

DICOM Correction Proposal

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Person Assigned	Clunie
Submitter Name	Jörg Riesmeier <dicom@jriesmeier.com>
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Correction Number	CP-2420
Log Summary:	Add missing Status Codes to DIMSE Services and further improve consistency
Name of Standard	PS3.7

Rationale for Correction:

It is proposed to make the Status Code “0211H” (Unrecognized operation), which “indicates that the operation is not one of those agreed between the DIMSE Service Users”, available to *all* DIMSE Services. This would allow e.g. a C-FIND SCP receiving a DIMSE message that is not of type “C-FIND” to report this as an error.

The same is proposed for the Status Code “0210H” (Duplicate invocation), which indicates “that the Message ID (0000,0110) specified is allocated to another notification or operation”, and the Status Code “0212H” (Mistyped argument), which “indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users”, which are currently available for all DIMSE Services apart from C-FIND.

It is also proposed to add the Status Code “0124H” (Refused: Not authorized), which “indicates that the peer DIMSE Service User was not authorized to invoke the operation”, to C-FIND.

Furthermore, there seems to be some confusion what “peer DIMSE Service User” and “Performing DIMSE Service User” actually mean, although the latter is clearly defined in Section 3.10. Also sometimes the prefix “peer” or “Performing” (or “Invoking”) is missing. It is proposed to correct the use of these terms.

It is also proposed to make the descriptions of the Status Codes more consistent between the various DIMSE Services (see below changes).

Editorial Changes:

- Currently, there is a mixture of “DIMSE service[s]” and “DIMSE Service[s]” (upper and lower case “S”) in PS3.4. It is proposed to consistently use “DIMSE Service[s]”, i.e. not only in the combinations “DIMSE Service User”, “DIMSE Service Provider” and “DIMSE Service Group”.
- “Invoking DIMSE Service User” is defined in PS3.4 Section 3.10 and should, therefore, be written with upper case “I” throughout the Standard text.
- “Performing DIMSE Service User” is defined in PS3.4 Section 3.10 and should, therefore, be written with upper case “P” throughout the Standard text.
- Make “C-FIND cancel request primitive” vs. “C-FIND cancel indication” vs. “C-FIND Cancel indication primitive” vs. “...” consistent, e.g. by using C-CANCEL-FIND request? Same for “C-FIND Cancel Request and Cancel Indication” and the like
- Make “C-MOVE cancel request primitive” vs. “C-MOVE cancel indication” vs. “C-MOVE Cancel indication primitive” vs. “...” consistent, e.g. by using C-CANCEL-MOVE request? Same for “C-MOVE Cancel Request and Cancel Indication” and the like
- Make “C-GET cancel request primitive” vs. “C-GET cancel indication” vs. “C-GET Cancel indication primitive” vs. “...” consistent, e.g. by using C-CANCEL-GET request? Same for “C-GET Cancel Request and Cancel Indication” and the like.

Correction Wording:

Change PS3.7 Section 9.1.1.1.9 (for C-STORE)

9.1.1.1.9 Status

This parameter contains the error or success notification for the operation. It shall be included by the **peerPerforming** DIMSE Service User in the response/confirmation. The following types of status may occur in a response/confirmation (see also -Annex C):

- a. Refused: Out of resources (Status value is Service Class specific) - This indicates that the **peerPerforming** DIMSE Service User was unable to store the composite SOP Instance because it was out of resources.

