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Person Assigned	Clunie
Submitter Name	Jörg Riesmeier <dicom@jriesmeier.com>
Submission Date	2021-12-02

Correction Number CP-2200
Log Summary: Fix inconsistent names of extended Storage Service features
Name of Standard PS3.4, PS3.7, PS3.15 2022c
Rationale for Correction: Consistent naming for the concept of “Storage Level” (long version: “Level of Storage Support”) should be used. Currently, it is rather inconsistent throughout PS3.4 and, therefore, makes it e.g. hard to document in a DICOM Conformance Statement or to talk about this concept with other people. To a lesser extent, this also applies to the concept of “Signature Level” (long version: “Level of Digital Signature Support”). *Make the following editorial changes to PS3.4, PS3.7:* • Always write “Extended Negotiation” instead of “extended negotiation”, i.e. with capital initial letters, since this phrase refers to a defined concept. • Always write “Related General SOP Class” instead of “related general SOP Class” (with the same reason). • Always write “Specialized SOP Class” instead of “specialized SOP Class” (with the same reason). • Use new, more consistent naming should also be applied to other parts of the DICOM standard, i.e. especially PS3.2, which is currently being completely revised (by Supplement 209) and, therefore, this CP does not propose any specific changes to that Part. • Use “an SCU” and “an SCP” throughout the standard text rather than "a SCU” and “a SCP”, as in PS3.4 for example.
Correction Wording:

Change PS3.4 Section B.3.1.1 and B.3.1.2

B.3.1.1 Service-Class-Application-Information (A-ASSOCIATE-RQ)

The SOP Class Extended Negotiation Sub-Item is made of a sequence of mandatory fields as defined by PS3.7. Table B.3-1 shows the format of the Service-class-application-information field of the SOP Class Extended Negotiation Sub-Item for SOP Classes of the Storage Service Class in the A-ASSOCIATE-RQ.

Table B.3-1. Service-Class-Application-Information (A-ASSOCIATE-RQ)

Item Bytes	Field Name	Description of Field
1	Level of **Storage S~~s~~**upport	This byte field defines the supported **~~s~~S**torage **~~l~~L**evel of the Association-requester. It shall be encoded as an unsigned binary integer and shall use one of the following values: 0 - **Storage L~~l~~**evel 0 SCP

Item Bytes	Field Name	Description of Field
		1 - **Storage L~~l~~**evel 1 SCP 2 - **Storage L~~l~~**evel 2 SCP 3 - N/A Association-requester is SCU only If **~~e~~E**xtended **~~n~~N**egotiation is not supported, the default shall have a value of 3.
2	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.
3	Level of Digital Signature **~~s~~S**upport	A **Storage** Level 2 SCP may further define its behavior in this byte field. 0 - The **~~s~~S**ignature **L~~l~~**evel is unspecified, the AE is an SCU only, or the AE is not a **Storage L~~l~~**evel 2 SCP 1 - **~~s~~S**ignature **L~~l~~**evel 1 2 - **~~s~~S**ignature **L~~l~~**evel 2 3 - **~~s~~S**ignature **L~~l~~**evel 3 If **~~e~~E**xtended **~~n~~N**egotiation is not supported, the default shall have a value of 0.
4	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.
5	Element Coercion	This byte field defines whether the Association-requester may coerce Data Elements. It shall be encoded as an unsigned binary integer and shall use one of the following values: 0 - does not coerce any Data Element 1 - may coerce Data Elements 2 - N/A - Association-requester is SCU only If **~~e~~E**xtended **~~n~~N**egotiation is not supported, the default shall have a value of 2.
6	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.

B.3.1.2 Service-Class-Application-Information (A-ASSOCIATE-AC)

The SOP Class Extended Negotiation Sub-Item is made of a sequence of mandatory fields as defined by PS3.7. Table B.3-2 shows the format of the Service-class-application-information field of the SOP Class Extended Negotiation Sub-Item for SOP Classes of the Storage Service Class in the A-ASSOCIATE-AC.

