) | LO |   | X |   |   |
| <b>Imaging Service Request</b>          |             |    |   |   |   |   |
| Accession Number                        | (0008,0050) | SH | S | X | X | X |
| Referring Physician's Name              | (0008,0090) | PN |   | X | X | X |
| Requesting Physician                    | (0032,1032) | PN |   | X | X |   |
| Requesting Service                      | (0032,1033) | LO |   | X |   |   |
| Reason for the Imaging Service Request  | (0040,2001) | LO |   | X |   |   |
| Issue Date of Imaging Service Request   | (0040,2004) | DA |   | X |   |   |
| Issue Time of Imaging Service Request   | (0040,2005) | TM |   | X |   |   |
| Order Entered By                        | (0040,2008) | PM |   | X |   |   |
| Order Enterer's Location                | (0040,2009) | SH |   | X |   |   |
| Order Callback Phone Number             | (0040,2010) | SH |   | X |   |   |
| Placer Order Number                     | (0040,2016) | LO |   | X |   |   |
| Filler Order Number                     | (0040,2017) | LO |   | X |   |   |
| Imaging Service Request Comments        | (0040,2400) | LT |   | X |   |   |
| <b>Visit Identification</b>             |             |    |   |   |   |   |
| Institution Name                        | (0008,0080) | LO |   | X |   |   |
| Institution Address                     | (0008,0081) | LO |   | X |   |   |
| Institution Code Sequence               | (0008,0082) | SQ |   | X |   |   |
| >Code Value                             | (0008,0100) | SH |   | X |   |   |
| >Coding Scheme Designator               | (0008,0102) | SH |   | X |   |   |
| >Coding Scheme Version                  | (0008,0103) | SH |   | X |   |   |
| >Code Meaning                           | (0008,0104) | LO |   | X |   |   |
| Admission ID                            | (0038,0010) | LO |   | X |   |   |
| Issuer of Admission ID                  | (0038,0011) | LO |   | X |   |   |
| <b>Visit Status</b>                     |             |    |   |   |   |   |
| Visit Status ID                         | (0038,0008) | CS |   | X |   |   |
| Current Patient Location                | (0038,0300) | LO |   | X |   |   |
| Patient's Institution Residence         | (0038,0400) | LO |   | X |   |   |
| Visit Comments                          | (0038,4000) | LT |   | X |   |   |
| <b>Visit Relationship</b>               |             |    |   |   |   |   |
| Referenced Patient Sequence             | (0008,1120) | SQ |   |   |   |   |
| >Referenced SOP Class UID               | (0008,1150) | UI |   | X |   |   |
| >Referenced SOP Instance UID            | (0008,1155) | UI |   | X |   |   |
| <b>Visit Admission</b>                  |             |    |   |   |   |   |
| Referring Physician's Name              | (0008,0090) | PN |   | X | X | X |
| Referring Physician's Address           | (0008,0092) | ST |   | X |   |   |
| Referring Physician's Telephone Numbers | (0008,0094) | SH |   | X |   |   |
| Admitting Diagnoses Description         | (0008,1080) | LO |   | X |   |   |
| Admitting Diagnosis Code Sequence       | (0008,1084) |    |   | X |   |   |
| >Code Value                             | (0008,0100) | SH |   | X |   |   |

|                                            |             |    |   |   |   |   |
|--------------------------------------------|-------------|----|---|---|---|---|
| >Coding Scheme Designator                  | (0008,0102) | SH |   | X |   |   |
| >Coding Scheme Version                     | (0008,0103) | SH |   | X |   |   |
| >Code Meaning                              | (0008,0104) | LO |   | X |   |   |
| Route of Admissions                        | (0038,0016) | DA |   | X |   |   |
| Admitting Date                             | (0038,0020) | DA |   | X |   |   |
| Admitting Time                             | (0038,0021) | TM |   | X |   |   |
| <b>Patient Identification</b>              |             |    |   |   |   |   |
| Patient's Name                             | (0010,0010) | PN | W | X | X | X |
| Patient ID                                 | (0010,0020) | LO | S | X | X | X |
| <b>Patient Demographic</b>                 |             |    |   |   |   |   |
| Patient's Birth Date                       | (0010,0030) | DA |   | X | X | X |
| Patient's Birth Time                       | (0010,0032) | TM |   | X |   |   |
| Patient's Sex                              | (0010,0040) | CS |   | X | X | X |
| Patient's Insurance Plan Code Sequence     | (0010,0050) | SQ |   | X |   |   |
| >Code Value                                | (0008,0100) | SH |   | X |   |   |
| >Coding Scheme Designator                  | (0008,0102) | SH |   | X |   |   |
| >Coding Scheme Version                     | (0008,0103) | SH |   | X |   |   |
| >Code Meaning                              | (0008,0104) | LO |   | X |   |   |
| Patient's Age                              | (0010,1010) | AS |   | X | X | X |
| Patient's Size                             | (0010,1020) | DS |   | X | X | X |
| Patient's Weight                           | (0010,1030) | DS |   | X | X | X |
| Patient's Address                          | (0010,1040) | LO |   | X |   |   |
| Military Rank                              | (0010,1080) | LO |   | X |   |   |
| Branch of Service                          | (0010,1081) | LO |   | X |   |   |
| Country of Residence                       | (0010,2150) | LO |   | X |   |   |
| Region of Residence                        | (0010,2152) | LO |   | X |   |   |
| Patient's Telephone Numbers                | (0010,2154) | SH |   | X |   |   |
| Occupation                                 | (0010,2180) | SH |   | X |   |   |
| Patient's Religious Preference             | (0010,21F0) | LO |   | X |   |   |
| Patient Comments                           | (0010,4000) | LT |   | X | X | X |
| Confidentiality constraint on patient data | (0040,3001) | LO |   | X |   |   |
| <b>Patient Medical</b>                     |             |    |   |   |   |   |
| Medical Alerts                             | (0010,2000) | LO |   | X | X |   |
| Allergies                                  | (0010,2110) | LO |   | X | X |   |
| Smoking Status                             | (0010,21A0) | CS |   | X | X |   |
| Additional Patient History                 | (0010,21B0) | LT |   | X | X |   |
| Pregnancy Status                           | (0010,21C0) | US |   | X | X |   |
| Last Menstrual Date                        | (0010,21D0) | DA |   | X | X |   |
| Special Needs                              | (0038,0050) | LO |   | X | X |   |
| Patient State                              | (0038,0500) | LO |   | X | X |   |

