# DICOM Conformance Statement for

# i-Dixel
## Version 2.3.6 or later

Oct 16, 2020

File No.：RD-G1-05-35-2-TR10 Attachment 1, rev.2

# 1. CONFORMANCE STATEMENT OVERVIEW

Table 1-1 provides an overview of the network services supported by i-Dixel.

**Table 1-1**
**NETWORK SERVICES**

| SOP Classes | User of Service (SCU) | Provider of Service (SCP) |
|---|---|---|
| **Transfer** | | |
| Verification SOP Class | Yes | No |
| Computed Radiography Image Storage | Yes | No |
| CT Image Storage | Yes | No |
| Digital X-Ray Image Storage - For Presentation | Yes | No |
| Digital Intra-oral X-Ray Image Storage - For Presentation | Yes | No |
| Secondary Capture Image Storage | Yes | No |
| VL Endoscopic Image Storage | Yes | No |
| VL Photographic Image Storage | Yes | No |
| X-Ray Radiation Dose SR Storage | Yes[*1,*2] | No |
| **Workflow Management** | | |
| Modality Worklist Information Model - FIND | Yes | No |
| Modality Performed Procedure Step | Yes | No |
| **Print Management** | | |
| Basic Grayscale Print Management | Yes | No |

*1 Only CT Radiation Dose SR is supported.

*2 Supported CT Equipment is required. Refer to the equipment's instructions for use.

Table 1-2 provides an overview of the Media Storage Application Profiles supported by i-Dixel.

**Table 1-2**
**MEDIA SERVICES**

| Media Storage Application Profile | Write Files (FSC) | Read Files (FSR) |
|---|---|---|
| Compact Disk - Recordable | | |
| General Purpose CD-R | Yes[*1] | No |

*1 Ability to write to media is not provided. Use any software which can write to CD-R within ISO 9660 Level 1 option.

Table 1-3 provides an overview of the IOD, SOP Classes and Transfer Syntaxes supported by i-Dixel.

**Table 1-3**
**SUPPORTED IODS, SOP CLASSES AND TRANSFER SYNTAXES**

| Information Object Definition | SOP Class UID | Transfer Syntax | Transfer Syntax UID |
|---|---|---|---|
| Media Storage Directory Storage | 1.2.840.10008.1.3.10 | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Digital X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Digital Intra-oral X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| X-Ray Radiation Dose SR Storage | 1.2.840.10008.5.1.4.1.1.88.67 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

# 2. TABLE OF CONTENTS

# 3. INTRODUCTION

This document is a DICOM conformance statement for i-Dixel.

## 3.1 REVISION HISTORY

| REV. | Date of issue | Author | Description |
|---|---|---|---|
| 2.0 | Oct.16 2020 | J. MORITA MFG. CORP. | Totally revised for Version 2.3.6. |

## 3.2 AUDIENCE

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

## 3.3 REMARKS

- The scope of this DICOM Conformance Statement is to facilitate integration between i-Dixel and other DICOM products. The Conformance Statement should be read and understood in conjunction with the DICOM Standard.
- DICOM by itself does not guarantee interoperability. The Conformance Statement does, however, facilitate a first-level comparison for interoperability between different applications supporting compatible DICOM functionality.
- This Conformance Statement and does not guarantee the connectivity, integration, and interoperability between i-Dixel and any equipment and/or applications provided by other vendors. In fact, the user should be aware of the following important issues:
  - The comparison of different Conformance Statements is just the first step towards assessing interconnectivity and interoperability between the product and other DICOM conformant equipment.
  - The user is always responsible for, testing and verifying the connectivity, integration, and interoperability of i-Dixel and the equipment and/or applications provided by other vendors before starting an integration. The effectiveness of testing and verification is limited to the tested and verified state. If the equipment and/or application provided by vendors including J. MORITA MFG. CORP. is changed, or if the standards (IHE, DICOM, etc.) are developed, the user must test and verify.
  - It may be necessary to update i-Dixel due to developments in the standards. J. MORITA MFG. CORP. reserves the right to modify i-Dixel as needed, in order to meet future standards. However, the update is not always free, and J. MORITA MFG. CORP. does not guarantee compatibility with future changes in standards.
- i-Dixel has participated in an industry-wide testing program sponsored by Integrating the Healthcare Enterprise (IHE) Japan to verify interoperability within the testing scope of that program. The IHE Integration Statement for i-Dixel, together with the IHE Technical Framework, may facilitate the process of validation testing.

# 3.4 TERMS AND ABBREVIATIONS

Terms and abbreviations used in this document are as follows. Formal definitions of these terms are defined in the DICOM Standard.

| | |
|---|---|
| AE | Application Entity |
| CD-R | Compact Disk Recordable |
| CT | Computed Tomography |
| DICOM | Digital Imaging and Communications in Medicine |
| DIMSE | DICOM Message Service Element |
| FSC | File-Set Creator |
| FSR | File-Set Reader |
| FSU | File-Set Updater |
| IHE | Integrating the Healthcare Enterprise |
| IOD | Information Object Definition |
| ISO | International Organization for Standards |
| JIS | Japanese Industrial Standards |
| MPPS | Modality Performed Procedure Step |
| MWM | Modality Worklist Model |
| SCP | Service Class Provider |
| SCU | Service Class User |
| SOP | Service-Object Pair |
| SR | Structured Report / Structured Reporting |
| UID | Unique Identifier |
| VL | Visible Light |
| VR | Value Representation |