Table B.3-2. Service-Class-Application-Information (A-ASSOCIATE-AC)

Item Bytes	Field Name	Description of Field
1	Level of **Storage ~~s~~S**upport	This byte field defines the supported **~~s~~S**torage **~~l~~L**evel of the Association-acceptor. It shall be encoded as an unsigned binary integer and shall use one of the following values: 0 - **Storage L~~l~~**evel 0 SCP 1 - **Storage L~~l~~**evel 1 SCP

Item Bytes	Field Name	Description of Field
		2 - **Storage L~~l~~**evel 2 SCP 3 - N/A - Association-acceptor is SCU only If **~~e~~E**xtended **~~n~~N**egotiation is not supported, no assumptions shall be made by the Association-requester about the capabilities of the Association-acceptor based upon this **~~e~~E**xtended **~~n~~N**egotiation.
2	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.
3	Level of Digital Signature **~~s~~S**upport	A **Storage** Level 2 SCP may further define its behavior in this byte field. 0 - The **~~s~~S**ignature **L~~l~~**evel is unspecified, the AE is an SCU only, or the AE is not a **Storage L~~l~~**evel 2 SCP 1 - **~~s~~S**ignature **L~~l~~**evel 1 2 - **~~s~~S**ignature **L~~l~~**evel 2 3 - **~~s~~S**ignature **L~~l~~**evel 3 If **~~e~~E**xtended **~~n~~N**egotiation is not supported, no assumptions shall be made by the Association-requester about the capabilities of the Association-acceptor based upon this **~~e~~E**xtended **~~n~~N**egotiation.
4	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.
5	Element Coercion	This byte field defines whether the Association-acceptor may coerce Data Elements. It shall be encoded as an unsigned binary integer and shall use one of the following values: 0 - does not coerce any Data Element 1 - may coerce Data Elements 2 - N/A - Association-acceptor is SCU only If **~~e~~E**xtended **~~n~~N**egotiation is not supported, no assumptions shall be made by the Association-requester about the capabilities of the Association-acceptor based upon this **~~e~~E**xtended **~~n~~N**egotiation.
6	Reserved	This reserved field shall be sent with a value 00H but not tested to this value when received.

Change PS3.4 Section B.4.1.1 to B.4.1.4

B.4.1.1 Levels of ~~Conformance~~Storage Support

Three ~~l~~Levels of **Storage Support are defined for an SCP that claims** conformance to the Storage SOP Classes ~~**as an SCP may be provided**~~:

- **Storage** Level 0 (Local)~~**. Level 0 conformance**~~ indicates that a user-defined subset of the Attributes of the ~~**image**~~**SOP Instance** will be stored, and all others will be discarded. This subset of the Attributes shall be defined in the Conformance Statement of the implementer.
- **Storage** Level 1 (Base)~~**. Level 1 conformance**~~ indicates that all Type 1 and 2 Attributes defined in the IOD associated with the SOP Class will be stored, and may be accessed. All other **Data E~~e~~**lements may be discarded. The SCP may, but is not required to validate that the Attributes of the SOP Instance meets the requirements of the IOD.

- **Storage** Level 2 (Full)~~. Level 2 conformance~~ indicates that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition associated with the SOP Class, as well as any Standard Extended Attributes (including Private Attributes) included in the SOP Instance, will be stored and may be accessed. The SCP may, but is not required to validate that the Attributes of the SOP Instance meet the requirements of the IOD.

  Note

  A **Storage** Level 2 SCP may discard (not store) Type 3 Attributes that are empty (zero length and no Value), since the meaning of an empty Type 3 Attribute is the same as absence of the Attribute. See PS3.5 definition of "Type 3 Optional Data Elements".