The above table should be read as follows:

Module Name: The name of the associated module for supported worklist attributes.

|                 |                                                                                                                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Attribute Name: | Attributes supported to build the MWM SCU AE Worklist Request Identifier.                                                                                                                                               |
| Tag:            | DICOM tag for this attribute.                                                                                                                                                                                           |
| VR:             | DICOM VR for this attribute.                                                                                                                                                                                            |
| M:              | Matching keys for (automatic) Worklist Update.<br>S: Single Value Matching<br>R: Range Matching<br>W: Wild Card Matching                                                                                                |
| R:              | Return keys. An "X" will indicate that the MWM SCU AE will supply this attribute as Return Key with zero length for Universal Matching. This setting can be configured using the service tool.                          |
| D:              | Displayed keys. An "X" indicates that this worklist attribute is displayed to the user during a patient registration. For example, Patient Name will be displayed when registering the patient prior to an examination. |
| IOD:            | An "X" indicates that this worklist attribute is included into all Object Instances created during performance of the related Procedure Step.                                                                           |

Notes: Specific Character Set (0008,0005) will be created if an extended or replacement character set is used in the matching keys.

Scheduled Performing Physician's Name (0040,0006) will be copied into Performing Physician's Name (0008,1050).

Scheduled Procedure Step Description (0040,0007), or Requested Procedure Description (0032,1060) can be displayed at *Exam Type* when matching the following exam types: Abdomen, Kidney, Tests, Thyroid, Other, TCD, GYN, Breast, Endo Vaginal, OB, Fetal Heart, Neo-General, Neo-Head, Neo-Hip, Adult Heart, Pediatric Heart, Coronary, Carotid, PV Arterial, PV Venous, Digits, and MSK. They can be also configured to correspond to user-defined terms, and it is selectable where to set those terms.

#### 4.2.4.4 Association Acceptance Policy

The MWM SCU AE does not accept associations.



## 4.2.5 MPPS SCU AE Specification

### 4.2.5.1 SOP Classes

The MPPS SCU AE provides Standard Conformance to the following SOP Classes:

**Table 4.2-33**  
**SOP CLASSES FOR THE MPPS SCU AE**

| SOP Class Name                    | SOP Class UID           | SCU | SCP |
|-----------------------------------|-------------------------|-----|-----|
| Modality Performed Procedure Step | 1.2.840.10008.3.1.2.3.3 | Yes | No  |

### 4.2.5.2 Association Policies

#### 4.2.5.2.1 General

The DICOM standard application context name for DICOM 3.0 is always proposed:

**Table 4.2-34**  
**DICOM APPLICATION CONTEXT FOR THE MPPS SCU AE**

|                          |                       |
|--------------------------|-----------------------|
| Application Context Name | 1.2.840.10008.3.1.1.1 |
|--------------------------|-----------------------|

#### 4.2.5.2.2 Number of Associations

The MPPS SCU AE initiates one association at a time.

**Table 4.2-35**  
**NUMBER OF ASSOCIATIONS INITIATED FOR THE MPPS SCU AE**

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

#### 4.2.5.2.3 Asynchronous Nature

The MPPS SCU AE does not support asynchronous communication (multiple outstanding transactions over a single association).

**Table 4.2-36**  
**ASYNCHRONOUS NATURE FOR THE MPPS SCU AE**

|                                                         |   |
|---------------------------------------------------------|---|
| Maximum number of outstanding asynchronous transactions | 1 |
|---------------------------------------------------------|---|

#### 4.2.5.2.4 Implementation Identifying Information

The implementation information for this Application Entity is:

**Table 4.2-37**  
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MPPS SCU AE**

|                             |                                 |
|-----------------------------|---------------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.6.17.1000.1 |
| Implementation Version Name | TM_VIAMO_1.0                    |

### 4.2.5.3 Association Initiation Policy

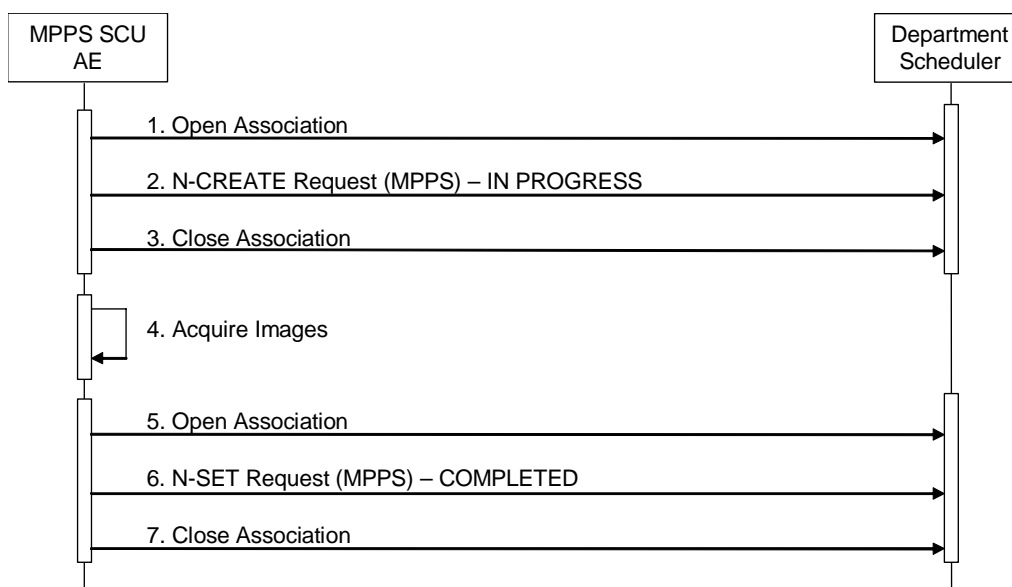
#### 4.2.5.3.1 Activity – Acquire Instances

##### 4.2.5.3.1.1 Description and Sequencing of Activities

The MPPS SCU AE performs the creation of an MPPS instance automatically when the user selects and starts a worklist item. Further updates on the MPPS data can be performed when the user completes the acquisition.