# 4. NETWORKING

## 4.1 IMPLEMENTATION MODEL

### 4.1.1 Application Data Flow

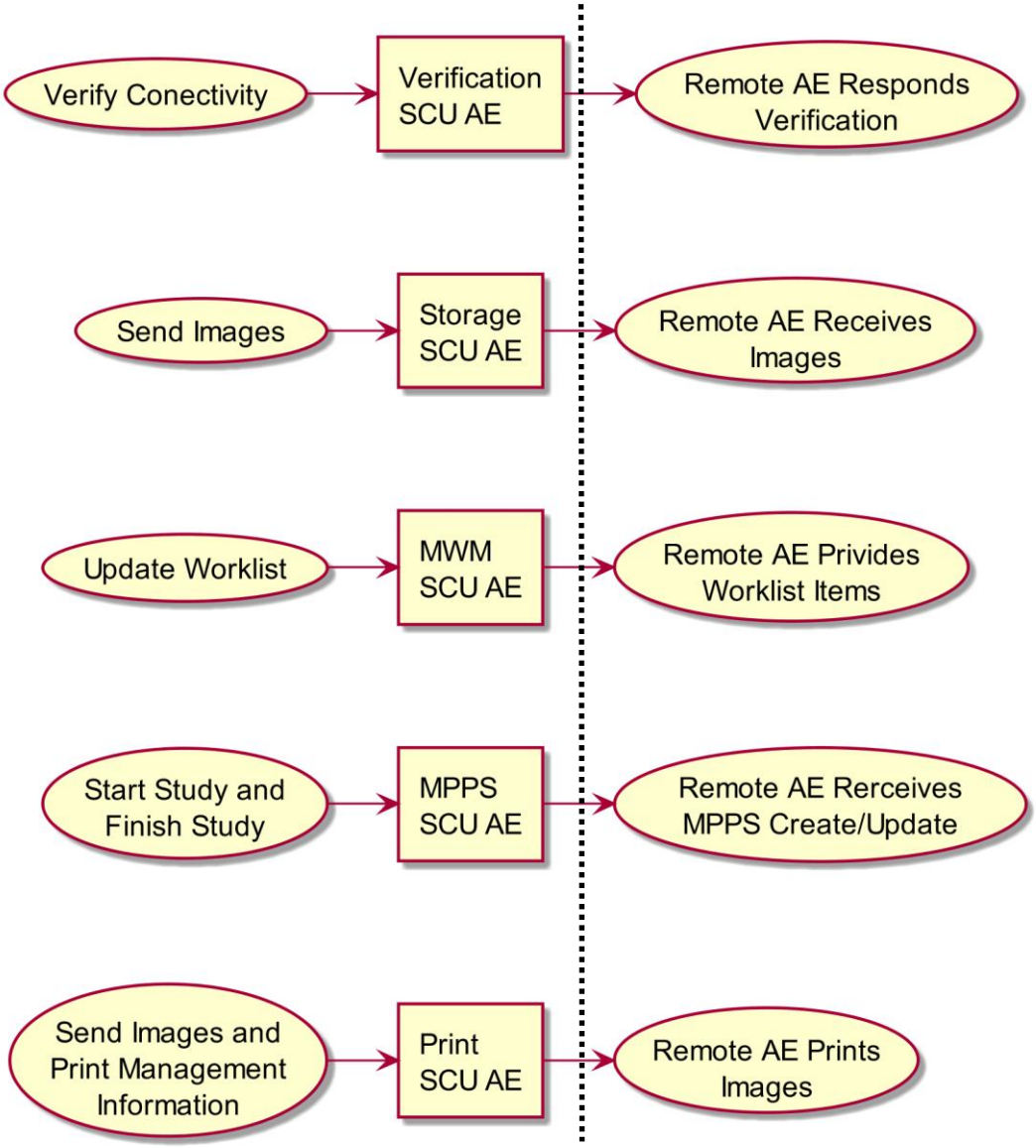


**Figure 4-1-1**
**APPLICATION DATA FLOW DIAGRAM**

- The Verification SCU AE, associated with the local real-world activity “Verify Connectivity”, issues a C-ECHO to verify a DICOM connection to a remote AE.
- The Storage SCU AE, associated with the local real-world activity “Send Images”, sends images to a remote AE.
- The MWM SCU AE, associated with the local real-world activity “Worklist Update”, receives Worklist information from a remote AE.
- The MPPS SCU AE, associated with the local real-world activity “Acquire Instances”, sends MPPS information to a remote AE.

- The Print SCU AE, associated with the local real-world activity “Worklist Update & Print Management Information”, prints images on a remote AE (Printer).

### 4.1.2 Functional Definition of AEs

1. Functional Definition of Verification SCU AE
   The Verification SCU AE verifies a DICOM connection to a remote AE.
2. Functional Definition of Storage SCU AE
   The Storage SCU AE sends images to remote AE.
3. Functional Definition of MWM SCU AE
   The MWM SCU AE downloads a worklist from a remote AE.
4. Functional Definition of MPPS SCU AE
   The MPPS SCU AE creates and updates a MPPS instance associated to study.
5. Functional Definition of Print SCU AE
   The Print SCU AE requests the printer to print.

### 4.1.3 Sequencing of Real World Activities

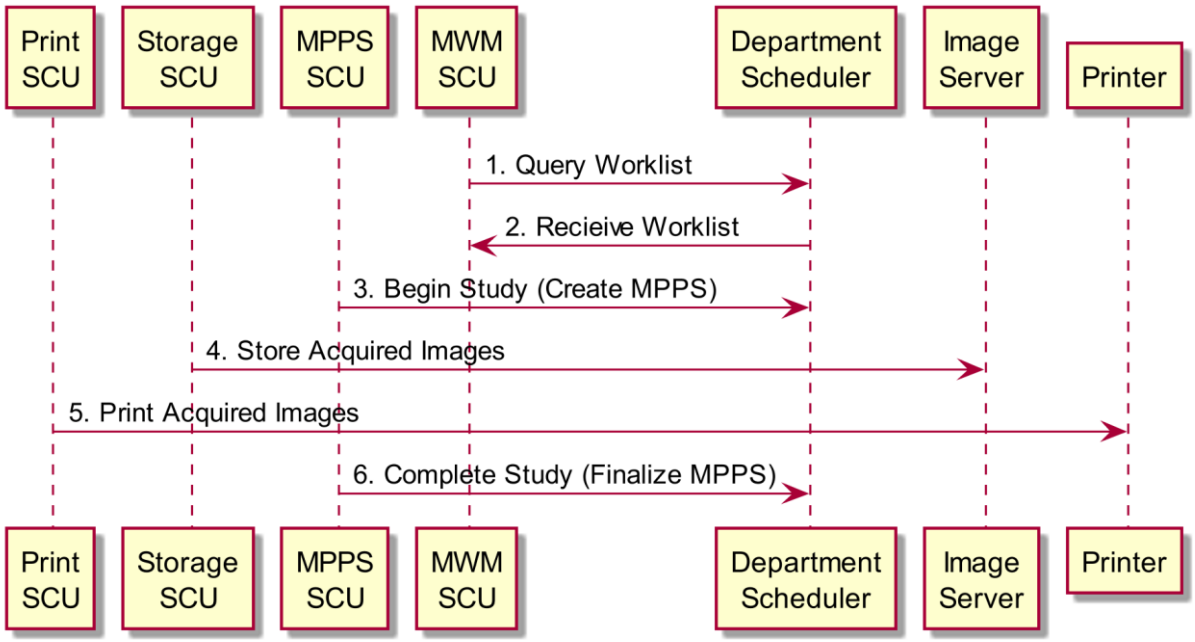


**Figure 4-1-2**
**SEQUENCING CONSTRAINTS**

i-Dixel expects that scheduled workflow would be sequenced as illustrated in Figure 4.2:

1. Query Worklist.
2. Select Workitem from Worklist.
3. Start Acquisition and Create MPPS.
4. Store Acquired Images.
5. Print Acquired Images.
6. Complete Acquisition and Finalize MPPS.

