DICOM Correction Proposal

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<td>Date of Last Update</td>
<td>2012/08/27</td>
</tr>
<tr>
<td>Person Assigned</td>
<td>Bas Revet (<a href="mailto:bas.revet@philips.com">bas.revet@philips.com</a>)</td>
</tr>
<tr>
<td>Submitter Name</td>
<td>2012/02/02</td>
</tr>
<tr>
<td>Submission Date</td>
<td>Gunter Zeilinger <a href="mailto:gunterze@gmail.com">gunterze@gmail.com</a></td>
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</table>

Correction Number CP- 1222

Log Summary: Amend DIMSE Service status codes

Name of Standard PS 3.7 2011

Rationale for Correction:

There are several gaps and inconsistencies in the specification of possible status codes for the different DIMSE Services:

Some types of failure status only specified for N-DIMSE Service:

- duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation.
- invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules.
- mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.
- unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users.

applies also for C-DIMSE Services.

The failure status type “Refused: Not Authorized” is defined in Annex C, but not referenced as possible status type of any DIMSE Service.

The specification of the Attribute List parameter of the N-SET Service and of the N-CREATE Service only mention that it may be included in the success response/confirmation, but some of the specified failure status types for that Services implies, that the Attribute List may be also included in the error response to encode the missing or invalid Attribute Values conveyed in the Modification List of the N-SET-RQ or the Attribute List of the N-CREATE-RQ.

The usage specification of the Print Management Service (Part 4, Annex H.2.4) lists the Warning status “Attribute Value out of Range” and “Attribute List Error” as possible status types for N-CREATE and N-SET operations, which are missing in the list of possible status types in the N-CREATE and N-SET Service specification.

The list of possible N-CREATE status types contains

- class-instance conflict: the specified SOP Instance is not a member of the specified SOP Class.
- no such SOP Instance: the SOP Instance was not recognized.

which does not sound sensible for N-CREATE.

The specification of failure status type “Class-instance conflict” declares Requested SOP Class UID (0000,0003) and Requested SOP Instance UID (0000,1001) as optional fields for the error response, which contradicts the service parameter specifications, which only declare Affected SOP Class UID (0000,0002) and Affected SOP Instance UID (0000,1000) as optional fields of any DIMSE response.

In Annex C, the failure status type referred as “No Such SOP instance” is headed with “No Such object
9.1.1.1 C-STORE parameters

9.1.1.1.9 Status
This parameter contains the error or success notification for the operation. It shall be included by the performing DIMSE-service-user in the response/confirmation. The following types of status may occur in a response/confirmation:

a) Refused: Out of Resources—This indicates that the peer DIMSE-service-user was unable to store the composite SOP Instance because it was out of resources.
b) Refused: SOP Class Not Supported—This indicates that the peer DIMSE-service-user was unable to store the composite SOP Instance because the SOP Class is not supported,
c) Error: Cannot Understand—This indicates that the peer DIMSE-service-user was unable to store the composite SOP Instance because it cannot understand certain Data Elements.
d) Error: Data Set does not match SOP Class—This indicates that the peer DIMSE-service-user was unable to store the composite SOP Instance because the Data Set does not match the SOP Class.
e) Warning—This indicates that the peer DIMSE-service-user was able to store the composite SOP Instance, but detected a probable error.
f) Success—This indicates that the composite SOP Instance was successfully stored.
g) Refused: Duplicate Invocation—Indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.
h) Refused: Invalid SOP Instance—Indicates that the SOP Instance UID specified implied a violation of the UID construction rules.
i) Refused: Mistyped argument—Indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.
j) Refused: Unrecognized Operation—Indicates that the operation is not one of those agreed between the DIMSE-service-users.
k) Refused: Not Authorized—Indicates that the peer DIMSE-service-user was not authorized to store the composite SOP Instance.