The MPPS SCU AE will initiate an association to issue an:

- N-CREATE request according to the CREATE Modality Performed Procedure Step SOP Instance operation, or an:
- N-SET request to update the contents and state of the MPPS according to the SET Modality Performed Procedure Step Information operation.



**Figure 4.2-5**  
**SEQUENCING OF ACTIVITY – ACQUIRE INSTANCES**

A possible sequence of interactions between the MPPS SCU AE and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated in the Figure above:

1. The MPPS SCU AE opens an association with the Department Scheduler
2. The MPPS SCU AE sends an N-CREATE request to the Department Scheduler to create an MPPS instance with status of “IN PROGRESS” and create all necessary attributes. The Department Scheduler acknowledges the MPPS creation with an N-CREATE response (status success).
3. The MPPS SCU AE closes the association with the Department Scheduler.
4. All instances are acquired and stored in the local database.
5. The MPPS SCU AE opens an association with the Department Scheduler.
6. The MPPS SCU AE sends an N-SET request to the Department Scheduler to update the MPPS instance with status of “COMPLETED” and set all necessary attributes. The Department Scheduler acknowledges the MPPS update with an N-SET response (status success).
7. The MPPS SCU AE closes the association with the Department Scheduler.

#### 4.2.5.3.1.2 Proposed Presentation Contexts

The MPPS SCU AE will propose Presentation Contexts shown in the following table:

**Table 4.2-38  
PROPOSED PRESENTATION CONTEXTS FOR REAL-WORLD ACTIVITY ACQUIRE INSTANCES**

| Presentation Context Table        |                         |                           |                     |      |           |
|-----------------------------------|-------------------------|---------------------------|---------------------|------|-----------|
| Abstract Syntax                   |                         | Transfer Syntax           |                     | Role | Ext. Neg. |
| 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   | SCP  | None      |
|                                   |                         | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |      |           |

#### 4.2.5.3.1.3 SOP Specific Conformance for MPPS SOP Class

The MPPS SCU AE provides standard conformance to the Modality Performed Procedure Step SOP Class as an SCU.

The behavior of the MPPS SCU AE when encountering status codes in an MPPS N-CREATE or N-SET response is summarized in the table below.

**Table 4.2-39  
MPPS N-CREATE / N-SET RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code           | Behavior                                                                                                            |
|----------------|-----------------|-----------------------|---------------------------------------------------------------------------------------------------------------------|
| Success        | Success         | 0000                  | The SCP has completed the operation successfully.                                                                   |
| *              | *               | Any other status code | The association is aborted and the MPPS is marked as failed. The status meaning is logged and reported to the user. |

The behavior of the MPPS SCU AE during communication failure is summarized in the table below:

**Table 4.2-40  
MPPS COMMUNICATION FAILURE BEHAVIOR**

| Exception                                        | Behavior                                                                                                |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Timeout                                          | The association is aborted and MPPS is marked as failed. The reason is logged and reported to the user. |
| Association aborted by the SCP or network layers | The MPPS is marked as failed. The reason is logged and reported to the user.                            |

The table below provides a description of the MPPS N-CREATE and N-SET request identifiers sent by the MPPS SCU AE. Empty cells in the N-CREATE and N-SET columns indicate that the attribute is not sent. An "x" indicates that an appropriate value will be sent. A "Zero length" attribute will be sent with zero length.

**Table 4.2-41  
MPPS N-CREATE / N-SET REQUEST IDENTIFIER**

| Attribute Name                               | Tag         | VR | N-CREATE                                                      | N-SET              |
|----------------------------------------------|-------------|----|---------------------------------------------------------------|--------------------|
| Specific Character Set                       | (0008,0005) | CS | Created, if an extended or replacement character set is used. |                    |
| <b>Performed Procedure Step Relationship</b> |             |    |                                                               |                    |
| Scheduled Step Attributes Sequence           | (0040,0270) | SQ | Always set                                                    |                    |
| >Study Instance UID                          | (0020,000D) | UI | From Modality Worklist                                        |                    |
| >Referenced Study Sequence                   | (0008,1110) | SQ | Zero length                                                   |                    |
| >Accession Number                            | (0008,0050) | SH | From Modality Worklist                                        |                    |
| >Requested Procedure ID                      | (0040,1001) | SH | From Modality Worklist                                        |                    |
| >Requested Procedure Description             | (0032,1060) | LO | From Modality Worklist                                        |                    |
| >Scheduled Procedure Step ID                 | (0040,0009) | SH | From Modality Worklist                                        |                    |
| >Scheduled Procedure Step Description        | (0040,0007) | LO | From Modality Worklist                                        |                    |
| >Scheduled Protocol Code Sequence            | (0040,0008) | SQ | Zero length                                                   |                    |
| Patient's Name                               | (0010,0010) | PN | From Modality Worklist or user input                          |                    |
| Patient ID                                   | (0010,0020) | LO | From Modality Worklist or user input                          |                    |
| Patient's Birth Date                         | (0010,0030) | DA | From Modality Worklist or user input                          |                    |
| Patient's Sex                                | (0010,0040) | CS | From Modality Worklist or user input                          |                    |
| Referenced Patient Sequence                  | (0008,1120) | SQ | Zero length                                                   |                    |
| <b>Performed Procedure Step Information</b>  |             |    |                                                               |                    |
| Performed Procedure Step ID                  | (0040,0253) | SH | X                                                             |                    |
| Performed Station AE Title                   | (0040,0241) | AE | MPPS AE Title                                                 |                    |
| Performed Station Name                       | (0040,0242) | SH | From configuration                                            |                    |
| Performed Location                           | (0040,0243) | SH | Zero length                                                   |                    |
| Performed Procedure Step Start Date          | (0040,0244) | DA | Actual start date                                             |                    |
| Performed Procedure Step Start Time          | (0040,0245) | TM | Actual start time                                             |                    |
| Performed Procedure Step Status              | (0040,0252) | CS | IN PROGRESS                                                   | COMPLETED          |
| Performed Procedure Step Description         | (0040,0254) | LO | X                                                             | X                  |
| Performed Procedure Type Description         | (0040,0255) | LO | Zero length                                                   |                    |
| Procedure Code Sequence                      | (0008,1032) | SQ | Zero or more items                                            | Zero or more items |
| Performed Procedure Step End Date            | (0040,0250) | DA | Zero length                                                   | Actual end date    |
| Performed Procedure Step End Time            | (0040,0251) | TM | Zero length                                                   | Actual end time    |
| <b>Image Acquisition Results</b>             |             |    |                                                               |                    |
| Modality                                     | (0008,0060) | CS | US                                                            |                    |
| Study ID                                     | (0020,0010) | SH | X                                                             |                    |
| Performed Protocol Code Sequence             | (0040,0260) | SQ | From Modality Worklist                                        | X                  |
| Performed Series Sequence                    | (0040,0340) | SQ | One or more items                                             | One or more items  |

