

DICOM Correction Proposal Form

Tracking Information - Administration Use Only	
Correction Proposal Number	CP-597
STATUS	Assigned
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Correction Number	CP-597
Log Summary: Instance Availability Notification structure	
Type of Modification	Name of Standard
Addition	PS 3.3, 3.4 2004
Rationale for Correction	
<p>Current DICOM implementation of the Instance Availability Notification SOP Class only defines such notifications at the INSTANCE level, which makes proper handling of the OFFLINE and UNAVAILABLE statuses impossible by information systems which don't keep track of individual instances but rather studies or series (e.g., some RIS systems). Also, when study is removed from storage or migrated offline, it is typically migrated as a whole, so ability to specify availability change for the study and or series would be useful. Proposed modifications are intended to address these limitations.</p>	
Sections of documents affected	
PS 3.3 C.4.23	
PS 3.4 Annex R	
Correction Wording:	

Add Study and Series Level Instance Availability and Retrieve AE Title Attributes to the Instance Availability Notification Module and update Table C.4.23-1 accordingly:

C.4.23 Instance Availability Notification Module

Table C.4.23-1 specifies the Attributes used to describe which Instances are available and their relationships.

**Table C.4.23-1
INSTANCE AVAILABILITY NOTIFICATION MODULE ATTRIBUTES**

Attribute Name	Tag	Attribute Description
Referenced Performed Procedure Step Sequence	(0008,1111)	Uniquely identifies the Performed Procedure Step SOP Instance to which this availability notification instance is related, if any. The Sequence shall have

		<p>zero or one Item.</p> <p>Notes: 1. This may refer to a different PPS than that encoded in the composite instances themselves.</p> <p>2. It is typically used for notification about instances created as a consequence of some scheduled activity.</p>
>Referenced SOP Class UID	(0008,1150)	Uniquely identifies the referenced SOP Class of the Performed Procedure Step.
>Referenced SOP Instance UID	(0008,1155)	Uniquely identifies the referenced SOP Instance of the Performed Procedure Step.
>Performed Workitem Code Sequence	(0040,4019)	<p>A sequence that conveys the (single) type of procedure performed.</p> <p>Only a single Item shall be permitted in this sequence.</p>
>>Include Code Sequence Macro Table 8.8-1		Baseline Context ID is CID 9231.
Study Instance UID	(0020,000D)	Unique identifier for the Study of which all the Instances referenced in this notification are part.
<u>Instance Availability</u>	<u>(0008,0056)</u>	<u>The availability of the referenced Instance. See Section C.4.23.1.1</u>
<u>Retrieve AE Title</u>	<u>(0008,0054)</u>	<u>Title of the DICOM Application Entity from which the referenced Instance may or may not be retrievable, See Section C.4.23.1.1.</u>
Referenced Series Sequence	(0008,1115)	Sequence of Items where each Item includes references to Instances within the same Series. One or more Items shall be included in this Sequence.
>Series Instance UID	(0020,000E)	Unique identifier of the Series of which all the Instances referenced in this Item are part.
<u>>Instance Availability</u>	<u>(0008,0056)</u>	<u>The availability of the referenced Instance. See Section C.4.23.1.1</u>
<u>>Retrieve AE Title</u>	<u>(0008,0054)</u>	<u>Title of the DICOM Application Entity from which the referenced Instance may or may not be retrievable, See Section C.4.23.1.1.</u>
>Referenced SOP Sequence	(0008,1199)	Sequence of Items where each Item includes a reference to a single Instance within this Series. One or more Items shall be included in this Sequence.
>>Referenced SOP Class UID	(0008,1150)	Uniquely identifies the referenced SOP Class.
>>Reference SOP Instance UID	(0008,1155)	Uniquely identifies the referenced SOP Instance.
>>Instance Availability	(0008,0056)	The availability of the referenced Instance. See Section C.4.23.1.1
>>Retrieve AE Title	(0008,0054)	Title of the DICOM Application Entity from which the referenced Instance may or may not be retrievable, i.e. the scope for which Instance Availability

		(0008,0056) applies. See Section C.4.23.1.1.
>>Storage Media File-Set ID	(0088,0130)	The user or implementation specific human readable identifier that identifies the offline storage media on which the instance resides.
>>Storage Media File-Set UID	(0088,0140)	Uniquely identifies the offline storage media on which the instance resides.

Add Study and Series levels of Instance Availability Notifications to the Instance Availability Notification Service Class OverView

R.1 OVERVIEW

R.1.1 Scope

The Instance Availability Notification Service Class defines an application-level class-of-service that allows one DICOM AE to notify another DICOM AE of the presence and availability of SOP instances, **either individually or as Series or Studies**, that may be retrieved. The AE from which such SOP Instances can later be retrieved may or may not be the SCU performing the notification.

Note: An example of usage of this Service Class is for the receiver of the instances to provide notification of their arrival and availability for subsequent workflow steps to a different entity, such as a separate workflow manager.

