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**Digital Imaging and Communications in Medicine (DICOM)**

*Supplement 68: Retirement of Storage Commitment Pull Model*

**DICOM Standards Committee, Working Group 6 Base Standard**

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## Foreword

ACR (the American College of Radiology) and NEMA (the National Electrical Manufacturers Association) formed a joint committee to develop a Standard for Digital Imaging and Communications in Medicine. This DICOM Standard was developed according to the NEMA Procedures.

The DICOM standard is structured as a multi-part document using the guidelines established in the following document:

- ISO/IEC Directives, 1989 Part 3 - Drafting and Presentation of International Standards.

This document is a Supplement to the DICOM Standard. It is an extension to PS 3.3, 3.4 and 3.6 of the published DICOM Standard which consists of the following parts:

PS 3.1	Introduction and Overview
PS 3.2	Conformance
PS 3.3	Information Object Definitions
PS 3.4	Service Class Specifications
PS 3.5	Data Structures and Encoding
PS 3.6	Data Dictionary
PS 3.7	Message Exchange
PS 3.8	Network Communication Support for Message Exchange
PS 3.9	Point-to-Point Communication Support for Message Exchange
PS 3.10	Media Storage and File Format
PS 3.11	Media Storage Application Profiles
PS 3.12	Media Format and Physical Media for Media Interchange
PS 3.13	Print Management Point-to-Point Communication Support
PS 3.14	Grayscale Standard Display Function
PS 3.15	Security Profiles
PS 3.16	Content Mapping Resource

These Parts are independent but related documents.

### **Scope and Field of Application**

- 2 The Storage Commitment Service Class consists of a Push Model and a Pull Model. The Pull model, has not proven to be useful and is retired.
- 4 This Supplement includes a number of revisions to existing Parts of DICOM:
  1. PS 3.3 Addenda (remove attributes from Storage Commitment Module)
  - 6 2. PS 3.4 Addenda (remove pull model from Annex J)
  3. PS 3.6 Addenda (flag pull model SOP class to retired)

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Item #1  
Amend PS 3.3 Section C14

4 **C.14 Storage Commitment Module**

6 Table C.14-1 defines the Attributes for referencing SOP Instances which are contained in a Storage Commitment Request/Response.

8 **Table C.14-1 - Storage Commitment Module**

Attribute Name	Tag	Attribute Description
...	...	...
<del>Referenced Study Component Sequence</del>	<del>(0008,1111)</del>	<del>This Attribute identifies a Study Component to which all the SOP Instances for which Storage Commitment is requested belong. Only 1 SOP Class/Instance pair shall be present in this sequence.</del>
<del>&gt;Referenced SOP Class UID</del>	<del>(0008,1150)</del>	<del>Uniquely identifies the referenced SOP Class.</del>
<del>&gt;Referenced SOP Instance UID</del>	<del>(0008,1155)</del>	<del>Uniquely identifies the referenced SOP Instance.</del>
...	...	...

10 **Notes:** 1. Conditions under which Attributes are required (i.e. Retrieve AE Title, etc.) are defined in the Storage Commitment Service Class in PS 3.4.

12 2. Referenced Performed Procedure Step Sequence (0008,1111) was included in this Module in earlier versions, but its use here has been retired. See PS 3.4-2001, in which the Attribute was formerly known as Referenced Study Component Sequence.

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Item #2  
Amend PS 3.4 Annex J

## Annex J (Normative) Storage Commitment Service Class

### J.1 OVERVIEW

#### J.1.1 Scope

The mechanism currently defined in DICOM for network based storage of SOP Instances, the Storage Service Class, allows a Service Class User (SCU) to transmit images and other information (such as overlays and curves) to a Service Class Provider (SCP). However, the Storage Service Class does not specify that the SCP explicitly take responsibility for the safekeeping of data into account. That is, there is no commitment that the SCP will do more than accept the transmitted SOP Instances. In order to have medical image management in addition to medical image communication, there is a need for a Service Class within DICOM that ensures that there is an explicitly defined commitment to store the SOP Instances.