## 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 4.2.1-1**
**SOP CLASSES FOR THE VERIFICATION SCU AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Verification SOP Class | 1.2.840.10008.1.3.10 | 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 4.2.1-2**
**DICOM APPLICATION CONTEXT FOR THE VERIFICATION SCU AE**

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

##### 4.2.1.2.2 Number of Associations

The Verification SCU AE initiates only one association at a time.

**Table 4.2.1-3**
**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 4.2.1-4**
**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 4.2.1-5**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE VERIFICATION SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.2.1.2.1 |
| Implementation Version Name | Dcmgw_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 initiates a new association to issue a verification request.

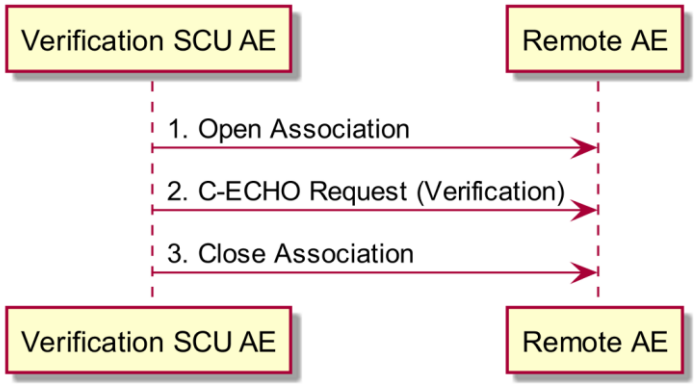


**Figure 4.2.1**
**SEQUENCING OF ACTIVITY – VERIFY CONNECTIVITY**

Expected sequence of interactions is illustrated in the Figure above:

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

#### 4.2.1.3.1.2 Proposed Presentation Contexts

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

**Table 4.2.1-6**
**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 |

#### 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 4.2.1-7**
**VERIFICATION RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Verification SCU AE considers that 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 4.2.1-8**
**VERIFICATION COMMUNICATION FAILURE BEHAVIOR**

| Exception | Behavior |
|---|---|
| Timeout | The Verification SCU AE aborts the association.<br>The reason for failure is logged and reported to the user. |
| Association aborted by the SCP or network layers | The reason for failure is logged and reported to the user. |

### 4.2.1.4 Association Acceptance Policy

The Verification SCU AE does not accept Associations.

## 4.2.2 Storage SCU AE Specification

### 4.2.2.1 SOP Classes

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

**Table 4.2.2-1**
**SOP CLASSES FOR THE STORAGE SCU AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | Yes | No |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | Yes | No |
| Digital X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Yes | No |
| Digital Intra-oral X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Yes | No |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Yes | No |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | Yes | No |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | Yes | No |
| X-Ray Radiation Dose SR Storage | 1.2.840.10008.5.1.4.1.1.88.67 | Yes | No |

### 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 4.2.2-2**
**DICOM APPLICATION CONTEXT FOR THE STORAGE SCU AE**

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

#### 4.2.2.2.2 Number of Associations

The Storage SCU AE initiates only one association at a time.

**Table 4.2.2-3**
**NUMBER OF ASSOCIATIONS INITIATED FOR THE STORAGE SCU AE**

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

#### 4.2.2.2.3 Asynchronous Nature

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

**Table 4.2.2-4**
**ASYNCHRONOUS NATURE FOR THE STORAGE SCU AE**

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

#### 4.2.2.2.4 Implementation Identifying Information

The implementation information for the Storage SCU AE is:

**Table 4.2.2-5**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE STORAGE SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.2.1.2.1 |
| Implementation Version Name | Dcmgw_1.0 |

### 4.2.2.3 Association Initiation Policy

### 4.2.2.3.1 Activity – Send Images

### 4.2.2.3.1.1 Description and Sequencing of Activities

The Storage SCU AE initiates a new association to issue a Storage request.

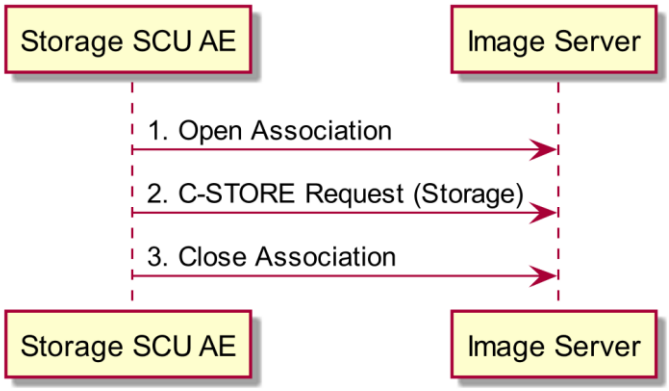


**Figure 4.2.2**
**SEQUENCING OF ACTIVITY – SEND IMAGES**

Expected sequence of interactions is illustrated in the Figure above:

1. The Storage SCU AE opens an association with the Image Server.
2. The Storage SCU AE transmits acquired images to the Image Server using a C-STORE request and the Image Server replies with a C-STORE response with status success.
3. The Storage SCU AE closes the association with the Image Server.

### 4.2.2.3.1.2 Proposed Presentation Contexts

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

**Table 4.2.2-6**
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY SEND IMAGES**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| **Abstract Syntax** | | **Transfer Syntax** | | **Role** | **Ext. Neg.** |
| **Name** | **UID** | **Name List** | **UID List** | | |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |

| | | | | | |
|---|---|---|---|---|---|
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| Digital X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| Digital Intra-oral X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| 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 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |
| X-Ray Radiation Dose SR Storage | 1.2.840.10008.5.1.4.1.1.88.67 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCU | None |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 | SCU | None |

## 4.2.2.3.1.3 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-ECHO response is summarized in the table below:

**Table 4.2.2-7**
**STORAGE RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Storage SCU AE considers that the remote AE has successfully stored the SOP instances. |
| * | * | Any other | The Storage SCU AE considers that the activity failed.<br>The job is marked as failed. The reason for failure is logged and reported to the user. |

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

**Table 4.2.2-8**
**STORAGE COMMUNICATION FAILURE BEHAVIOR**

| Exception | Behavior |
|---|---|
| Timeout | The Storage SCU AE aborts the association.<br>The job is marked as failed. The reason for failure is logged and reported to the user. |
| Association aborted by the SCP or network layers | The job is marked as failed. The reason for failure is logged and reported to the user. |

### 4.2.2.4 Association Acceptance Policy

The Storage SCU AE does not accept Associations.

## 4.2.3 MWM SCU AE Specification

### 4.2.3.1 SOP Classes

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

**Table 4.2.3-1**
**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 |

### 4.2.3.2 Association Policies

#### 4.2.3.2.1 General

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

**Table 4.2.3-2**
**DICOM APPLICATION CONTEXT FOR THE MWM SCU AE**

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

#### 4.2.3.2.2 Number of Associations

The MWM SCU AE initiates only one association at a time.