|                                                       |             |    |                                      |                   |
|-------------------------------------------------------|-------------|----|--------------------------------------|-------------------|
| >Performing Physician's Name                          | (0008,1050) | PN | From Modality Worklist or user input | X                 |
| >Protocol Name                                        | (0018,1030) | LO | X                                    | X                 |
| >Operator's Name                                      | (0008,1070) | PN | Zero length                          | Zero length       |
| >Series Instance UID                                  | (0020,000E) | UI | X                                    | X                 |
| >Series Description                                   | (0008,103E) | LO | Zero length                          | Zero length       |
| >Retrieve AE Title                                    | (0008,0054) | AE | Zero length                          | Zero length       |
| >Referenced Image Sequence                            | (0008,1140) | SQ | Zero length                          | One or more items |
| >>Referenced SOP Class UID                            | (0008,1150) | UI |                                      | X                 |
| >>Referenced SOP Instance UID                         | (0008,1155) | UI |                                      | X                 |
| >Referenced Non-Image Composite SOP Instance Sequence | (0040,0220) | SQ | Zero length                          | Zero length       |

#### 4.2.5.4 Association Acceptance Policy

The MPPS SCU AE does not accept associations.

## 4.3 NETWORK INTERFACES

### 4.3.1 Physical Network Interface

This product supports a single network interface. One of the following physical network interfaces will be available depending on installed hardware options:

**Table 4.3-1**  
**SUPPORTED PHYSICAL NETWORK INTERFACES**

|                    |
|--------------------|
| Ethernet 1000baseT |
| Ethernet 100baseT  |
| Ethernet 10baseT   |

### 4.3.2 Additional Protocols

None.

## 4.4 CONFIGURATION

### 4.4.1 AE Title/Presentation Address Mapping

#### 4.4.1.1 Local AE Titles

All local applications use the AE Titles and TCP/IP Ports configured via the Service Tool. The Field Service Engineer can configure the TCP Port via the Service Tool.

Note: AE Titles can use alphanumeric characters, "-", ".", and "\_", up to 16 characters.

**Table 4.4-1  
AE TITLE CONFIGURATION TABLE**

| Application Entity | Default AE Title | Default TCP/IP Port |
|--------------------|------------------|---------------------|
| Verification SCP   | DICOM_LOCAL_SCP  | 104                 |
| Verification SCU   | VERIFYSCU_AE     | Not Applicable      |
| Storage SCU        | DICOM_LOCAL_SCU  |                     |
| MWM SCU            | MWMSCU_AE        |                     |
| MPPS SCU           | MPPSSCU_AE       |                     |

#### 4.4.1.2 Remote AE Title/Presentation Address Mapping

The AE Titles, host names and port numbers of remote applications are configured using the Service Tool.

Note: AE Titles can use alphanumeric characters, "-", ".", and "\_", up to 16 characters.

### 4.4.2 Parameters

A large number of parameters related to acquisition and general operation can be configured using the Service Tool. The table below only shows those configuration parameters relevant to DICOM communication. See the Product's Service Manual for details on general configuration capabilities.

**Table 4.4-2  
CONFIGURATION PARAMETERS TABLE**

| Parameter                                                                                                      | Configurable<br>(Yes/No)[Range] | Default Value |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|---------------|
| <b>General Parameters</b>                                                                                      |                                 |               |
| Time-out waiting for an acceptance or rejection response to an association request (Application Level timeout) | No                              | 240 sec       |
| Time-out waiting for a response to an association release request (Application Level timeout)                  | Yes [0-999999]                  | 20 sec        |
| Time-out waiting for completion of a TCP/IP connect request (Low-level timeout)                                | No                              | 240 sec       |
| Time-out awaiting a response to a DIMSE request (Low-level timeout)                                            | No                              | 240 sec       |
| Time-out for waiting for data between TCP/IP-packets (Low-level timeout)                                       | No                              | 240 sec       |

| Parameter                                                                                                                 | Configurable<br>(Yes/No)[Range] | Default Value                                          |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------|
| <b>Storage SCU Parameters</b>                                                                                             |                                 |                                                        |
| Maximum number of simultaneously initiated associations by the Storage SCU AE                                             | No                              | 1                                                      |
| Supported transfer syntaxes (separately configurable for each remote AE)                                                  | Yes                             | Implicit VR Little Endian<br>JPEG Baseline (Process 1) |
| Number of times a failed send job may be retried                                                                          | Yes [0-99999]                   | 0                                                      |
| <b>Modality Worklist SCU Parameters</b>                                                                                   |                                 |                                                        |
| Maximum number of simultaneously initiated associations by the MWM SCU AE                                                 | No                              | 1                                                      |
| Maximum number of worklist items                                                                                          | Yes<br>[1-9999]                 | 200                                                    |
| Query worklist for specific Scheduled Station AE Title                                                                    | Yes [Up to<br>16 Characters]    | MWMSCU_AE                                              |
| Query worklist for specific Modality                                                                                      | Yes<br>[US or blank]            | US                                                     |
| Time out between Results<br>(This time-out is activated on a higher priority than<br>General Parameter's time-out values) | Yes [0-999]                     | 20 sec                                                 |
| <b>MPPS SCU Parameters</b>                                                                                                |                                 |                                                        |
| Maximum number of simultaneously initiated associations by the MPPS SCU AE                                                | No                              | 1                                                      |
| Number of times a failed send job may be retried                                                                          | Yes [0-99999]                   | 0                                                      |



## **5. MEDIA INTERCHANGE**

This product does not support Media Storage.

## 6. SUPPORT OF CHARACTER SETS

This product supports the following character sets:

- ISO-IR 6 (default)                      ISO 646
- ISO-IR 100 (Latin alphabet No.1)    Supplementary set of ISO 8859

## 7. SECURITY

This product does not support any specific security measures.