The Storage Commitment Service Class defines an application-level class-of-service which facilitates this commitment to storage. The Storage Commitment Service Class enables an Application Entity (AE) acting as an SCU to request another Application Entity (AE) acting as an SCP to make the commitment for the safekeeping of the SOP Instances (i.e. that the SOP Instances will be kept for an implementation specific period of time and can be retrieved). The AE where such SOP Instances can later be retrieved may be the SCP where storage commitment was accepted or it may be distinct from that SCP.

The SCP implementation defines how it provides its commitment to storage. Certain SCPs may commit to permanently store the SOP Instances (e.g. an archive system) while other SCPs may commit to provide storage of the SOP Instances for a limited amount of time. The SCP is required to document in its Conformance Statement the nature of its commitment to storage (e.g. duration of storage, retrieve capabilities and latency, capacity).

Once the SCP has accepted the commitment to store the SOP Instances, the SCU may decide that it is appropriate to delete its copies of the SOP Instances. These types of policies are outside the scope of this Standard, however, the SCU is required to document these policies in its Conformance Statement.

#### J.1.2 Models Overview

The request for storage commitment can be accomplished using ~~one of two basic models:~~ the Push Model ~~and the Pull Model.~~

The Push model expects an SCU to transmit SOP Instances to an SCP using an appropriate mechanism outside the scope of this Service Class. Storage commitment is then initiated by transmitting a Storage Commitment Request containing references to a set of one or more SOP Instances. Success or failure of storage commitment is subsequently indicated via a notification from the SCP to the SCU.

~~The Pull model allows an SCU to transmit a Storage Commitment Request containing references to SOP Instances which do not currently reside at the SCP. The SCP must then retrieve the SOP Instances from their current location using a mechanism outside the scope of this Service Class. Success or failure of storage commitment is subsequently indicated via a notification from the SCP to the SCU.~~

Notes: **1. A Pull Model was defined in earlier versions, but has been retired. See PS 3.4-2001.**

**2.** As indicated, the mechanisms used to transfer SOP Instances from an SCU to an SCP are outside the scope of this Service Class. However, typical mechanisms are found in the Storage Service Class, the Query/Retrieve Service Class, or Media Exchange.

**J.2 CONFORMANCE OVERVIEW**

The application-level services addressed by this Service Class are specified via **2 distinct SOP Classes:**

- ~~a) — Storage Commitment Push Model SOP Class;~~
- ~~b) — the Storage Commitment Pull Push Model SOP Class.~~

An SCP implementation of the Storage Commitment Service Class shall support the Storage Commitment Push Model SOP Class. ~~If an SCP supports the Storage Commitment Pull Model SOP Class, it shall also support the Storage Commitment Push Model SOP Class.~~

~~Each~~ **The** SOP Class specifies Attributes, operations, notifications, and behavior applicable to the SOP Class. ~~Conformance of Application Entities shall be defined by selecting one or both of the Storage Commitment SOP Classes. For each SOP Class~~ **The** conformance requirements shall be specified in terms of the Service Class Provider (SCP) and the Service Class User (SCU).

The Storage Commitment Service Class uses the Storage Commitment IOD as defined in PS 3.3 and the N-ACTION and N-EVENT-REPORT DIMSE Services specified in PS 3.7.

**J.2.1 Association Negotiation**

Association establishment is the first phase of any instance of communication between peer DICOM AEs. The association negotiation rules as specified in PS 3.7 shall be used to negotiate the supported SOP Classes.

Support for the SCP/SCU role selection negotiation is mandatory. ~~The~~ The SOP Class Extended Negotiation shall not be supported.

An SCP implementation of the Storage Commitment Service Class shall support the Storage Commitment Push Model SOP Class. ~~If an SCP accepts a Presentation Context for the Storage Commitment Pull Model SOP Class, it shall also accept a Presentation Context for the Storage Commitment Push Model SOP Class.~~

**J.3 STORAGE COMMITMENT PUSH MODEL SOP CLASS**

...

**Table J.3-2.1-4-1 Storage Commitment Request - Action Information**

Action Name	Type	Action Type ID	Attribute	Tag	Requirement Type SCU/SCP
Request Storage Commitment		1	Transaction UID	(0008,1195)	1/1
		...	...	...	3...