**Table 4.2.3-3**
**NUMBER OF ASSOCIATIONS INITIATED FOR THE MWM SCU AE**

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

#### 4.2.3.2.3 Asynchronous Nature

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

**Table 4.2.3-4**
**ASYNCHRONOUS NATURE FOR THE MWM SCU AE**

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

#### 4.2.3.2.4 Implementation Identifying Information

The implementation information for the MWM SCU AE is:

**Table 4.2.3-5**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MWM SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.2.1.2.1 |
| Implementation Version Name | Dcmgw_1.0 |

### 4.2.3.3 Association Initiation Policy

#### 4.2.3.3.1 Activity – Worklist Update

##### 4.2.3.3.1.1 Description and Sequencing of Activities

The MWM SCU AE initiates a new association to issue an MWM request.

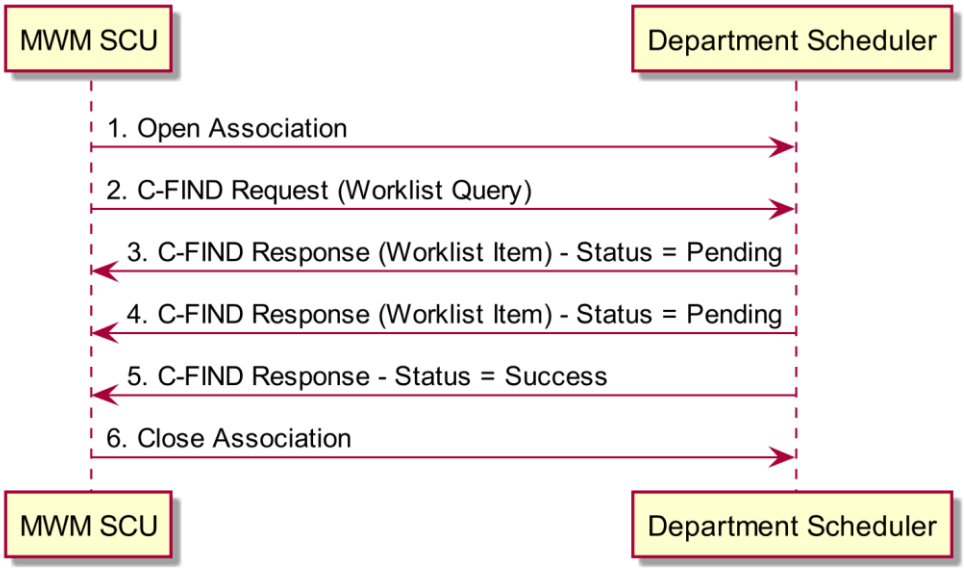


**Figure 4.2.3**
**SEQUENCING OF ACTIVITY – WORKLIST UPDATE**

Expected sequence of interactions 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.

### 4.2.3.3.1.2 Proposed Presentation Contexts

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

**Table 4.2.3-6**
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY WORKLIST UPDATE**

| 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 | SCU | None |

### 4.2.3.3.1.3 SOP Specific Conformance for MWM SOP Classes

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

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

**Table 4.2.3-7**
**MWM RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Matching completed | 0000 | The MWM SCU AE considers that the remote AE has completed the matching and worklist items are available for display or further processing. |
| * | * | Any other | The MWM SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

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

**Table 4.2.3-8**
**MWM COMMUNICATION FAILURE BEHAVIOR**

| Exception | Behavior |
|---|---|
| Timeout | The Association is aborted using A-ABORT.<br>The reason for failure is logged and reported to the user. |
| Association aborted by the SCP or network layers | The reason for failure is logged and reported to the user. |

Acquired images 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 images. Unexpected attributes returned in a C-FIND response are ignored.

Requested return attributes not supported by the SCP are set to have no value. Non-matching responses returned by the SCP due to unsupported optional matching keys are ignored. No attempt is made to filter out possible duplicate entries.

**Table 4.2.3-9**
**WORKLIST REQUEST IDENTIFIER**

| Module Name | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Attribute Name** | **Tag** | **VR** | **M** | **R** | **Q** | **D** | **IOD** |
| **Scheduled Procedure Step** | | | | | | | |
| Scheduled Procedure Step Sequence | (0040,0100) | SQ | | | | | |
| >Scheduled Station AE Title | (0040,0001) | AE | S | x | | x | |
| >Scheduled Procedure Step Start Date | (0040,0002) | DA | S | x | | x | |
| >Scheduled Procedure Step Start Time | (0040,0003) | TM | | x | x | | |
| >Modality | (0008,0060) | CS | S | x | | x | x |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| >Scheduled Performing Physician's Name | (0040,0006) | PN | | x | | | |
| >Scheduled Procedure Step Description | (0040,0007) | LO | | x | | x | |
| >Scheduled Procedure Code Sequence | (0040,0008) | 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 | | x | |
| **Requested Procedure** | | | | | | | |
| Requested Procedure Description | (0032,1060) | LO | | x | | x | x |
| Study Instance UID | (0020,000D) | UI | | x | | | x |
| **Imaging Service Request** | | | | | | | |
| Referring Physician's Name | (0008,0090) | PN | | x | | x | x |
| Accession Number | (0008,0050) | SH | | x | x | x | x |
| Requesting Service | (0032,1033) | LO | | x | | x | x |
| **Visit Identification** | | | | | | | |
| **Visit Status** | | | | | | | |
| **Visit Admission** | | | | | | | |
| Referring Physician's Name | (0008,0090) | PN | | x | | x | x |
| **Patient Identification** | | | | | | | |
| Patient's Name | (0010,0010) | PN | | x | | x | x |
| Patient ID | (0010,0020) | LO | | x | x | x | x |
| **Patient Demographic** | | | | | | | |
| Patient's Birth Date | (0010,0030) | DA | | x | | | x |
| Patient's Sex | (0010,0040) | CS | | x | | | x |
| **Patient Medical** | | | | | | | |
| Special Needs | (0038,0050) | LO | | x | | x | x |

Note: If an extended character set is used in the Request Identifier, Specific Character Set (0008,0005) will be included in the Identifier with the value "ISO_IR 100", “ISO 2022 IR 6\ISO 2022 IR 87" or “ISO 2022 IR 6\ISO 2022 IR 87\ISO 2022 IR 159" (see Section 6). Otherwise, Specific Character Set (0008,0005) will not be sent.