The SCU implementation defines the conditions under which it provides the notification, **and the levels at which those notifications are provided**. Certain SCUs may provide notification for arbitrary sets of SOP Instances, while other SCUs may provide notification when they determine that the instances associated with a Procedure Step or a Requested Procedure are available. **If notification is provided at the Study or Series level, Instance Availability shall be the same for all SOP Instances in the corresponding Study or Series known to the SCU at the time of notification**. The SCU is required to document in its Conformance Statement the nature of its notification decisions (e.g., frequency of notifications, retrieve capabilities and latency, etc.), **and the levels at which it can provide availability notifications**.

Once the SCU has provided notification about availability of the SOP Instances, **Series or Study**, the SCP may use that information in directing further workflow, such as in populating the Input Information Sequence and Relevant Information Sequence when forming General Purpose Scheduled Procedure Step. These types of policies are outside the scope of this Standard, however, the SCP is required to document these policies in its Conformance Statement, **including description of using availability notifications at different levels**.

The SCU of this Service Class is not required to assure that the study, procedure step or any workflow-related entity is “complete”; indeed no semantics other than the concept of “availability” is expressed or implied by the use of this service.

- Notes:
1. The Performed Workitem Code Sequence (0040,4019) attribute of a referenced GP-PPS instance may provide the specific description of the work item that triggered the Instance Availability Notification.
 2. The Instance Availability Notification is typically a service of the composite instance Storage SCP, since that application is responsible for making the instances available. The Instance Availability Notification allows that application to report the specific Retrieve AE Title, which

may differ from the Storage Service AE Title, and which may vary with different instance SOP Classes, or may vary over time.

Add Study and Series Level Instance Availability and Retrieve AE Title attributes to the Instance Availability Notification SOP Class N-CREATE attributes and update Table R.3.2-1 accordingly:

R.3.2.1.1 Attributes

The Attribute list of the N-CREATE is defined as shown in Table R.3.2-1.

**Table R.3.2-1
INSTANCE AVAILABILITY NOTIFICATION SOP CLASS N-CREATE ATTRIBUTES**

Attribute Name	Tag	Req. Type N-CREATE (SCU/SCP)
Specific Character Set	(0008,0005)	1C/1C (Required if an extended or replacement character set is used)
<i>All other Attributes of SOP Common Module</i>		3/3
Referenced Performed Procedure Step Sequence	(0008,1111)	2/2
>Referenced SOP Class UID	(0008,1150)	1/1
>Referenced SOP Instance UID	(0008,1155)	1/1
>Performed Workitem Code Sequence	(0040,4019)	2/2
>>Code Value	(0008,0100)	1/1
>>Coding Scheme Designator	(0008,0102)	1/1
>>Code Meaning	(0008,0104)	1/1
>>All other Attributes from Performed Workitem Code Sequence		3/3
Study Instance UID	(0020,000D)	1/1
<u>Instance Availability</u>	<u>(0008,0056)</u>	<u>3/1</u>
<u>Retrieve AE Title</u>	<u>(0008,0054)</u>	<u>1C/1</u> <u>(Required if Referenced Series Sequence is not present. Can be present otherwise)</u>

Referenced Series Sequence	(0008,1115)	1/1 1C/1 (Required if Instance Availability for Study is not present. Can be present otherwise)
>Series Instance UID	(0020,000E)	1/1
>Instance Availability	(0008,0056)	1C/1 (Required if both Instance Availability for Study and Referenced SOP Sequence are not present. Can be present otherwise)
>Retrieve AE Title	(0008,0054)	1C/1 (Required if both Instance Availability for Study and Referenced SOP Sequence are not present. Can be present otherwise)
>Referenced SOP Sequence	(0008,1199)	1/1 1C/1 (Required if both Instance Availability for Study and Instance Availability for Series are not present. Can be present otherwise)
>>Referenced SOP Class UID	(0008,1150)	1/1
>>Reference SOP Instance UID	(0008,1155)	1/1
>>Instance Availability	(0008,0056)	1/1
>>Retrieve AE Title	(0008,0054)	1/1
>>Storage Media File-Set ID	(0088,0130)	3/3
>>Storage Media File-Set UID	(0088,0140)	3/3

Modify Instance Availability Notifications SCU and SCP Conformance Statement requirements to specify the levels of instances for which they can provide and process availability notifications.

R.3.4.1 SCU Conformance

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R.3.4.1.1 Operations

Any Attributes for which Attribute Values may be provided (using the N-CREATE) by the SCU shall be enumerated in the SCU Conformance Statement. The SCU Conformance Statement shall be formatted as defined in Annex A of PS 3.2.

An implementation that conforms to this SOP Class as an SCU shall specify under which conditions during the performance of real-world activities it will create the SOP Class Instance, **and the levels at which it can provide availability notifications.**

The SCU Conformance Statement shall specify what is meant by each reported value of Instance Availability (0008,0056) **at each supported level.**

The SCU Conformance Statement shall describe the relationship between the Instance Availability Notification and the Performed Procedure Step SOP Classes, if the latter are supported.

R.3.4.2 SCP Conformance

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R.3.4.2.1 Operations

The SCP Conformance Statement shall be formatted as defined in Annex A of PS 3.2.

The SCP Conformance Statement shall provide information on the behavior of the SCP (in terms of real world activities) for each reported value of Instance Availability (0008,0056) **at each level of the availability notifications.**

The SCP Conformance Statement shall describe the behavioral relationship between the Instance Availability Notification and the Performed Procedure Step SOP Classes, if the latter are supported.