		<b>Referenced Study Component Sequence</b>	<b>(0008,1111)</b>	<b>1G/1</b> <b>See Section J.3.2.1.1.2.</b>
		<b>&gt;Referenced SOP Class UID</b>	<b>(0008,1150)</b>	<b>1/1</b>
		<b>&gt;Referenced SOP Instance UID</b>	<b>(0008,1155)</b>	<b>1/1</b>

...

### J.3.2.1.1.2 Referenced Performed Procedure Step Sequence Attribute (Retired)

Referenced Performed Procedure Step Sequence (0008,1111) was included in earlier versions, but its use here has been retired. See PS 3.4-2001, in which the Attribute was formerly known as Referenced Study Component Sequence.

~~The Referenced Study Component Sequence (0008,1111) Attribute shall be provided if all the SOP Instance(s) referenced within the Referenced SOP Sequence (0008,1199) belong to the same Study Component and represent the complete set of SOP Instances for that Study Component (i.e. if the referenced SOP Instances do not represent the complete Study Component, this Attribute is not sent). Only 1 SOP Class/Instance UID pair may be present in this sequence.~~

~~Note: See the Study Management Service Class for more information about the Study Component.~~

Note: This section formerly specified a means of referencing a Study Component that has been completed and semantics that the list of images in the commitment request represented a complete set. This section has been retired since the Modality Performed Procedure Step SOP Classes provide the same facility in a more appropriate service.

### J.3.6 Conformance Requirements

...

#### J.3.6.1 SCU Conformance

...

##### J.3.6.1.1 Operations

The SCU shall document in the SCU Operations Statement the actions and behavior which cause the SCU to generate an N-ACTION primitive (Storage Commitment Request).

The SCU shall specify the SOP Class UIDs for which it may request storage commitment.

~~The SCU shall specify if it supports the Referenced Study Component Sequence Attribute.~~

...

#### J.4 STORAGE COMMITMENT PULL MODEL SOP CLASS (RETIRED)

**A Pull Model was defined in earlier versions, but has been retired. See PS 3.4-2001.**

*Delete the remainder of the entire section*

#### J.5 STORAGE COMMITMENT EXAMPLES (INFORMATIVE)

...

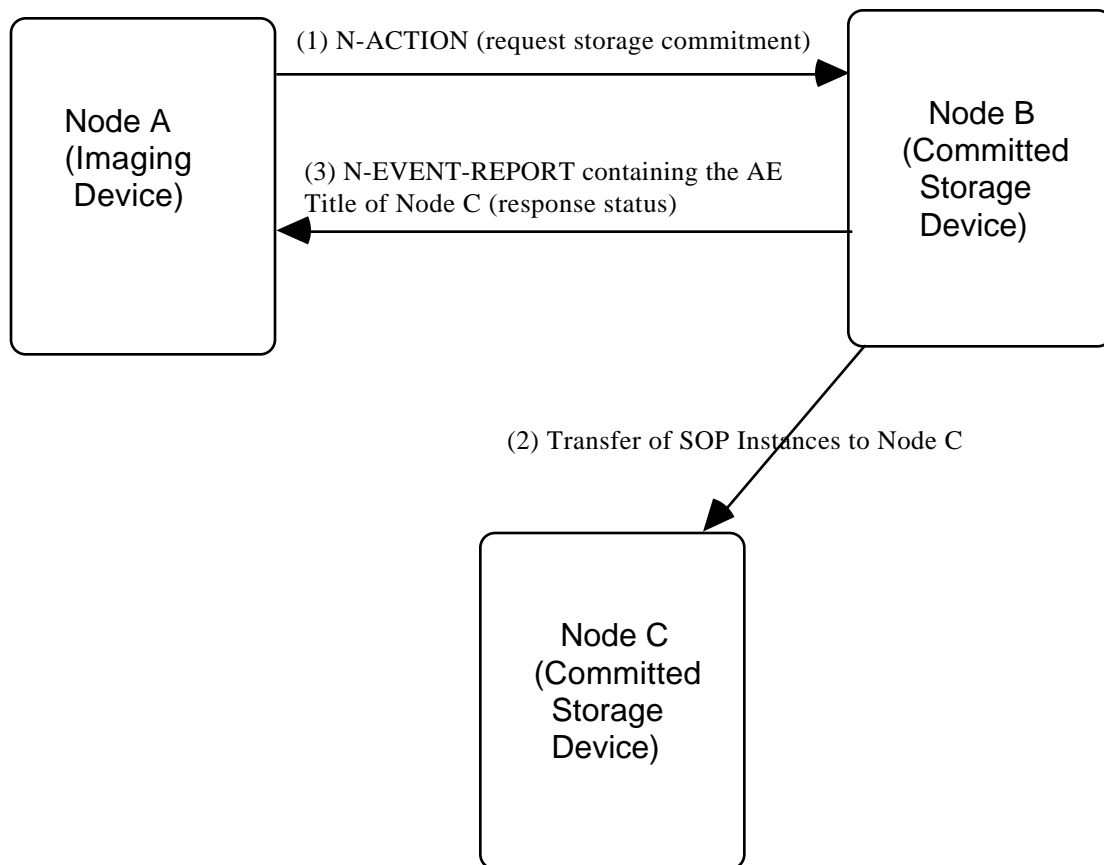
##### J.5.2 Pull Model Example (Retired)