It is assumed that the product is used within a secured environment. It is assumed that a secured environment includes at a minimum:

- a. Firewall or router protections to ensure that only approved external hosts have network access to the product.
- b. Firewall or router protections to ensure that the product only has network access to approved external hosts and services.

Other network security procedures such as automated intrusion detection may be appropriate in some environments. Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

## 8. ANNEXES

### 8.1 IOD CONTENTS

#### 8.1.1 Created SOP Instances

Table 8.1-1 specifies the attributes of a Secondary Capture Image transmitted by the Storage SCU AE.

Table 8.1-2 specifies the attributes of an Ultrasound Image transmitted by the Storage SCU AE.

Table 8.1-3 specifies the attributes of an Ultrasound Multi-frame Image transmitted by the Storage SCU AE.

The following tables use a number of abbreviations. The abbreviations used in the “Presence of ...” column are:

|        |                                                                              |
|--------|------------------------------------------------------------------------------|
| VNAP   | Value Not Always Present (attribute sent zero length if no value is present) |
| ANAP   | Attribute Not Always Present                                                 |
| ALWAYS | Always Present                                                               |
| EMPTY  | Attribute is sent without a value                                            |

The abbreviations used in the “Source” column:

|        |                                                                                   |
|--------|-----------------------------------------------------------------------------------|
| MWL    | the attribute value source Modality Worklist                                      |
| USER   | the attribute value source is from user input                                     |
| AUTO   | the attribute value is generated automatically                                    |
| MPPS   | the attribute value is the same as that use for Modality Performed Procedure Step |
| CONFIG | the attribute value source is a configurable parameter                            |

## 8.1.1.1 SC Image IOD

**Table 8.1-1  
IOD OF CREATED SC IMAGE SOP INSTANCES**

| <b>IE</b> | <b>Module</b>          | <b>Reference</b> | <b>Presence of Module</b> |
|-----------|------------------------|------------------|---------------------------|
| Patient   | Patient                | Table 8.1-4      | ALWAYS                    |
|           | Clinical Trial Subject | --               | Not Present               |
| Study     | General Study          | Table 8.1-5      | ALWAYS                    |
|           | Patient Study          | Table 8.1-6      | ALWAYS                    |
|           | Clinical Trial Study   | --               | Not Present               |
| Series    | General Series         | Table 8.1-7      | ALWAYS                    |
|           | Clinical Trial Series  | --               | Not Present               |
| Equipment | General Equipment      | Table 8.1-8      | ALWAYS                    |
|           | SC Equipment           | Table 8.1-11     | ALWAYS                    |
| Image     | General Image          | Table 8.1-9      | ALWAYS                    |
|           | Image Pixel            | Table 8.1-10     | ALWAYS                    |
|           | SC Image               | --               | Not Present               |
|           | Overlay Plane          | --               | Not Present               |
|           | Modality LUT           | --               | Not Present               |
|           | VOI LUT                | --               | Not Present               |
|           | SOP Common             | Table 8.1-12     | ALWAYS                    |

## 8.1.1.2 US Image IOD

**Table 8.1-2  
IOD OF CREATED US IMAGE SOP INSTANCES**

| <b>IE</b>          | <b>Module</b>              | <b>Reference</b> | <b>Presence of Module</b> |
|--------------------|----------------------------|------------------|---------------------------|
| Patient            | Patient                    | Table 8.1-4      | ALWAYS                    |
|                    | Clinical Trial Subject     | --               | Not Present               |
| Study              | General Study              | Table 8.1-5      | ALWAYS                    |
|                    | Patient Study              | Table 8.1-6      | ALWAYS                    |
|                    | Clinical Trial Study       | --               | Not Present               |
| Series             | General Series             | Table 8.1-7      | ALWAYS                    |
|                    | Clinical Trial Series      | --               | Not Present               |
| Frame of Reference | Frame of Reference         | --               | Not Present               |
|                    | Synchronization            | --               | Not Present               |
| Equipment          | General Equipment          | Table 8.1-8      | ALWAYS                    |
| Image              | General Image              | Table 8.1-9      | ALWAYS                    |
|                    | Image Pixel                | Table 8.1-10     | ALWAYS                    |
|                    | Contrast/bolus             | --               | Not Present               |
|                    | Palette Color Lookup Table | --               | Not Present               |
|                    | US Region Calibration      | --               | Not Present               |
|                    | US Image                   | Table 8.1-13     | ALWAYS                    |
|                    | Overlay Plane              | --               | Not Present               |
|                    | VOI LUT                    | --               | Not Present               |
|                    | SOP Common                 | Table 8.1-14     | ALWAYS                    |

## 8.1.1.3 US Multi-frame Image IOD

**Table 8.1-3**  
**IOD OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES**

| <b>IE</b>          | <b>Module</b>              | <b>Reference</b> | <b>Presence of Module</b> |
|--------------------|----------------------------|------------------|---------------------------|
| Patient            | Patient                    | Table 8.1-4      | ALWAYS                    |
|                    | Clinical Trial Subject     | --               | Not Present               |
| Study              | General Study              | Table 8.1-5      | ALWAYS                    |
|                    | Patient Study              | Table 8.1-6      | ALWAYS                    |
|                    | Clinical Trial Study       | --               | Not Present               |
| Series             | General Series             | Table 8.1-7      | ALWAYS                    |
|                    | Clinical Trial Series      | --               | Not Present               |
| Frame of Reference | Frame of Reference         | --               | Not Present               |
|                    | Synchronization            | --               | Not Present               |
| Equipment          | General Equipment          | Table 8.1-8      | ALWAYS                    |
| Image              | General Image              | Table 8.1-9      | ALWAYS                    |
|                    | Image Pixel                | Table 8.1-10     | ALWAYS                    |
|                    | Contrast/bolus             | --               | Not Present               |
|                    | Cine                       | Table 8.1-15     | ALWAYS                    |
|                    | Multi-frame                | Table 8.1-16     | ALWAYS                    |
|                    | Frame Pointers             | --               | Not Present               |
|                    | Palette Color Lookup Table | --               | Not Present               |
|                    | US Region Calibration      | --               | Not Present               |
|                    | US Image                   | Table 8.1-17     | ALWAYS                    |
|                    | VOI LUT                    | --               | Not Present               |
|                    | SOP Common                 | Table 8.1-18     | ALWAYS                    |