9.1.2.1 C-FIND Parameters

9.1.2.1.6 Status
Indicates the status of the response. It may have any of the following values:

a) Success—This indicates that processing of the matches is complete. It shall not contain a matching Identifier.
b) Pending—This indicates that processing of the matches is initiated or continuing. It shall contain a matching Identifier.
c) Refused: Out of Resources—Indicates that processing of the C-FIND has been terminated because it was out of resources. This may be the initial response to the C-FIND, 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 — Indicates that processing of the C-FIND has been terminated because the SOP Class was not supported. This response shall not contain a matching Identifier.
e) Cancel—Indicates that the processing of the C-FIND has been terminated due to a C-FIND Cancel indication primitive. The response shall not contain an Identifier.
f) Failed—Indicates that the C-FIND operation failed at the performing DIMSE-service-user.

g) **Refused: Duplicate Invocation**—Indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.

h) **Refused: Mistyped argument**—Indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

i) **Refused: Unrecognized Operation**—Indicates that the operation is not one of those agreed between the DIMSE-service-users.

j) **Refused: Not Authorized**—Indicates that the peer DIMSE-service-user was not authorized to invoke the C-FIND operation

9.1.3.1 **C-GET parameters**

9.1.3.1.7 **Status**

Indicates the status of the response. It may have any of the following values:

a) Success—This indicates that processing of the matches and all sub-operations are complete.

b) Pending—This indicates that processing of the matches and sub-operations is initiated or continuing.

c) Refused: Out of Resources—Indicates that processing of the C-GET has been terminated because it was out of resources. This may be the initial response to the C-GET or may be sent after a number of Pending statuses.

d) Refused: SOP Class Not Supported—Indicates that processing of the C-GET has been terminated because the SOP Class was not supported.

e) Cancel—Indicates that processing of the C-GET has been terminated due to a C-GET Cancel indication primitive.

f) Failed—Indicates that the C-GET operation failed at the performing DIMSE-service-user.

g) **Refused: Duplicate Invocation**—Indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.

h) **Refused: Mistyped argument**—Indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

i) **Refused: Unrecognized Operation**—Indicates that the operation is not one of those agreed between the DIMSE-service-users.

j) **Refused: Not Authorized**—Indicates that the peer DIMSE-service-user was not authorized to invoke the C-GET operation

9.1.4.1 **C-MOVE parameters**

9.1.4.1.7 **Status**

Indicates the status of the response. It may have any of the following values:

a) Success—This indicates that processing of the matches and all sub-operations are complete.

b) Pending—This indicates that processing of the matches and sub-operations is initiated or continuing.

c) Refused: Out of Resources—Indicates that processing of the C-MOVE has been terminated because it was out of resources. This may be the initial response to the C-MOVE or may be sent after a number of Pending statuses.

d) Refused: SOP Class Not Supported—Indicates that processing of the C-MOVE has been terminated because the SOP Class was not supported.
e) Refused: Move Destination Unknown—Indicates that processing of the C-MOVE has been terminated because the Move destination was unknown.

f) Cancel—Indicates that processing of the C-MOVE has been terminated due to a C-MOVE Cancel indication primitive.

g) Failed—Indicates that the C-MOVE operation failed at the performing DIMSE-service-user.

h) Refused: Duplicate Invocation—Indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.

i) Refused: Mistyped argument—Indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

j) Refused: Unrecognized Operation—Indicates that the operation is not one of those agreed between the DIMSE-service-users.

k) Refused: Not Authorized—Indicates that the peer DIMSE-service-user was not authorized to invoke the C-MOVE operation.

9.1.5.1 C-ECHO parameters

9.1.5.1.4 Status

Indicates the status of the response. It shall have a value of success. It may have any of the following values:

a) Success

b) Refused: SOP Class Not Supported—Indicates that a different SOP Class than the Verification SOP Class was specified, which was not supported.

c) Refused: Duplicate Invocation—Indicates that the Message ID (0000,0110) specified is allocated to another notification or operation.

d) Refused: Mistyped argument—Indicates that one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

e) Refused: Unrecognized Operation—Indicates that a different SOP Class than the Verification SOP Class was specified, which does not recognize a C-ECHO operation.

10.1.2.1 N-GET Parameters

10.1.2.1.9 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:

— attribute list error: 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: the specified SOP Instance is not a member of the specified SOP Class.

— duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation.

— invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules.

— mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

— no such SOP class: the SOP Class was not recognized.
— no such SOP Instance: the SOP Instance was not recognized.
— processing failure: a general failure in processing the operation was encountered.
— resource limitation: the operation was not performed due to resource limitation.
— success: successful operation.
— unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users.
— not authorized: the DIMSE-service-user was not authorized to invoke the operation

: 10.1.3.1 N-SET parameters :

: 10.1.3.1.6 Attribute list
This parameter contains the set of Attribute identifiers and values which were used by the performing DIMSE-service-user to replace the values of the Attributes specified, if. It may be included in the success response/confirmation.