- b. Refused: SOP Class not supported (0122H) - This indicates that the **peerPerforming** DIMSE Service User was unable to store the composite SOP Instance because the SOP Class is not supported.
- c. Error: Cannot understand (Status value is Service Class specific) - This indicates that the **peerPerforming** DIMSE Service User was unable to store the composite SOP Instance because it **C**annot understand certain Data Elements.
- d. Error: Data Set does not match SOP Class (Status value is Service Class specific) - This indicates that the **peerPerforming** DIMSE Service User was unable to store the composite SOP Instance because the Data Set does not match the SOP Class.
- e. Warning (Status value is Service Class specific) - This indicates that the **peerPerforming** DIMSE Service User was able to store the composite SOP Instance, but detected a probable error.
- f. Success (0000H) - This indicates that the composite SOP Instance was successfully stored.
- g. Duplicate invocation (0210H) - **This i**ndicates that the Message ID (0000,0110) specified is allocated to another notification or operation.
- h. Invalid SOP Instance (0117H) - **This i**ndicates that the SOP Instance UID specified implied a violation of the UID construction rules.
- i. Mistyped argument (0212H) - **This i**ndicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- j. Unrecognized operation (0211H) - **This i**ndicates that the operation is not one of those agreed between the DIMSE Service Users.
- k. Refused: Not authorized (0124H) - **This i**ndicates that the peer DIMSE Service User was not authorized to store the composite SOP Instance.

<i>Change PS3.7 Section 9.1.2.1.6 (for C-FIND)</i>

9.1.2.1.6 Status

Indicates the status of the response. It may have any of the following values (see also -Annex C):

- a. Success (0000H) - This indicates that processing of the matches is complete. It shall not contain a matching Identifier.
- b. Pending (Status value is Service Class specific) - This indicates that processing of the matches is initiated or continuing. It shall contain a matching Identifier.
- c. Refused: Out of resources (Status value is Service Class specific) - **This i**ndicates that processing of the C-FIND **operation** has been terminated because it was out of resources. This may be the initial response to the C-FIND **request**, or may be sent after a number of pending C-FIND responses. This response shall not contain a matching Identifier.
- d. Refused: SOP Class not supported (0122H) - **This i**ndicates that processing of the C-FIND **operation** has been terminated because the SOP Class was not supported. This response shall not contain a matching Identifier.
- e. Cancel (FE00H) - **This i**ndicates that the processing of the C-FIND **operation** has been terminated due to a C-FIND Cancel indication primitive. The response shall not contain an Identifier.
- f. Failed (Status value is Service Class specific) - **This i**ndicates that the C-FIND operation failed at the **p**erforming DIMSE Service User.
- g. Warning (Status value is Service Class specific) - **This i**ndicates that the **p**erforming DIMSE Service User has terminated the C-FIND operation, and the set of returned matching Identifiers may not be complete.
- h. Refused: Not authorized (0124H) - This indicates that the peer DIMSE Service User was not authorized to invoke the C-FIND operation.**
- i. Duplicate invocation (0210H) - This indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.**
- j. Unrecognized operation (0211H) - This indicates that the operation is not one of those agreed between the DIMSE Service Users.**

- k. **Mistyped argument (0212H)** - **This indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.**

Change PS3.7 Section 9.1.3.1.6 (for C-GET)

9.1.3.1.6 Status

Indicates the status of the response. It may have any of the following values (see also -Annex C):

- a. Success (0000H) - This indicates that processing of the matches and all sub-operations are complete.
- b. Pending (Status value is Service Class specific) - This indicates that processing of the matches and sub-operations is initiated or continuing.
- c. Refused: Out of resources (Status value is Service Class specific) - **This indicates** that processing of the C-GET **operation** has been terminated because it was out of resources. This may be the initial response to the C-GET **request** or may be sent after a number of Pending statuses.
- d. Refused: SOP Class not supported (0122H) - **This indicates** that processing of the C-GET **operation** has been terminated because the SOP Class was not supported.
- e. Cancel (FE00H) - **This indicates** that processing of the C-GET **operation** has been terminated due to a C-GET Cancel indication primitive.
- f. Failed (Status value is Service Class specific) - **This indicates** that the C-GET operation failed at the **performing** DIMSE Service User.
- g. Duplicate invocation (0210H) - **This indicates** that the Message ID (0000,0110) specified is allocated to another notification or operation.
- h. Mistyped argument (0212H) - **This indicates** that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- i. Unrecognized operation (0211H) - **This indicates** that the operation is not one of those agreed between the DIMSE Service Users.
- j. Refused: Not authorized (0124H) - **This indicates** that the peer DIMSE Service User was not authorized to invoke the C-**FINDGET** operation.
- k. Warning (Status value is Service Class specific) - This indicates that the peer DIMSE Service User was able to perform sub-operations but detected a probable error with one or more of them.