B.4.1.2 Support of Additional SOP Classes

An SCP that claims conformance to **Storage** Level 2 (Full) support of the Storage Service Class may accept any Presentation Context negotiation of a SOP Class that specifies the Storage Service Class during the SOP Class Common Extended Negotiation (see Section B.3.1.3), without asserting conformance to that SOP Class in its Conformance Statement.

Note

1. The SCP may support storage of all SOP Classes of the Storage Service Class, preserving all Attributes as a **Storage** Level 2 SCP.

2. This Extended Negotiation allows an SCP to determine that a Private SOP Class in a proposed Presentation Context follows the semantics of the Storage Service Class, and may be handled accordingly.

An SCP that claims conformance to **Storage** Level 2 (Full) support of a Related General SOP Class may accept any Presentation Context negotiation of a SOP Class that specifies that Related General SOP Class during the SOP Class Common Extended Negotiation, without asserting conformance to that specialized SOP Class in its Conformance Statement.

Note

1. The term "specialized" in this section is used generically, including both Implementation-defined Specialized SOP Classes and Standard SOP Classes specified in Table B.3-3.

2. The SCP may handle instances of such specialized SOP Classes using the semantics of the Related General SOP Class, but preserving all additional (potentially Type 1 or 2) Attributes as a **Storage** Level 2 SCP.

3. An SCP that has access to the current content of Table B.5-1 might use that to determine acceptance of proposed Presentation Context SOP Classes. This allows an SCP, even without Extended Negotiation, to be able to identify all Standard SOP Classes of the Storage Service Class. Access to Table B.5-1 may be through private means, or to the publication of PS3 on the web site of the DICOM Standards Committee. This provides an automated alternative to manually editing a table of supported Storage SOP Classes.

B.4.1.3 Coercion of Attributes

At any ~~l~~**L**evel of ~~conformance~~ **Storage Support**, the SCP of the Storage Service Class may modify the **V**~~v~~alues of certain Attributes in order to coerce the SOP Instance into the Query Model of the SCP. The Attributes that may be modified are shown in Table B.4-1.

Table B.4-1. Attributes Subject to Coercion

Attribute Name	Tag
Patient ID	(0010,0020)
Issuer of Patient ID	(0010,0021)
Other Patient IDs Sequence	(0010,1002)
Study Instance UID	(0020,000D)

Attribute Name	Tag
Series Instance UID	(0020,000E)

The SCP of the Storage Service Class may modify the **V**~~v~~alues of Code Sequence Attributes to convert from one coding scheme into another. This includes changing from deprecated **V**~~v~~alues of Coding Scheme Designator (0008,0102) or Code Value (0008,0100) to currently valid **V**~~v~~alues.

If an SCP performs such a modification, it shall return a C-STORE response with a status of Warning.

Note

1. Modification of these Attributes may be necessary if the SCP is also an SCP of a Query/Retrieve SOP Classes. These SOP Classes are described in this Standard. For example, an MR scanner may be implemented to generate Study Instance UIDs for images generated on the MR. When these images are sent to an archive that is HIS/RIS aware, it may choose to change the UID of the study assigned to the study by the PACS. The mechanism by which it performs this coercion is implementation dependent.

2. An SCP may, for instance, convert retired Code Values with a Coding Scheme Designator **V**~~v~~alue of "99SDM", "SNM3" or "SRT" to the corresponding SCT Code Values and use the "SCT" Coding Scheme Designator, in accordance with the DICOM conventions for SNOMED (see PS3.16).

3. Modification of Attributes that may be used to reference a SOP Instance by another SOP Instance (such as Study Instance UID and Series Instance UID Attributes) will make that reference invalid. Modification of these Attributes is strongly discouraged.