: 10.1.3.1.9 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:
— class-instance conflict: the specified SOP Instance is not a member of the specified SOP Class.
— duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation.
— invalid Attribute Value: the Attribute Value specified was out of range or otherwise inappropriate. The Attribute Values that could be modified were modified.
— Attribute Value out of range: the Attribute Value specified was out of range or otherwise inappropriate. The Attribute Values that could be modified were modified.
— mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.
— invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules.
— missing Attribute Value: a required Attribute Value was not supplied.
— no such Attribute: the Tag for the specified Attribute was not recognized. The Attribute Values that could be modified were modified.
— Attribute list error: 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: the SOP Class was not recognized.
— no such SOP Instance: the SOP Instance was not recognized.
— processing failure: a general failure in processing the operation was encountered.
— resource limitation: the operation was not performed due to resource limitation.
— success: successful operation.
— unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users.
— not authorized: the DIMSE-service-user was not authorized to invoke the operation
10.1.4.1 N-ACTION parameters

10.1.4.1.10 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 type of status may occur:

- class-instance conflict: the specified SOP Instance is not a member of the specified SOP Class.
- duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation.
- invalid argument value: the action information value specified was out of range or otherwise inappropriate.
- invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules.
- mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.
- no such action: the action type specified was not supported.
- no such argument: the action information specified was not supported.
- no such SOP class: the SOP Class was not recognized.
- no such SOP Instance: the SOP Instance was not recognized.
- processing failure: a general failure in processing the operation was encountered.
- resource limitation: the operation was not performed due to resource limitation.
- success: successful operation.
- unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users.
- **not authorized: the DIMSE-service-user was not authorized to invoke the operation**

10.1.5.1 N-CREATE parameters

10.1.5.1.5 Attribute list
When this parameter is supplied by the invoking DIMSE-service-user, it contains a set of Attribute identifiers and values that the performing DIMSE-service-user is to assign to the new managed SOP Instance. When returned by the performing DIMSE-service-user in the success response/confirmation, this parameter contains the complete list of all Attribute identifiers and values that were assigned to the new managed SOP Instance. It may be included in the success response/confirmation.

10.1.5.1.6 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 type of status may occur:

- **class-instance conflict: the specified SOP Instance is not a member of the specified SOP Class.**
- duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation.
- duplicate SOP Instance: the new managed SOP Instance Value supplied by the invoking DIMSE-service-user was already registered for a managed SOP Instance of the specified SOP Class.
- invalid Attribute Value: the Attribute Value specified was out of range or otherwise inappropriate.
— **Attribute Value out of range:** 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 instance.

— invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules.

— missing Attribute: a required Attribute was not supplied.

— missing Attribute Value: a required Attribute Value was not supplied and a default value was not available.

— mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users.

— no such Attribute: the Tag for the specified Attribute was not recognized.

— **Attribute list error: one or more specified Attributes were not recognized and not included in the created instance.**

— no such SOP class: the SOP Class was not recognized.

—— **no such SOP Instance: the SOP Instance was not recognized.**

— processing failure: a general failure in processing the operation was encountered.

— resource limitation: the operation was not performed due to resource limitation.

— success: successful operation.

— unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users.

— **not authorized: the DIMSE-service-user was not authorized to invoke the operation**

### 10.1.6.1 N-DELETE parameters

### 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

— class-instance conflict: the specified SOP Instance is not a member of the specified SOP Class

— duplicate invocation: the Message ID (0000,0110) specified is allocated to another notification or operation

— invalid SOP Instance: the SOP Instance UID specified implied a violation of the UID construction rules

— mistyped argument: one of the parameters supplied has not been agreed for use on the Association between the DIMSE-service-users

— no such SOP class: the SOP Class was not recognized

— no such SOP Instance: the SOP Instance was not recognized

— processing failure: a general failure in processing the operation was encountered

— resource limitation: the operation was not performed due to resource limitation

— success: successful operation

— unrecognized operation: the operation is not one of those agreed between the DIMSE-service-users

—— **not authorized: the DIMSE-service-user was not authorized to invoke the operation**

### C.5.7 Class-instance conflict

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<td>This optional field contains the SOP Instance which was not a member of the specified SOP Class.</td>
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C.5.19 No Such object SOP instance

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<tr>
<th>Status Field</th>
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<td>Confirmation status of the operation. The value of this required field shall be set to 0112H.</td>
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<td>UI</td>
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<td>This optional field contains the SOP Instance UID which did not exist.</td>
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