Change PS3.7 Section 9.1.4.1.7 (for C-MOVE)

9.1.4.1.7 Status

Indicates the status of the response. It may have any of the following values (see also -Annex C):

- a. Success (0000H) - This indicates that processing of the matches and all sub-operations are complete.
- b. Pending (Status value is Service Class specific) - This indicates that processing of the matches and sub-operations is initiated or continuing.
- c. Refused: Out of resources (Status value is Service Class specific) - **This indicates** that processing of the C-MOVE **operation** has been terminated because it was out of resources. This may be the initial response to the C-MOVE **request** or may be sent after a number of Pending statuses.
- d. Refused: SOP Class not supported (0122H) - **This indicates** that processing of the C-MOVE **operation** has been terminated because the SOP Class was not supported.
- e. Refused: Move Destination unknown (Status value is Service Class specific) - **This indicates** that processing of the C-MOVE **operation** has been terminated because the Move **destination** was unknown.
- f. Cancel (FE00H) - **This indicates** that processing of the C-MOVE **operation** has been terminated due to a C-MOVE Cancel indication primitive.

- g. Failed (Status value is Service Class specific) - **This i**ndicates that the C-MOVE operation failed at the **p**erforming DIMSE Service User.
- h. Duplicate invocation (0210H) - **This i**ndicates that the Message ID (0000,0110) specified is allocated to another notification or operation.
- i. Mistyped argument (0212H) - **This i**ndicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- j. Unrecognized operation (0211H) - **This i**ndicates that the operation is not one of those agreed between the DIMSE Service Users.
- k. Refused: Not authorized (0124H) - **This i**ndicates that the peer DIMSE Service User was not authorized to invoke the C-MOVE operation.
- l. Warning (Status value is Service Class specific) - This indicates that the peer DIMSE Service User was able to perform sub-operations but detected a probable error with one or more of them.

Change PS3.7 Section 9.1.5.1.4 (for C-ECHO)

9.1.5.1.4 Status

Indicates the status of the response. It may have any of the following values (see also -Annex C):

- a. Success (0000H) - **This indicates a successful operation.**
- b. Refused: SOP Class not supported (0122H) - **This i**ndicates that a different SOP Class than the Verification SOP Class was specified, which was not supported.
- c. Duplicate invocation (0210H) - **This i**ndicates that the Message ID (0000,0110) specified is allocated to another notification or operation.
- d. Mistyped argument (0212H) - **This i**ndicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- e. Unrecognized operation (0211H) - **This i**ndicates that a different SOP Class than the Verification SOP Class was specified, which does not recognize a C-ECHO operation.

Change PS3.7 Section 10.1.1.1.8 (for N-EVENT-REPORT)

10.1.1.1.8 Status

This parameter contains the error or success notification for the operation. It shall be included by the **p**erforming DIMSE Service User in any response/confirmation. The following types of status may occur (see also -Annex C):

- Class-Instance conflict (0119H) - **This indicates that** the specified SOP Instance is not a member of the specified SOP **e**Class.
- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.
- Invalid argument value (0115H) - **This indicates that** the event information value specified was out of range or otherwise inappropriate.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- No such argument (0114H) - **This indicates that** the event information specified was not recognized.
- No such Event Type (0113H) - **This indicates that** the **e**Event **t**ype specified was not recognized.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.
- No such SOP Instance (0112H) - **This indicates that** the SOP Instance was not recognized.

- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful notification.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.