4. Other Attributes may be modified/corrected by an SCP of a Storage SOP Class.

5. Modification of Attributes may affect digital signatures referencing the content of the SOP Instance.

B.4.1.4 Levels of Digital Signature Support

Three ~~l~~**L**evels of Digital Signature ~~s~~**S**upport are defined for an SCP that claims conformance to **Storage** Level 2 (Full) ~~**storage support**~~:

- **At** Signature Level 1~~.~~**, the** SCP may not preserve Digital Signatures and does not replace them.
- **At** Signature Level 2~~.~~**, the** SCP does not preserve the integrity of incoming Digital Signatures, but does validate the **Digital** ~~s~~**S**ignatures of SOP Instances being stored, takes implementation-specific measures for ~~i~~**e**nsuring the integrity of data stored, and will add replacement Digital Signatures before sending SOP Instances elsewhere.
- **At** Signature Level 3~~.~~**, the** SCP does preserve the integrity of incoming Digital Signatures (i.e., is bit-preserving and stores and retrieves all Attributes regardless of whether they are defined in the IOD).

Change PS3.4 Section B.4.2.1

B.4.2.1 SCU Fall-Back Behavior

During Association Negotiation, an application may propose a specialized SOP Class and its ~~r~~**R**elated ~~g~~**G**eneral SOP Class in separate Presentation Contexts as a Storage SCU. If the Association Acceptor rejects the specialized SOP Class Presentation Context, but accepts the ~~r~~**R**elated ~~g~~**G**eneral SOP Class Presentation Context, the application may send instances of the specialized SOP Class as instances of the ~~r~~**R**elated ~~g~~**G**eneral SOP Class. In this fall-back behavior, the SOP Class UID of the instance shall be the UID of the ~~r~~**R**elated ~~g~~**G**eneral SOP Class, and any special semantics associated with the specialized SOP Class may be lost; the SOP Instance UID shall remain the same.

Note

The SCU may include the SOP Class UID of the original intended specialized SOP Class in the Attribute Original Specialized SOP Class UID (0008,001B) of the instance sent under the ~~r~~**R**elated ~~g~~**G**eneral SOP Class. In some cases, e.g., when all intermediate storage applications are **Storage** Level 2 SCPs, this may allow an ultimate receiver of the instance to recast it as an instance of the specialized SOP Class IOD. However, this transformation is not guaranteed.

Change PS3.4 Section B.4.3.2

B.4.3.2 Conformance Statement for an SCP

The following issues shall be documented in the Conformance Statement of any implementation claiming conformance to the Storage Service Class as an SCP:

- The ~~l~~**L**evel of ~~**conformance**~~**Storage Support**, as defined by Section B.4.1, shall be stated.
- The ~~l~~**L**evel of Digital Signature ~~**s**~~**S**upport, as defined by Section B.4.1, shall be stated.
- The optional ~~**elements**~~**Attributes** that will be discarded (if any) shall be listed for each IOD supported.
- The mechanisms by which additional SOP Classes are dynamically supported, as defined by Section B.4.1.2, shall be stated.
- The Conformance Statement shall document the policies concerning the Attribute Lossy Image Compression (0028,2110).
- The behavior of the SCP in the case of a successful C-STORE operation shall be described. This includes the following:
  - the access method for a stored SOP Instance
  - the duration of the storage
- The meaning of each case of an unsuccessful C-STORE response status shall be described, as well as appropriate recovery action.
- The meaning of each case of a warning C-STORE response status shall be described, as well as appropriate action.
- If the SCP performs coercion on any Attributes, this shall be stated, and the conditions under which it may occur shall be described.

Change PS3.4 Section B.5.1.11 and B.5.1.12

B.5.1.11 Ophthalmic Axial Measurements Storage SOP Class

Ophthalmic axial measurements devices are used in the preoperative assessment of every cataract surgery patient. Ophthalmic axial measurements SOP Classes support ophthalmic axial measurements devices.