### 8.1.1.4 Common Modules

**Table 8.1-4  
PATIENT MODULE OF CREATED SOP INSTANCES**

| Attribute Name       | Tag         | VR | Value | Presence of Value | Source       |
|----------------------|-------------|----|-------|-------------------|--------------|
| Patient's Name       | (0010,0010) | PN |       | VNAP              | MWL/<br>USER |
| Patient ID           | (0010,0020) | LO |       | VNAP              | MWL/<br>USER |
| Patient's Birth Date | (0010,0030) | DA |       | VNAP              | MWL/<br>USER |
| Patient's Sex        | (0010,0040) | CS |       | VNAP              | MWL/<br>USER |
| Patient Comments     | (0010,4000) | LT |       | ANAP              | MWL/<br>USER |

**Table 8.1-5  
GENERAL STUDY MODULE OF CREATED SOP INSTANCES**

| Attribute Name             | Tag         | VR | Value                                                                                                                                                                                                                                | Presence of Value | Source       |
|----------------------------|-------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|
| Study Instance UID         | (0020,000D) | UI |                                                                                                                                                                                                                                      | ALWAYS            | MWL/<br>AUTO |
| Study Date                 | (0008,0020) | DA |                                                                                                                                                                                                                                      | ALWAYS            | AUTO         |
| Study Time                 | (0008,0030) | TM |                                                                                                                                                                                                                                      | ALWAYS            | AUTO         |
| Referring Physician's Name | (0008,0090) | PN |                                                                                                                                                                                                                                      | VNAP              | MWL/<br>USER |
| Study ID                   | (0020,0010) | SH |                                                                                                                                                                                                                                      | ALWAYS            | AUTO         |
| Accession Number           | (0008,0050) | SH |                                                                                                                                                                                                                                      | VNAP              | MWL/<br>USER |
| Study Description          | (0008,1030) | LO |                                                                                                                                                                                                                                      | ANAP              | MWL/<br>USER |
| Study Comments             | (0032,4000) | LT | Additional Info from user input will be edited in the following format:<br><"BSA="BSA Information<LINEFEED><br>"BloodPressure="Blood Pressure Information<LINEFEED><br>Additional Info<LINEFEED><br>"BSAType="BSA Type Information>. | ALWAYS            | USER         |

**Table 8.1-6  
PATIENT STUDY MODULE OF CREATED SOP INSTANCES**

| Attribute Name   | Tag         | VR | Value | Presence of Value | Source       |
|------------------|-------------|----|-------|-------------------|--------------|
| Patient's Age    | (0010,1010) | AS |       | ANAP              | AUTO         |
| Patient's Size   | (0010,1020) | DS |       | VNAP              | MWL/<br>USER |
| Patient's Weight | (0010,1030) | DS |       | VNAP              | MWL/<br>USER |

**Table 8.1-7**



**GENERAL SERIES MODULE OF CREATED SOP INSTANCES**

| Attribute Name                       | Tag         | VR | Value | Presence of Value | Source       |
|--------------------------------------|-------------|----|-------|-------------------|--------------|
| Modality                             | (0008,0060) | CS | US    | ALWAYS            | MWL/<br>AUTO |
| Series Instance UID                  | (0020,000E) | UI |       | ALWAYS            | AUTO         |
| Series Number                        | (0020,0011) | IS |       | ALWAYS            | AUTO         |
| Series Date                          | (0008,0021) | DA |       | ALWAYS            | AUTO         |
| Series Time                          | (0008,0031) | TM |       | ALWAYS            | AUTO         |
| Performing Physician's Name          | (0008,1050) | PN |       | ANAP              | MWL/<br>USER |
| Performed Procedure Step Start Date  | (0040,0244) | DA |       | ANAP              | AUTO         |
| Performed Procedure Step Start Time  | (0040,0245) | TM |       | ANAP              | AUTO         |
| Performed Procedure Step ID          | (0040,0253) | SH |       | ANAP              | MWL          |
| Performed Procedure Step Description | (0040,0254) | LO |       | ANAP              | MWL          |
| Performed Protocol Code Sequence     | (0040,0260) | SQ |       | ANAP              | MWL          |
| >Code Value                          | (0008,0100) | SH |       | ANAP              | AUTO         |
| >Coding Scheme Designator            | (0008,0102) | SH |       | ANAP              | AUTO         |
| >Coding Scheme Version               | (0008,0103) | SH |       | ANAP              | AUTO         |
| >Code Meaning                        | (0008,0104) | LO |       | ANAP              | AUTO         |

**Table 8.1-8****GENERAL EQUIPMENT MODULE OF CREATED SOP INSTANCES**

| Attribute Name            | Tag         | VR | Value       | Presence of Value | Source |
|---------------------------|-------------|----|-------------|-------------------|--------|
| Manufacturer              | (0008,0070) | LO | TOSHIBA_MEC | ALWAYS            | AUTO   |
| Institution Name          | (0008,0080) | LO |             | ANAP              | CONFIG |
| Manufacturer's Model Name | (0008,1090) | LO | Viamo       | ALWAYS            | AUTO   |
| Device Serial Number      | (0018,1000) | LO |             | ALWAYS            | AUTO   |
| Software Version          | (0018,1020) | LO | V2.0        | ALWAYS            | AUTO   |

**Table 8.1-9****GENERAL IMAGE MODULE OF CREATED SOP INSTANCES**

| Attribute Name                | Tag         | VR | Value | Presence of Value | Source |
|-------------------------------|-------------|----|-------|-------------------|--------|
| Instance Number               | (0020,0013) | IS |       | ALWAYS            | AUTO   |
| Patient Orientation           | (0020,0020) | CS |       | EMPTY             | AUTO   |
| Content Date                  | (0008,0023) | DA |       | ALWAYS            | AUTO   |
| Content Time                  | (0008,0033) | TM |       | ALWAYS            | AUTO   |
| Image Type                    | (0008,0008) | CS |       | ALWAYS            | AUTO   |
| Acquisition Date              | (0008,0022) | DA |       | ALWAYS            | AUTO   |
| Acquisition Time              | (0008,0032) | TM |       | ALWAYS            | AUTO   |
| Lossy Image Compression       | (0028,2110) | CS |       | ANAP              | AUTO   |
| Lossy Image Compression Ratio | (0028,2112) | DS |       | ANAP              | AUTO   |