<i>Change PS3.7 Section 10.1.2.1.9 (for N-GET)</i>

10.1.2.1.9 Status

This parameter contains the error or success notification for the operation. It shall be included by the **pP**erforming DIMSE Service User in any response/confirmation. The following types of status may occur (see also -Annex C):

- Attribute list error (0107H) - **This indicates that** one or more Attribute Values were not read because the specified Attribute was not recognized. The Attribute Values that could be read are returned.
- Class-Instance conflict (0119H) - **This indicates that** the specified SOP Instance is not a member of the specified SOP Class.
- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.
- No such SOP Instance (0112H) - **This indicates that** the SOP Instance was not recognized.
- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful operation.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.
- Refused: Not authorized (0124H) - **This indicates that** the **peer** DIMSE Service User was not authorized to invoke the operation.
- Warning (Status value is Service Class specific) - **This indicates that** not all optional **aA**tributes were returned by **the Performing** DIMSE Service User.
- Failed (Status value is Service Class specific) - **This indicates that the Performing** DIMSE Service User failed to complete the operation.

<i>Change PS3.7 Section 10.1.3.1.9 (for N-SET)</i>

10.1.3.1.9 Status

This parameter contains the error or success notification for the operation. It shall be included by the **pP**erforming DIMSE Service User in any response/confirmation. The following types of status may occur (see also -Annex C):

- Class-Instance conflict (0119H) - **This indicates that** the specified SOP Instance is not a member of the specified SOP Class.
- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.

- Invalid Attribute Value (0106H) - **This indicates that** the Attribute Value specified was out of range or otherwise inappropriate.
- Attribute Value out of range (0116H) - **This indicates that** the Attribute Value specified was out of range or otherwise inappropriate. The Attribute Values that could be modified were modified.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Missing Attribute Value (0121H) - **This indicates that** a required Attribute Value was not supplied.
- No such Attribute (0105H) - **This indicates that** the Tag for the specified Attribute was not recognized.
- Attribute list error (0107H) - **This indicates that** one or more Attribute Values were not modified because the specified Attributes were not recognized. The Attribute Values that could be modified were modified.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.
- No such SOP Instance (0112H) - **This indicates that** the SOP Instance was not recognized.
- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful operation.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.
- Refused: Not authorized (0124H) - **This indicates that** the **peer** DIMSE Service User was not authorized to invoke the operation.
- Failed (Status value is Service Class specific) - **This indicates that** the operation was not performed as certain conditions for operation were not met.
- Warning (Status value is Service Class specific) - **This indicates that** the operation was performed partially or with modified conditions.

<i>Change PS3.7 Section 10.1.4.1.10 (for N-ACTION)</i>

10.1.4.1.10 Status

This parameter contains the error or success notification for the operation. It shall be included by the **p**Performing DIMSE Service User in any response/confirmation. The following **types** of status may occur (see also -Annex C):

- Class-Instance conflict (0119H) - **This indicates that** the specified SOP Instance is not a member of the specified SOP Class.
- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.
- Invalid argument value (0115H) - **This indicates that** the action information value specified was out of range or otherwise inappropriate.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- No such Action (0123H) - **This indicates that** the **a**Action **t**Type specified was not supported.
- No such argument (0114H) - **This indicates that** the action information specified was not supported.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.

- No such SOP Instance (0112H) - **This indicates that** the SOP Instance was not recognized.
- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful operation.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.
- Refused: Not authorized (0124H) - **This indicates that** the **peer** DIMSE Service User was not authorized to invoke the operation.
- Failed (Status value is Service Class specific) - **This indicates that** the operation was not performed as certain conditions for operation were not met.
- Warning (Status value is Service Class specific) - **This indicates that** the operation was performed partially or with modified conditions.