The above tables should be read as follows:

| | |
|---|---|
| **Module Name** | The name of the associated module for supported worklist attributes |
| **Attribute Name** | Attributes supported to build an 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. An "S" will indicate that the MWM SCU AE will supply an attribute value for Single Value Matching, an “R” will indicates Range Matching and an “*” will indicate Wildcard Matching. |
| **R** | Return keys. An "x" will indicate that MWM SCU AE will supply this attribute as Return Key with zero length for Universal Matching. |
| **Q** | Interactive Query Key. An "x" will indicate that MWM SCU AE will supply this attribute as a matching key, if a value is entered. |
| **D** | Displayed keys. An "x" indicates that this worklist attribute is displayed to the user. |
| **IOD** | An "x" indicates that this worklist attribute is included in all Object Instances created during performance of the related Procedure Step. |

### 4.2.3.4 Association Acceptance Policy

The MWM SCU AE does not accept Associations.

## 4.2.4 MPPS SCU AE Specification

### 4.2.4.1 SOP Classes

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

**Table 4.2.4-1**
**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 |

### 4.2.4.2 Association Policies

### 4.2.4.2.1 General

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

**Table 4.2.4.2**
**DICOM APPLICATION CONTEXT FOR THE MPPS SCU AE**

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

### 4.2.4.2.2 Number of Associations

The MPPS SCU AE initiates only one association at a time.

**Table 4.2.4.3**
**NUMBER OF ASSOCIATIONS INITIATED FOR THE MPPS SCU AE**

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

### 4.2.4.2.3 Asynchronous Nature

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

**Table 4.2.4-4**
**ASYNCHRONOUS NATURE FOR THE MPPS SCU AE**

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

### 4.2.4.2.4 Implementation Identifying Information

The implementation information for the MPPS SCU AE is:

**Table 4.2.4-5**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE MPPS SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.2.1.2.1 |
| Implementation Version Name | Dcmgw_1.0 |

### 4.2.4.3 Association Initiation Policy

### 4.2.4.3.1 Activity – Acquire Instances

### 4.2.4.3.1.1 Description and Sequencing of Activities

The MPPS SCU AE initiates a new association to issue a MPPS request.

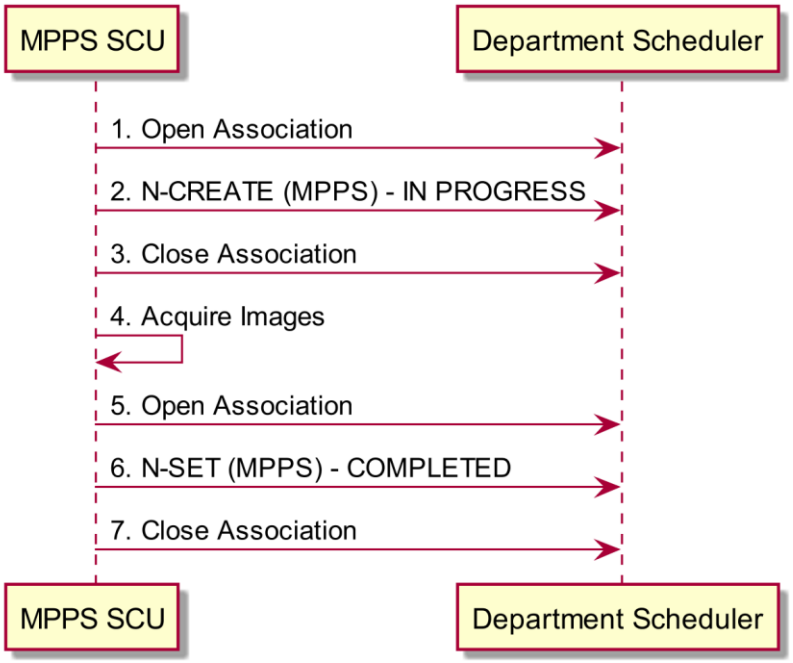


**Figure 4.2.4**
**SEQUENCING OF ACTIVITY – ACQUIRE INSTANCES**

Expected sequence of interactions 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 with the status of “IN PROGRESS” and creates 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 images 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 the 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.

## 4.2.4.3.1.2 Proposed Presentation Contexts

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

**Table 4.2.4-6**
**PROPOSED PRESENTATION CONTEXTS FOR 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 | SCU | None |

### 4.2.4.3.1.3 SOP Specific Conformance for MPPS SOP Classes

The behavior of MPPS SCU when encountering status codes in an MPPS N-CREATE or N-SET response is summarized in the table below. If any SCP response status other than "Success" or "Warning" is received by MPPS SCU AE, a message "MPPS update failed" will appear on the user interface.

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

**Table 4.2.4-7**
**MPPS N-CREATE / N-SET RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The MPPS SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The MPPS SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

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

**Table 4.2.4-8**
**MPPS N-CREATE / N-SET COMMUNICATION FAILURE BEHAVIOR**

| Exception | Behavior |
|---|---|
| Timeout | The Association is aborted using A-ABORT.<br>The reason for failure is logged and reported to the user. |
| Association aborted by the SCP or network layers | The reason for failure 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 MPPS SCP 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 4.2.4-9**
**MPPS N-CREATE / N-SET REQUEST IDENTIFIER**

| Module Name | | | | |
|---|---|---|---|---|
| Attribute Name | Tag | VR | N-CREATE | N-SET |
| Specific Character Set | (0008,0005) | CS | See Note1 | See Note1 |
| **Performed Procedure Step Relationship** | | | | |
| Scheduled Step Attributes Sequence | (0040,0270) | SQ | Only one Item | |

| | | | | |
|---|---|---|---|---|
| > Accession Number | (0008,0050) | SH | From Modality Worklist or user input. | |
| > Referenced Study Sequence | (0008,1110) | SQ | Zero length | |
| > Study Instance UID | (0020,000D) | UI | From Modality Worklist | |
| > Requested Procedure Description | (0032,1060) | LO | From Modality Worklist | |
| > Scheduled Procedure Step Description | (0040,0007) | LO | Zero length | |
| > Scheduled Protocol Code Sequence | (0040,0008) | SQ | Zero length | |
| > Scheduled Procedure Step ID | (0040,0009) | SH | From Modality Worklist | |
| > Requested Procedure ID | (0040,1001) | SH | From Modality Worklist | |
| Patient's Name | (0010,0010) | PN | From Modality Worklist. See Note 2. | |
| Patient ID | (0010,0020) | LO | From Modality Worklist. See Note 2. | |
| Patient's Birth Date | (0010,0030) | DA | From Modality Worklist. See Note 2. | |
| Patient's Sex | (0010,0040) | CS | From Modality Worklist. See Note 2. | |
| Referenced Patient Sequence | (0008,1120) | SQ | Zero length | |
| **Performed Procedure Step Information** | | | | |
| Performed Procedure Step ID | (0040,0253) | SH | Automatically created. | |
| Performed Station AE Title | (0040,0241) | AE | MPPS AE Title | |
| Performed Station Name | (0040,0242) | SH | Zero length | |
| 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 | DISCONTINUED or COMPLETED |
| Performed Procedure Step Description | (0040,0254) | LO | Zero length | |
| Performed Procedure Type Description | (0040,0255) | LO | Zero length | |
| Procedure Code Sequence | (0008,1032) | SQ | Zero length | |
| 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 |
| **Image Acquisition Results** | | | | |
| Modality | (0008,0060) | CS | x | |
| Study ID | (0020,0010) | SH | Zero length | |
| Performed Protocol Code Sequence | (0040,0260) | SQ | Zero length | Zero or more items |
| >>Code Value | (0008,0100) | SH | | From Modality Worklist |
| >>Coding Scheme Designator | (0008,0102) | SH | | From Modality Worklist |
| >>Coding Scheme Version | (0008,0103) | SH | | From Modality Worklist |