**Table 8.1-10**

**IMAGE PIXEL MODULE OF CREATED SOP INSTANCES**

| <b>Attribute Name</b>      | <b>Tag</b>  | <b>VR</b>      | <b>Value</b>            | <b>Presence of Value</b> | <b>Source</b> |
|----------------------------|-------------|----------------|-------------------------|--------------------------|---------------|
| Samples per Pixel          | (0028,0002) | US             | 3                       | ALWAYS                   | AUTO          |
| Photometric Interpretation | (0028,0004) | CS             | "RGB" or "YBR_FULL_422" | ALWAYS                   | CONFIG        |
| Planar Configuration       | (0028,0006) | US             | 0                       | ANAP                     | AUTO          |
| Rows                       | (0028,0010) | US             | 600                     | ALWAYS                   | AUTO          |
| Columns                    | (0028,0011) | US             | 800                     | ALWAYS                   | AUTO          |
| Bits Allocated             | (0028,0100) | US             | 8                       | ALWAYS                   | AUTO          |
| Bits Stored                | (0028,0101) | US             | 8                       | ALWAYS                   | AUTO          |
| High Bit                   | (0028,0102) | US             | 7                       | ALWAYS                   | AUTO          |
| Pixel Representation       | (0028,0103) | US             | 0                       | ALWAYS                   | AUTO          |
| Pixel Data                 | (7FE0,0010) | OB<br>or<br>OW |                         | ALWAYS                   | AUTO          |

### 8.1.1.5 SC Image Modules

**Table 8.1-11**  
**SC EQUIPMENT MODULE OF CREATED SC IMAGE SOP INSTANCES**

| Attribute Name  | Tag         | VR | Value                                                                                                    | Presence of Value | Source |
|-----------------|-------------|----|----------------------------------------------------------------------------------------------------------|-------------------|--------|
| Conversion Type | (0008,0064) | CS | “DV” (Digitized Video),<br>“DI” (Digital Interface),<br>“DF” (Digitized Film), or<br>“WSD” (Workstation) | ALWAYS            | AUTO   |

**Table 8.1-12**  
**SOP COMMON MODULE OF CREATED SC IMAGE SOP INSTANCES**

| Attribute Name         | Tag         | VR | Value                     | Presence of Value | Source |
|------------------------|-------------|----|---------------------------|-------------------|--------|
| Specific Character Set | (0008,0008) | CS | ISO_IR 100                | ALWAYS            | AUTO   |
| SOP Class UID          | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.7 | ALWAYS            | AUTO   |
| SOP Instance UID       | (0008,0018) | UI |                           | ALWAYS            | AUTO   |

### 8.1.1.6 US Image Modules

**Table 8.1-13**  
**US IMAGE MODULE OF CREATED US IMAGE SOP INSTANCES**

| Attribute Name                | Tag         | VR             | Value                   | Presence of Value | Source |
|-------------------------------|-------------|----------------|-------------------------|-------------------|--------|
| Samples per Pixel             | (0028,0002) | US             | 3                       | ALWAYS            | AUTO   |
| Photometric Interpretation    | (0028,0004) | CS             | “RGB” or “YBR_FULL_422” | ALWAYS            | CONFIG |
| Planar Configuration          | (0028,0006) | US             | 0                       | ANAP              | AUTO   |
| Rows                          | (0028,0010) | US             | 600                     | ALWAYS            | AUTO   |
| Columns                       | (0028,0011) | US             | 800                     | ALWAYS            | AUTO   |
| Ultrasound Color Data Present | (0028,0014) | US             | 1                       | ALWAYS            | AUTO   |
| Bits Allocated                | (0028,0100) | US             | 8                       | ALWAYS            | AUTO   |
| Bits Stored                   | (0028,0101) | US             | 8                       | ALWAYS            | AUTO   |
| High Bit                      | (0028,0102) | US             | 7                       | ALWAYS            | AUTO   |
| Pixel Representation          | (0028,0103) | US             | 0                       | ALWAYS            | AUTO   |
| Pixel Data                    | (7FE0,0010) | OB<br>or<br>OW |                         | ALWAYS            | AUTO   |

**Table 8.1-14**  
**SOP COMMON MODULE OF CREATED US IMAGE SOP INSTANCES**

| Attribute Name         | Tag         | VR | Value                       | Presence of Value | Source |
|------------------------|-------------|----|-----------------------------|-------------------|--------|
| Specific Character Set | (0008,0008) | CS | ISO_IR 100                  | ALWAYS            | AUTO   |
| SOP Class UID          | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.6.1 | ALWAYS            | AUTO   |
| SOP Instance UID       | (0008,0018) | UI |                             | ALWAYS            | AUTO   |

### 8.1.1.7 US Multi-frame Image Modules

**Table 8.1-15  
CINE MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES**

| Attribute Name                 | Tag         | VR | Value | Presence of Value | Source |
|--------------------------------|-------------|----|-------|-------------------|--------|
| Start Trim                     | (0008,2142) | IS |       | ANAP              | AUTO   |
| Stop Trim                      | (0008,2143) | IS |       | ANAP              | AUTO   |
| Recommended Display Frame Rate | (0008,2144) | IS |       | ANAP              | USER   |
| Cine Rate                      | (0018,0040) | IS |       | ANAP              | USER   |
| Effective Duration             | (0018,0072) | DS |       | ANAP              | AUTO   |
| Frame Time                     | (0018,1063) | DS |       | ALWAYS            | AUTO   |
| Frame Delay                    | (0018,1066) | DS |       | ANAP              | AUTO   |
| Actual Frame Duration          | (0018,1242) | IS |       | ANAP              | AUTO   |

**Table 8.1-16  
MULTI-FRAME MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES**

| Attribute Name          | Tag         | VR | Value | Presence of Value | Source |
|-------------------------|-------------|----|-------|-------------------|--------|
| Number of Frames        | (0028,0008) | IS |       | ALWAYS            | USER   |
| Frame Increment Pointer | (0028,0009) | AT |       | ALWAYS            | AUTO   |