<i>Change PS3.7 Section 10.1.5.1.6 (for N-CREATE)</i>

10.1.5.1.6 Status

This parameter contains the error or success notification for the operation. It shall be included by the **p**Performing DIMSE Service User in any response/confirmation. The following **types** of status may occur (see also -Annex C):

- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.
- Duplicate SOP Instance (0111H) - **This indicates that** the new managed SOP Instance Value supplied by the **i**nvolving DIMSE Service User was already registered for a managed SOP Instance of the specified SOP Class.
- Invalid Attribute Value (0106H) - **This indicates that** the Attribute Value specified was out of range or otherwise inappropriate.
- Attribute Value out of range (0116H) - **This indicates that** the Attribute Value specified was out of range or otherwise inappropriate. The SCP will apply a default value or will not include the attribute in the created **i**nstance.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Missing Attribute (0120H) - **This indicates that** a required Attribute was not supplied.
- Missing Attribute Value (0121H) - **This indicates that** a required Attribute Value was not supplied and a default value was not available.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- No such Attribute (0105H) - **This indicates that** the Tag for the specified Attribute was not recognized.
- Attribute list error (0107H) - **This indicates that** one or more specified Attributes were not recognized and not included in the created **i**nstance.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.
- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful operation.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.
- Refused: Not authorized (0124H) - **This indicates that** the **peer** DIMSE Service User was not authorized to invoke the operation.

- Failed (Status value is Service Class specific) - **This indicates that** no Instance was created by the **Performing** DIMSE Service User.
- Warning (Status value is Service Class specific) - **This indicates that** the **Performing** DIMSE Service User created an Instance but did not perform all specified operations.

Change PS3.7 Section 10.1.6.1.7 (for N-DELETE)

10.1.6.1.7 Status

This parameter contains the error or success notification for the operation. It shall be included by the **Performing** DIMSE Service User in any response/confirmation. The following types of status may occur (see also -Annex C):

- Class-Instance conflict (0119H) - **This indicates that** the specified SOP Instance is not a member of the specified SOP Class.
- Duplicate invocation (0210H) - **This indicates that** the Message ID (0000,0110) specified is allocated to another notification or operation.
- Invalid SOP Instance (0117H) - **This indicates that** the SOP Instance UID specified implied a violation of the UID construction rules.
- Mistyped argument (0212H) - **This indicates that** one of the parameters supplied has not been agreed for use on the Association between the DIMSE Service Users.
- No such SOP Class (0118H) - **This indicates that** the SOP Class was not recognized.
- No such SOP Instance (0112H) - **This indicates that** the SOP Instance was not recognized.
- Processing Failure (0110H) - **This indicates that** a general failure in processing the operation was encountered.
- Resource Limitation (0213H) - **This indicates that** the operation was not performed due to resource limitation.
- Success (0000H) - **This indicates a** successful operation.
- Unrecognized operation (0211H) - **This indicates that** the operation is not one of those agreed between the DIMSE Service Users.
- Refused: Not authorized (0124H) - **This indicates that** the **peer** DIMSE Service User was not authorized to invoke the operation.

Change PS3.7 Section C.5.18

C.5.18 No such Event Type

Status Field	Tag	VR	VM	Description of Field
Affected SOP Class UID	(0000,0002)	UI	1	This optional field contains the SOP Class UID for which the Event Type does not exist.
Status	(0000,0900)	US	1	Confirmation status of the operation. The value of this required field shall be set to 0113H.
Event Type ID	(0000,1002)	US	1	This optional field contains the ID of the Event Type that does not exist.

Change PS3.7 Section C.5.24

C.5.24 No such Action Type

Status Field	Tag	VR	VM	Description of Field
Affected SOP Class UID	(0000,0002)	UI	1	This optional field contains the SOP Class UID for which the a Action #Type does not exist.
Status	(0000,0900)	US	1	Confirmation status of the operation. The value of this required field shall be set to 0123H.
Action Type ID	(0000,1008)	US	1	This optional field contains the ID of the Action Type that does not exist.