For a device that is both a**n** SCU and a**n** SCP of the Ophthalmic Axial Measurements Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for Ophthalmic Axial Measurements Storage SOP Classes:

- A**n** SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

B.5.1.12 IOL Calculation Storage SOP Class

IOL (intraocular lens) calculation is used in the preoperative assessment of every cataract surgery patient. IOL Calculation SOP Classes support IOL calculation software, which may be located either on ophthalmic axial measurement devices or on a separate computer.

For a device that is both a**n** SCU and a**n** SCP of the IOL Calculation Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for IOL Calculation Storage SOP Classes:

- A**n** SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

Change PS3.4 Section B.5.1.14

B.5.1.14 Ophthalmic Thickness Map Storage SOP Class

The Ophthalmic Thickness Map SOP Class encodes a topographic representation of the thickness/height measurements of the posterior eye.

For a device that is both a**n** SCU and a**n** SCP of the Ophthalmic Thickness Map Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for Ophthalmic Thickness Map Storage SOP Classes:

- A**n** SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

Change PS3.4 Section B.5.1.17

B.5.1.17 Corneal Topography Map Storage SOP Class

The Corneal Topography Map SOP Class encodes a topographic representation of the curvature and/or elevation measurements of corneal anterior and posterior surfaces (e.g., maps that display corneal curvatures, corneal elevations, and corneal power, etc.).

For a device that is both a**n** SCU and a**n** SCP of the Corneal Topography Map Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for Corneal Topography Map Storage SOP Classes:

- A**n** SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

Change PS3.4 Section B.5.1.21 to B.5.1.23

B.5.1.21 CT and XA Performed Procedure Protocol Storage SOP Classes

The CT and XA Performed Procedure Protocol Storage SOP Classes encode the acquisition, reconstruction and storage protocol parameter values used during a specific performed procedure, and related details.

For a device that is both a**n** SCU and a**n** SCP of the CT or XA Performed Procedure Protocol Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for CT and XA Performed Procedure Protocol Storage SOP Classes:

- An SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

B.5.1.22 Raw Data Storage SOP Class

For a device that is both a**n** SCU and a**n** SCP of the Raw Data Storage SOP Class, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for the Raw Data Storage SOP Class:

- An SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

Note

This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

B.5.1.23 Enhanced Multi-Frame Image SOP Classes

An SCP of any of the Enhanced Multi-Frame Image SOP Classes that makes SOP Instances available through the Enhanced Multi-Frame Image Conversion Extended Negotiation of the Query/Retrieve Service Class (see Section C.3.5 ~~**"New Instance Creation for Enhanced Multi-Frame Image Conversion"**~~) shall ~~**provide**~~**support Storage** Level 2 (Full) ~~**Storage SCP Conformance**~~.

Note

Effective use of the Image Conversion option requires the storage of Type 3 Attributes.

Change PS3.4 Section J.3.3.1.2

J.3.3.1.2 Service Class Provider Behavior

If the SCP determines that it has successfully completed storage commitment for all the SOP Instances referenced by a Storage Commitment Request, the SCP shall issue an N-EVENT-REPORT with the Event Type ID set to 1 (**S**~~**s**~~torage **C**~~**c**~~ommitment **R**~~**r**~~equest **S**~~**s**~~uccessful). This event shall include references to the successfully stored SOP Instances. The SCP shall store the referenced SOP Instances in accordance with **Storage** Level 2 **(Full)** as defined in the Storage Service Class (i.e., **shall store** all Attributes, including Private Attributes). The Storage Service Class is defined in PS3.4. After the N-EVENT-REPORT has been sent, the Transaction UID is no longer active and shall not be reused for other transactions.

If it is determined that storage commitment could not be achieved for one or more referenced SOP Instances, the SCP shall issue an N-EVENT-REPORT with the Event Type ID set to 2 (**S**~~**s**~~torage **C**~~**c**~~ommitment **R**~~**r**~~equest **C**~~**c**~~omplete - **F**~~**f**~~ailure **E**~~**e**~~xists) conveying that the SCP does not commit to store all SOP Instances. This event shall include references to the failed SOP Instances together with references to those SOP Instances that have been successfully stored. For each failed SOP Instance the reason for failure shall be described by the Failure Reason Attribute. After the N-EVENT-REPORT has been sent, the Transaction UID is no longer active and shall not be reused for other transactions.