**A Pull Model was defined in earlier versions, but has been retired. See PS 3.4-2001.**

*Delete the remainder of the entire section*

##### J.5.3 Remote storage of data by the SCP

**Figure J.5-3 This example (illustrated in Figure 3) explains the use of the Retrieve AE Title and applies to both the push and the pull model.** Using either the push or the pull model a set of SOP Instances will be transferred from the SCU to the SCP. The SCP may decide to store the data locally or, alternatively, may decide to store the data at a remote location. This example illustrates how to handle the latter case.



**Figure J.5-3: Example of Remote Storage of SOP Instances**



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Node A, an SCU of ~~either~~ the Storage Commitment ~~Pull Model~~ or Push Model SOP Class, informs Node B, an SCP of the corresponding SOP Class, of its wish for storage commitment by issuing an N-ACTION containing a list of references to SOP Instances (1). ~~Depending on the SOP Class in question~~ The SOP Instances will ~~either~~ already have been transferred from Node A to Node B (Push Model) ~~or will be transferred as a result of the N-ACTION (Pull Model)~~ (2). If the SCP has determined that storage commitment has been achieved for all SOP Instances at Node C specified in the original Storage Commitment Request (from Node A), it issues an N-EVENT-REPORT (3) like in the previous examples. However, to inform the SCU about the address of the location at which the data will be stored, the SCP includes in the N-EVENT-REPORT the Application Entity Title of Node C.

The Retrieve AE Title can be included in the N-EVENT-REPORT at two different levels. If all the SOP Instances in question were stored at Node C, a single Retrieve AE Title could be used for the whole data set. However, the SCP could also choose not to store all the SOP Instances at the same location. In this case the Retrieve AE Title Attribute must be provided at the level of each single SOP Instance in the Referenced SOP Instance Sequence.

**NOTE:** This example also applies to the situation where the SCP decides to store the SOP Instances on Storage Media. Instead of providing the Retrieve AE Title, the SCP will then provide a pair of Storage Media File-Set ID and UID.

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2 **Item #3**  
Amend the following UIDs in PS 3.6 Annex A:

4

UID Value	UID Name	UID Type	Part
1.2.840.10008.1.20.1	Storage Commitment Push Model SOP Class	SOP Class	PS 3.4
1.2.840.10008.1.20.1.1	Storage Commitment Push Model SOP Instance	Well-known SOP Instance	PS 3.4
1.2.840.10008.1.20.2	Storage Commitment Pull Model SOP Class <b><i>(Retired)</i></b>	SOP Class	PS 3.4
1.2.840.10008.1.20.2.1	Storage Commitment Pull Model SOP Instance <b><i>(Retired)</i></b>	Well-known SOP Instance	PS 3.4

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