**Table 8.1-17  
US IMAGE MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES**

| Attribute Name                | Tag         | VR             | Value                   | Presence of Value | Source |
|-------------------------------|-------------|----------------|-------------------------|-------------------|--------|
| Stage Name                    | (0008,2120) | SH             |                         | ANAP              | AUTO   |
| Stage Number                  | (0008,2122) | IS             |                         | ANAP              | AUTO   |
| Number of Stages              | (0008,2124) | IS             |                         | ANAP              | AUTO   |
| View Name                     | (0008,2127) | SH             |                         | ANAP              | AUTO   |
| View Number                   | (0008,2128) | IS             |                         | ANAP              | AUTO   |
| Number of Views in Stage      | (0008,212A) | IS             |                         | ANAP              | AUTO   |
| Heart Rate                    | (0018,1088) | IS             |                         | ANAP              | AUTO   |
| Samples per Pixel             | (0028,0002) | US             | 3                       | ALWAYS            | AUTO   |
| Photometric Interpretation    | (0028,0004) | CS             | "RGB" or "YBR_FULL_422" | ALWAYS            | AUTO   |
| Planar Configuration          | (0028,0006) | US             | 0                       | ALWAYS            | AUTO   |
| Rows                          | (0028,0010) | US             | 600                     | ALWAYS            | AUTO   |
| Columns                       | (0028,0011) | US             | 800                     | ALWAYS            | AUTO   |
| Ultrasound Color Data Present | (0028,0014) | US             | 1                       | ANAP              | AUTO   |
| Bits Allocated                | (0028,0100) | US             | 8                       | ALWAYS            | AUTO   |
| Bits Stored                   | (0028,0101) | US             | 8                       | ALWAYS            | AUTO   |
| High Bit                      | (0028,0102) | US             | 7                       | ALWAYS            | AUTO   |
| Pixel Representation          | (0028,0103) | US             | 0                       | ALWAYS            | AUTO   |
| Pixel Data                    | (7FE0,0010) | OB<br>or<br>OW |                         | ALWAYS            | AUTO   |

**Table 8.1-18**  
**SOP COMMON MODULE OF CREATED US MULTI-FRAME IMAGE SOP INSTANCES**

| Attribute Name         | Tag         | VR | Value                       | Presence of Value | Source |
|------------------------|-------------|----|-----------------------------|-------------------|--------|
| Specific Character Set | (0008,0008) | CS | ISO_IR 100                  | ALWAYS            | AUTO   |
| SOP Class UID          | (0008,0016) | UI | 1.2.840.10008.5.1.4.1.1.3.1 | ALWAYS            | AUTO   |
| SOP Instance UID       | (0008,0018) | UI |                             | ALWAYS            | AUTO   |

### 8.1.2 Usage of Attributes from received IOD's

No SOP Class specific fields are required.

### 8.1.3 Attribute Mapping

**Table 8.1-19**  
**ATTRIBUTE MAPPING BETWEEN MODALITY WORKLIST, IMAGE AND MPSS**

| Modality Worklist                    | Image IOD                              | MPSS IOD                               |
|--------------------------------------|----------------------------------------|----------------------------------------|
| Patient Name                         | Patient Name                           | Patient Name                           |
| Patient ID                           | Patient ID                             | Patient ID                             |
| Patient's Birth Date                 | Patient's Birth Date                   | Patient's Birth Date                   |
| Patient's Sex                        | Patient's Sex                          | Patient's Sex                          |
| Patient's Weight                     | Patient's Weight                       |                                        |
| Referring Physician's Name           | Referring Physician's Name             |                                        |
| ----                                 | ----                                   | Scheduled Step Attributes Sequence     |
| Study Instance UID                   | Study Instance UID                     | >Study Instance UID                    |
| Referenced Study Sequence            | Referenced Study Sequence              | >Referenced Study Sequence             |
| Accession Number                     | Accession Number                       | >Accession Number                      |
| ----                                 | Request Attributes Sequence            | ----                                   |
| Requested Procedure ID               | > Requested Procedure ID               | > Requested Procedure ID               |
| Requested Procedure Description      |                                        | >Requested Procedure Description       |
| Scheduled Procedure Step ID          | > Scheduled Procedure Step ID          | > Scheduled Procedure Step ID          |
| Scheduled Procedure Step Description | > Scheduled Procedure Step Description | > Scheduled Procedure Step Description |
| Scheduled Protocol Code Sequence     | >Scheduled Protocol Code Sequence      | ----                                   |
| ----                                 | Performed Protocol Code Sequence       | Performed Protocol Code Sequence       |
| ----                                 | Study ID                               | Study ID                               |
| ----                                 | Performed Procedure Step ID            | Performed Procedure Step ID            |
| ----                                 | Performed Procedure Step Start Date    | Performed Procedure Step Start Date    |
| ----                                 | Performed Procedure Step Start Time    | Performed Procedure Step Start Time    |

|                                                                                                            |                                          |                                          |
|------------------------------------------------------------------------------------------------------------|------------------------------------------|------------------------------------------|
| ----                                                                                                       | Performed Procedure Step Description     | Performed Procedure Step Description     |
| ----                                                                                                       | Comments on the Performed Procedure Step | Comments on the Performed Procedure Step |
| ----                                                                                                       | ----                                     | Performed Series Sequence                |
| Scheduled Performing Physician's Name                                                                      | Performing Physician's Name              | >Performing Physician's Name             |
| Requested Procedure Code Sequence                                                                          | ----                                     | Procedure Code Sequence                  |
| ----                                                                                                       | Referenced Study Component Sequence      | ----                                     |
| ----                                                                                                       | >Referenced SOP Class UID                | SOP Class UID                            |
| ----                                                                                                       | >Referenced SOP Instance UID             | SOP Instance UID                         |
| Configurable to be follows;<br>Scheduled Procedure Step Description, or<br>Requested Procedure Description | Protocol Name                            | Protocol Name                            |

#### 8.1.4 Coerced/Modified Fields

Not applicable.

#### 8.2 DATA DICTIONARY OF PRIVATE ATTRIBUTES

Not applicable.

#### 8.3 CONTROLLED TERMINOLOGY AND TEMPLATES

Not applicable.

#### 8.4 GRAYSCALE IMAGE CONSISTENCY

Not applicable.

#### 8.5 STANDARD EXTENDED/SPECIALIZED/PRIVATE SOP CLASSES

Not applicable.

#### 8.6 PRIVATE TRANSFER SYNTAXES

Not applicable.