The complete set of SOP Instances referenced by the Referenced SOP Sequence (0008,1199) Attribute, in the initiating N-ACTION, shall be present in both Event Types either in the Referenced SOP Sequence (0008,1199) or in the Failed SOP Sequence (0008,1198).

The N-EVENT-REPORT shall include the same Transaction UID (0008,1195) Attribute **V**~~**v**~~alue as contained in the initiating N-ACTION.

An SCP shall be capable of issuing the N-EVENT-REPORT on a different association than the one on which the N-ACTION operation was performed.

Note

1. The SCP may attempt to issue the N-EVENT-REPORT on the same Association, but this operation may fail because the SCU is free to release at any time the Association on which it sent the N-ACTION-Request. As DICOM defaults the association requestor to the SCU role, the SCP (i.e., the association requester) negotiates an SCP role using the SCU/SCP Role Selection Negotiation (see PS3.7).

2. When responding on a different Association, the SCP must use the same AE Title as it used on the original Association, because the DICOM Standard defines a Service between two peer applications, each identified by an AE Title. Thus the SCP should be consistently identified for all Associations in the particular instance of the Storage Commitment Service.

3. The optional Attributes Retrieve AE Title (0008,0054), Storage Media File-Set ID (0088,0130) and Storage Media File-Set UID (0088,0140) within the Event Information allows an SCP to indicate the location where it has stored SOP Instances for safekeeping. For example, the SCP could relay SOP Instances to a third Application Entity using this Service Class, in which case it can use the Retrieve AE Title Attribute to indicate the real location of the data. Another example is if the SCP stores data on media, it can indicate this using the Storage Media File-Set ID and UID Attributes.

Change PS3.4 Section O.2.2

O.2.2 Behavior of an SCP

An SCP intending to display or otherwise render a Structured Report shall convey its full meaning in an unambiguous manner, except as described in Section O.2.2.2.

Note

"Full meaning" includes not just the Content Tree (i.e., the Items of the Content Sequence), but all Attributes of the Data Set that are necessary to properly interpret the Structured Report. This includes those Attributes that set the initial Observation Context for the Content Tree, i.e., the patient, procedure, and observer identifiers, and the Completion status and Verification status of the Structured Report.

An Icon Image in an IMAGE reference has no meaning, and is not required to be rendered.

For a device, that is both an SCU and an SCP of these Storage SOP Classes, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for Structured Reporting Storage SOP Classes:

- an SCP of this SOP Class shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

Note

This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition associated with the SOP Class will be stored and may be accessed.

Change PS3.4 Section Z.1.3

Z.1.3 Attributes Not Included

The Attributes that shall not be included in the top level of the Data set sent by an SCP of this Service are as defined in Table Z.1-1**.**

Table Z.1-1. Attributes Not to Be Included in Instances Sent

Attribute Name	Tag
Pixel Data	(7FE0,0010)
Float Pixel Data	(7FE0,0008)
Double Float Pixel Data	(7FE0,0009)
Pixel Data Provider URL	(0028,7FE0)
Spectroscopy Data	(5600,0020)
Overlay Data	(60xx,3000)
Curve Data	(50xx,3000)
Audio Sample Data	(50xx,200C)
Encapsulated Document	(0042,0011)

Note

This implies that the pixel data within Icon Image Sequence (0088,0200) Items will be preserved.

The Waveform Data (5400,1010) Attribute shall not be included within the Waveform Sequence (5400,0100).

Private Attributes may be preserved or discarded by a Storage SCP, as defined in Section B.4.1. A Storage SCP that claims conformance to **Storage** Level 2 (Full) support of the Storage Service Class may choose to return Private Attributes in the~~2~~ Retrieve Without Bulk Data Service or not. Whether or not particular Private Attributes are returned shall be documented in the Conformance Statement.