| | | | | |
|---|---|---|---|---|
| >>Code Meaning | (0008,0104) | LO | | From Modality Worklist |
| Performed Series Sequence | (0040,0340) | SQ | Zero length | Zero length |
| **Radiation Dose (See Note 3)** | | | | |
| Total Time of Fluoroscopy | (0040,0300) | US | | x |
| Total Number of Exposures | (0040,0301) | US | | x |
| Image and Fluoroscopy Area Dose Product | (0018,115E) | DS | | x |
| Comments on Radiation Dose | (0040,0310) | ST | | x |
| Exposure Dose Sequence | (0040,030E) | SQ | | Zero or more items |
| >Radiation Mode | (0018,115A) | CS | | x |
| >KVP | (0018,0060) | DS | | x |
| >X-Ray Tube Current in µA | (0018,8151) | DS | | x |
| >Exposure Time | (0018,1150) | IS | | x |
| >Comments on Radiation Dose | (0040,0310) | ST | | x |

Note1: Created, if an extended or replacement character set is used. See Section 6.

Note2: User can modify values provided via Modality Worklist and modified value will be sent.

Note3: Radiation Dose Module already retired in Supp.201 (in 2017), but still supported by i-Dixel to keep compatibility.

### 4.2.4.4 Association Acceptance Policy

The MPPS SCU AE does not accept Associations.

## 4.2.5 Print SCU AE Specification

### 4.2.5.1 SOP Classes

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

**Table 4.2.5-1**
**META SOP CLASSES FOR THE PRINT SCU AE**

| SOP Class Name | SOP Class UID | SCU | SCP |
|---|---|---|---|
| Basic Grayscale Print Management Meta | 1.2.840.10008.5.1.1.9 | 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 4.2.5-2**
**DICOM APPLICATION CONTEXT FOR THE PRINT SCU AE**

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

#### 4.2.5.2.2 Number of Associations

The Print SCU AE initiates only one association at a time.

**Table 4.2.5-3**
**NUMBER OF ASSOCIATIONS INITIATED FOR THE PRINT SCU AE**

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

#### 4.2.5.2.3 Asynchronous Nature

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

**Table 4.2.5-4**
**ASYNCHRONOUS NATURE FOR THE PRINT SCU AE**

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

#### 4.2.5.2.4 Implementation Identifying Information

The implementation information for the Print SCU AE is:

**Table 4.2.5-5**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR THE PRINT SCU AE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.3.1 |
| Implementation Version Name | Dcmgw_1.0 |

### 4.2.5.3 Association Initiation Policy

#### 4.2.5.3.1 Activity – Print Images

##### 4.2.5.3.1.1 Description and Sequencing of Activities

A user composes images onto film sheets and requests them to be sent to a specific Print device. The user can select the desired film format and number of copies. Each print-job is forwarded to the job queue and processed individually.

The Print AE is invoked by the job control interface that is responsible for processing network tasks. The job consists of data describing the images and graphics to be printed as well as the requested layout and other parameters. The film sheet is internally processed, converted to a STANDARD\1,1 page and then the page image is sent. If no association to the printer can be established, the print-job is switched to a failed state and the user informed.

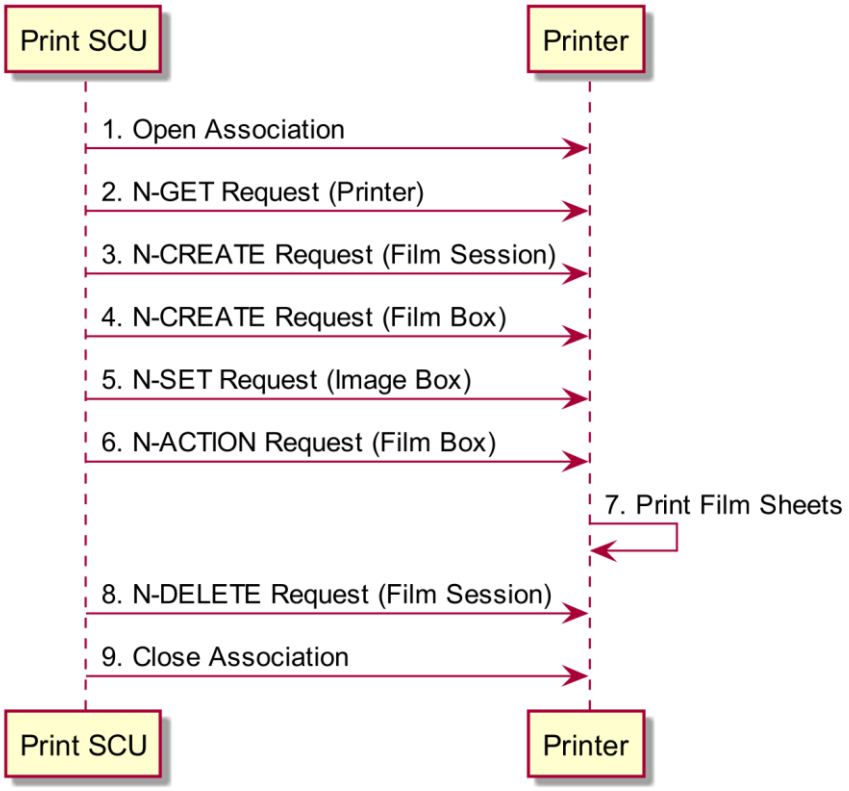


**Figure 4.2.5**
**SEQUENCING OF ACTIVITY – PRINT IMAGES**

Expected sequence of interactions is illustrated in the Figure above:

1. Print AE opens an association with the Printer.
2. N-GET on the Printer SOP Class is used to obtain current printer status information. If the Printer reports a status of FAILURE, the print-job is switched to a failed state and the user informed.
3. N-CREATE on the Film Session SOP Class creates a Film Session.
4. N-CREATE on the Film Box SOP Class creates a Film Box linked to the Film Session. A single Image Box will be created as the result of this operation (Print AE only uses the format STANDARD\1,1).
5. N-SET on the Image Box SOP Class transfers the contents of the film sheet to the printer. If the printer does not support the Presentation LUT SOP Class, the image data will be passed through a printer-specific correction LUT before being sent.
6. N-ACTION on the Film Box SOP Class instructs the printer to print the Film Box
7. The printer prints the requested number of film sheets.