Note

The decision as to whether or not to return a particular Private Attribute may be dependent on its size.

Change PS3.4 Section AA

AA Ophthalmic Refractive Measurements Storage SOP Classes (Normative)

AA.1 Scope

Refractive instruments are the most commonly used instruments in eye care. At present many of them have the capability for digital output, but their data is most often addressed by manual input into a paper or electronic record. Lensometry, Autorefraction, Keratometry, Subjective Refraction, and Visual Acuity Measurements Storage SOP Classes support devices such as lensometers, auto-refractors, keratometers, autophoropters, and autoprojectors.

AA.2 Behavior of an SCP

For a device that is both a**n** SCU and a**n** SCP of the aforementioned Storage SOP Classes, in addition to the behavior for the Storage Service Class specified in Section B.2.2, the following additional requirements are specified for ~~**Structured Reporting**~~ **Ophthalmic Refractive Measurements** Storage SOP Classes:

- A**n** SCP of these SOP Class**es** shall support **Storage** Level 2 **(Full)**~~**Conformance**~~ as defined in Section B.4.1.

  Note

  This requirement means that all Type 1, Type 2, and Type 3 Attributes defined in the Information Object Definition and Private Attributes associated with the SOP Class will be stored and may be accessed.

Change PS3.4 Section BB

BB.1.4 Service Definition

...

An SCP of this SOP Class shall support **Storage** Level**-** 2 **(Full)** ~~**conformance**~~ as defined in Section B.4.1.

...

BB.4.1.2 Service Class Provider Behavior

An SCP of this SOP Class shall support **Storage** Level**-** 2 **(Full)** ~~**conformance**~~ as defined in Section B.4.1.

Change PS3.4 Section HH

HH.1.4 Service Definition

...

An SCP of this SOP Class shall support **Storage** Level**-** 2 **(Full)** ~~**conformance**~~ as defined in Section B.4.1.

...

Change PS3.4 Section II

II.1.4 Service Definition

...

An SCP of this SOP Class shall support **Storage** Level**-** 2 **(Full)** ~~**conformance**~~ as defined in Section B.4.1.

...

Change PS3.15 Section A.1.1

A.1.1 SOP Instance Status

An implementation that conforms to the Online Electronic Storage Secure Use Profile shall conform to the following rules regarding the use of the SOP Instance Status (0100,0410) Attribute with SOP Instances that are transferred using the Storage Service Class:

a. An Application Entity that supports the Online Electronic Storage Secure Use Profile and that creates a SOP Instance intended for diagnostic use in Online Electronic Storage shall:

   1. Set the SOP Instance Status to Original (OR).

   2. Include the following Attributes:

      i. the SOP Class UID (0008,0016) and SOP Instance UID (0008,0018)

      ii. the Instance Creation Date (0008,0012) and Instance Creation Time (0008,0013), if known

      iii. the SOP Instance Status

      iv. the SOP Authorization Date and Time (0100,0420)

      v. the SOP Authorization Comment, if any (0100,0424)

      vi. the SOP Equipment Certification Number (0100,0426)

      vii. the Study Instance UID (0020,000D) and Series Instance UID (0020,000E)

      viii. any Attributes of the General Equipment Module that are known

      ix. any overlay data present

      x. any image data present

b. The Application Entity that holds a SOP Instance where the SOP Instance Status is Original (OR) may change the SOP Instance Status to Authorized Original(AO) as long as the following rules are followed:

   1. The Application Entity shall determine that an authorized entity has certified the SOP Instance as useable for diagnostic purposes.

   2. The Application Entity shall change the SOP Instance Status to Authorized Original (AO). The SOP Instance UID shall not change.

   3. The Application Entity shall set the SOP Authorization Date and Time (0100,0420) and Authorization Equipment Certification Number (0100,0426) Attributes to appropriate **V**~~v~~alues. It may also add an appropriate SOP Authorization Comment (0100,0424) Attribute.

c. There shall only be one Application Entity that holds a SOP Instance where the SOP Instance Status is Original (OR) or Authorized Original (AO). The Application Entity that holds such a SOP instance shall not delete it.

d. When communicating with an Application Entity that supports Online Electronic Storage the Application Entity that holds a SOP Instance where the SOP Instance Status is Original(OR) or Authorized Original(AO) may transfer that SOP Instance to another Application Entity that also conforms to the Online Electronic Storage Secure Use Profile as long as the following rules are followed:

   1. The transfer shall occur on a Secure Transport Connection.

   2. The two Application Entities involved in the transfer shall authenticate each other and shall confirm via the authentication that the other supports the Online Electronic Storage Secure Use Profile.

   3. The receiving Application Entity shall reject the storage request and discard the received SOP Instance if the data integrity checks done after the transfer indicate that the SOP Instance was altered during transmission.

   4. The transfer shall be confirmed using the push model of the Storage Commitment Service Class. Until it has completed this confirmation, the receiving Application Entity shall not forward the SOP Instance or Authorized Copies of the SOP instance to any other Application Entity.

   5. Once confirmed that the receiving Application Entity has successfully committed the SOP Instance to storage, the sending Application Entity shall do one of the following to its local copy of the SOP Instance:

      i. delete the SOP Instance,

      ii. change the SOP Instance Status to Not Specified (NS),

      iii. if the SOP Instance Status was Authorized Original (AO), change the SOP Instance Status to Authorized Copy (AC).

e. When communicating with an Application Entity that supports Online Electronic Storage an Application Entity that holds a SOP Instance whose SOP Instance Status is Authorized Original (AO) or Authorized Copy (AC) may send an Authorized Copy of the SOP Instance to another Application Entity as long as the following rules are followed:

   1. The transfer shall occur on a Secure Transport Connection.

   2. The two Application Entities involved in the transfer shall authenticate each other, and shall confirm via the authentication that the other supports the Online Electronic Storage Secure Use Profile.

   3. The sending Application Entity shall set the SOP Instance Status to either Not Specified (NS) or Authorized Copy (AC) in the copy sent. The SOP Instance UID shall not change.

   4. The receiving Application Entity shall reject the storage request and discard the copy if data integrity checks done after the transfer indicate that the SOP Instance was altered during transmission.

f. If communicating with a system that does not support the Online Electronic Storage Secure Use Profile, or if communication is not done over a Secure Transport Connection, then

   1. A sending Application Entity that conforms to this Security Profile shall either set the SOP Instance Status to Not Specified (NS), or leave out the SOP Instance Status and associated parameters of any SOP Instances that the sending Application Entity sends out over the unsecured Transport Connection or to systems that do not support the Online Electronic Storage Secure Use Profile.

   2. A receiving Application Entity that conforms to this Security Profile shall set the SOP Instance Status to Not Specified (NS) of any SOP Instance received over the unsecured Transport Connection or from systems that do not support the Online Electronic Storage Secure Use Profile.

g. The receiving Application Entity shall store SOP Instances in accordance with **Storage** Level 2 **(Full)** as defined in the Storage Service Class (i.e., all Attributes, including Private Attributes), as required by the Storage Commitment Storage Service Class, and shall not coerce any Attribute other than SOP Instance Status, SOP Authorization Date and Time, Authorization Equipment Certification Number, and SOP Authorization Comment.

h. Other than changes to the SOP Instance Status, SOP Authorization Date and Time, Authorization Equipment Certification Number, and SOP Authorization Comment Attributes, as outlined above, or changes to group length Attributes to accommodate the aforementioned changes, the Application Entity shall not change any Attribute **V**~~v~~alues.