8. N-DELETE on the Film Session SOP Class deletes the complete Film Session SOP Instance hierarchy.
9. Print AE closes the association with the Printer.

#### 4.2.5.3.1.2 Proposed Presentation Contexts

The Print SCU AE proposes the Presentation Contexts shown in the following table:

**Table 4.2.5-6**
**PROPOSED PRESENTATION CONTEXTS FOR ACTIVITY PRINT IMAGES**

| Presentation Context Table | | | | | |
|---|---|---|---|---|---|
| Abstract Syntax | | Transfer Syntax | | Role | Ext. Neg. |
| Name | UID | Name List | UID List | | |
| Basic Grayscale Print Management Meta | 1.2.840.10008.5.1.1.9 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU | None |

#### 4.2.5.3.1.3 Common SOP Specific Conformance for PRINT SOP Classes

The general behavior of PRINT SCU AE during communication failure is summarized in the table below. This behavior is common for all SOP Classes supported by the Print SCU AE.

**Table 4.2.5-7**
**PRINT COMMUNICATION FAILURE BEHAVIOR**

| Exception | Behavior |
|---|---|
| Timeout | The Association is aborted using A-ABORT.<br>The reason for failure is logged and reported to the user. |
| Association aborted by the SCP or network layers | The reason for failure is logged and reported to the user. |

#### 4.2.5.3.1.4 SOP Specific Conformance for PRINT SOP Classes

The Print SCU AE supports the following DIMSE operations and notifications for the Printer SOP Class:

- N-GET

Details of the supported attributes and status handling behavior are described in the following subsections.

##### 4.2.5.3.1.4.1 Printer SOP Class Operations (N-GET)

The Print SCU AE uses the Printer SOP Class N-GET operation to obtain information about the current printer status. The attributes obtained via N-GET are listed in the table below:

**Table 4.2.5-8**
**PRINTER SOP CLASS N-GET REQUEST ATTRIBUTES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Printer Status | (2110,0010) | CS | Provided by Printer | ALWAYS | Printer |

The Printer Status information is evaluated as follows:

1. If Printer status (2110,0010) is NORMAL, the print-job continues to be printed.
2. If Printer status (2110,0010) is WARNING, the print-job continues to be printed.
3. If Printer status (2110,0010) is otherwise, the print-job is marked as failed.

The behavior of Print SCU AE when encountering status codes in an N-GET response is summarized in the table below:

**Table 4.2.5-9**
**PRINT N-GET RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

## 4.2.5.3.1.5 SOP Specific Conformance for Film Session SOP Classes

The PRINT SCU AE supports the following DIMSE operations and notifications for the Film Session SOP Class:

- N-CREATE
- N-DELETE

Details of the supported attributes and status handling behavior are described in the following subsections.

### 4.2.5.3.1.5.1 Film Session SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

**Table 4.2.5-10**
**FILM SESSION SOP CLASS N-CREATE REQUEST ATTRIBUTES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Number of Copies | (2000,0010) | IS | 1 | ALWAYS | Auto |
| Print Priority | (2000,0020) | CS | LOW | ALWAYS | Auto |
| Medium Type | (2000,0030) | CS | BLUE FILM | ALWAYS | Auto |
| Film Destination | (2000,0040) | CS | PROCESSOR | ALWAYS | Auto |

The behavior of Print SCU AE when encountering status codes in an N-CREATE response is summarized in the table below:

**Table 4.2.5-11**
**FILM SESSION N-CREATE RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |

| | | | |
|---|---|---|---|
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

#### 4.2.5.3.1.5.2 Film Session SOP Class Operations (N-DELETE)

The behavior of Print SCU AE when encountering status codes in an N-DELETE response is summarized in the table below:

**Table 4.2.5-12**
**FILM SESSION N-DELETE RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

### 4.2.5.3.1.6 SOP Specific Conformance for Film Box SOP Classes

The Print SCU AE supports the following DIMSE operations and notifications for the Film Box SOP Class:

- N-CREATE
- N-ACTION

Details of the supported attributes and status handling behavior are described in the following subsections.

#### 4.2.5.3.1.6.1 Film Box SOP Class Operations (N-CREATE)

The attributes supplied in an N-CREATE Request are listed in the table below:

**Table 4.2.5-13**
**FILM BOX SOP CLASS N-CREATE REQUEST ATTRIBUTES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Image Display Format | (2010,0010) | CS | STANDARD\1,1 | ALWAYS | Auto |
| Referenced Film Session Sequence | (2010,0500) | SQ | | ALWAYS | Auto |
| >Referenced SOP Class UID | (0008,1150) | UI | 1.2.840.10008.5.1.1.1 | ALWAYS | Auto |
| >Referenced SOP Instance UID | (0008,1155) | UI | From created Film Session SOP Instance | ALWAYS | Auto |
| Film Orientation | (2010,0040) | CS | PORTRAIT or LANDSCAPE | ALWAYS | User |
| Film Size ID | (2010,0050) | US | 8INX10IN, 10INX12IN, 11INX14IN, 14INX14IN, 14INX17IN | ALWAYS | User |
| Magnification Type | (2010,0060) | CS | CUBIC | ALWAYS | Auto |
| Border Density | (2010,0100) | CS | BLACK | ALWAYS | Auto |

The behavior of Print SCU AE when encountering status codes in an N-CREATE response is summarized in the table below:

**Table 4.2.5-14**
**FILM BOX N-CREATE RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

#### 4.2.5.3.1.6.2 Film Box SOP Class Operations (N-ACTION)

An N-ACTION Request is issued to instruct the Print SCP to print the contents of the Film Box. The Action Reply argument in an N-ACTION response is not evaluated.

The behavior of Print SCU AE when encountering status codes in an N-CREATE response is summarized in the table below:

**Table 4.2.5-15**
**FILM BOX N-ACTION RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

### 4.2.5.3.1.7 SOP Specific Conformance for Image Box SOP Classes

The Print SCU AE supports the following DIMSE operations and notifications for the Film Session SOP Class:

- N-SET

Details of the supported attributes and status handling behavior are described in the following subsections.

#### 4.2.5.3.1.7.1 Image Box SOP Class Operations (N-SET)

The attributes supplied in an N-SET Request are listed in the table below:

**Table 4.2.5-16**
**IMAGE BOX SOP CLASS N-SET REQUEST ATTRIBUTES**

| Attribute Name | Tag | VR | Value | Presence of Value | Source |
|---|---|---|---|---|---|
| Image Position | (2020,0010) | US | 1 | ALWAYS | Auto |
| Basic Grayscale Image Sequence | (2020,0110) | SQ | | ALWAYS | Auto |
| >Samples Per Pixel | (0028,0002) | US | 1 | ALWAYS | Auto |

| | | | | | |
|---|---|---|---|---|---|
| >Photometric Interpretation | (0028,0004) | CS | MONOCHROME1 or MONOCHROME2 | ALWAYS | Auto |
| >Rows | (0028,0010) | US | Depends on film size | ALWAYS | Auto |
| >Columns | (0028,0011) | US | Depends on film size | 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 | Pixels of rendered film sheet | ALWAYS | Auto |

The behavior of Print SCU AE when encountering status codes in an N-GET response is summarized in the table below:

**Table 4.2.5-17**
**PRINT N-GET RESPONSE STATUS HANDLING BEHAVIOR**

| Service Status | Further Meaning | Status Code | Behavior |
|---|---|---|---|
| Success | Success | 0000 | The Print SCU AE considers that the remote AE has completed the operation successfully. |
| * | * | Any other | The Print SCU AE considers that the activity failed.<br>The reason for failure is logged and reported to the user. |

## 4.2.5.4 Association Acceptance Policy

The Print SCU AE does not accept Associations.

# 5. MEDIA INTERCHANGE

## 5.1. IMPLEMENTATION MODEL

### 5.1.1. Application Data Flow Diagram

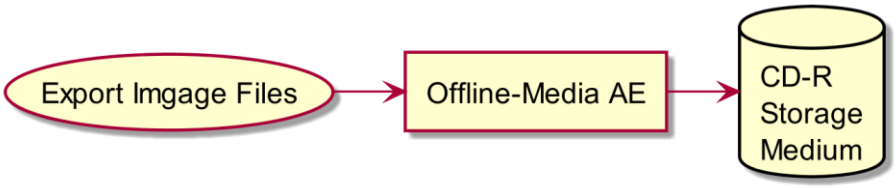


**Figure 5-1-1**
**APPLICATION DATA FLOW DIAGRAM FOR MEDIA STORAGE**

The Offline-Media AE exports images and Presentation States to a CD-R Storage medium. It is associated with the local real-world activity "Export to CD-R". "Export to CD-R" is performed upon user request for selected patients, studies, series or instances (images or presentation states).

### 5.1.2. Functional Definitions of AEs

#### 5.1.2.1 Functional Definition of Offline-Media AE

Activation of the "Export to CD-R" icon or menu entry will pass the currently selected patients, studies, series or instances (images or presentation states) to the Offline-Media AE. The SOP Instances associated with the selection will be collected into one or more export jobs. The contents of each export job will be written to a single CD-R media.

### 5.1.3. Sequencing of Real World Activities

At least one image or presentation state must exist and be selected before the Offline-Media AE can be invoked. The operator can insert a new CD-R media at any time before or after invocation of the Offline-Media AE. The Offline-Media AE will wait indefinitely for a media to be inserted before starting to write to the CD-R device. If no CD-R media is available the export job can be canceled from the job queue.

### 5.1.4. File Meta Information Options

The implementation information written to the File Meta Header in each file is:

**Table 5.1-1**
**DICOM IMPLEMENTATION CLASS AND VERSION FOR MEDIA STORAGE**

| | |
|---|---|
| Implementation Class UID | 1.2.392.200036.9133.2.1.2.1 |
| Implementation Version Name | Dcmgw_1.0 |

## 5.2. AE SPECIFICATIONS

### 5.2.1. Offline-Media AE Specification

The Offline-Media AE provides standard conformance to the Media Storage Service Class. The Application Profiles and roles are listed below:

**Table 5.2-1**
**APPLIATION PROFILES, ACTIVITIES AND ROLES FOR OFFLINE-MEDIA**

| Application Profile Supported | Real world Activity | Role |
|---|---|---|
| STD-GEN-CD | Export to CD-R | FSC |

#### 5.2.1.1. File Meta Information for the AE

The Source Application Entity Title included in the File Meta Header is configurable. See Section 5.4.

#### 5.2.1.2. Real-World Activities

#### 5.2.1.2.1. Activity - Export to CD-R

The Offline-Media Application Entity acts as an FSC when requested to export SOP Instances from the local database to media.

i-Dixel itself only provides the dataset to write to media. Use any software which can write to CD-R within ISO 9660 Level 1 option.

##### 5.2.1.2.1.1. Media Storage Application Profile

The Offline-Media Application Entity supports the STD-GEN-CD Application Profile.

##### 5.2.1.2.1.1.1. Options

The Offline-Media AE supports the SOP Classes and Transfer Syntaxes listed in the table below:

**Table 5.2-2**
**IODS, SOP CLASSES AND TRANSFER SYNTAXES FOR OFFLINE-MEDIA**

| Information Object Definition | SOP Class UID | Transfer Syntax | Transfer Syntax UID |
|---|---|---|---|
| Media Storage Directory Storage | 1.2.840.10008.1.3.10 | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| Computed Radiography Image Storage | 1.2.840.10008.5.1.4.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| CT Image Storage | 1.2.840.10008.5.1.4.1.1.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |

| | | | |
|---|---|---|---|
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Digital X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Digital Intra-oral X-Ray Image Storage - For Presentation | 1.2.840.10008.5.1.4.1.1.1.3 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| Secondary Capture Image Storage | 1.2.840.10008.5.1.4.1.1.7 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| VL Endoscopic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |
| VL Photographic Image Storage | 1.2.840.10008.5.1.4.1.1.77.1.4 | Implicit VR Little Endian | 1.2.840.10008.1.2 |
| | | Explicit VR Little Endian | 1.2.840.10008.1.2.1 |
| | | Explicit VR Big Endian | 1.2.840.10008.1.2.2 |

## 5.3. AUGMENTED AND PRIVATE APPLICATION PROFILES

The Offline-Media AE does not support any augmented for private application profiles.

## 5.4. MEDIA CONFIGURATION

The Application Entity Titles configurable for Media Services are listed in the table below:

**Table 5.4-1**
**AE TITLE CONFIGURATION TABLE**

| Application Entity | Default AE Title |
|---|---|
| Offline-Media | JMORITA3DX |

# 6. SUPPORT OF CHARACTER SETS

In addition to the default character repertoire, this product supports the following Character sets:

- ISO_IR 100 ISO 8859-1:1987 Latin Alphabet No.1 supplementary set
- ISO 2022 IR 87 JIS X 0208: Kanji
- ISO 2022 IR 159 JIS X 0212: Supplementary Kanji set

# 7. SECURITY

i-Dixel does not support any specific security measures.

It is assumed that i-Dixel 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 i-Dixel.

b) Firewall or router protections to ensure that i-Dixel only has network access to approved external hosts and services.

c) Any communication with external hosts and services outside the locally secured environment use appropriate secure network channels (e.g., such as a Virtual Private Network (VPN) )

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.