**INTERNATIONAL STANDARD ISO/IEC 9596-1:1998**
TECHNICAL CORRIGENDUM 2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОМИССИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

# Information technology — Open Systems Interconnection — Common management information protocol —

## Part 1: **Specification**

TECHNICAL CORRIGENDUM 2

*Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — Protocole commun d'information de gestion —*

*Partie 1: Spécification*

*RECTIFICATIF TECHNIQUE 2*

Technical Corrigendum 2 to ISO/IEC 9596-1:1998 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

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**INTERNATIONAL STANDARD**

**ITU-T RECOMMENDATION**

# INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – COMMON MANAGEMENT INFORMATION PROTOCOL: SPECIFICATION

## TECHNICAL CORRIGENDUM 2

## Revision to include ASN.1: 1997

### 1) Subclause 2.1

*Insert the following references into this subclause:*

- ITU-T Recommendation X.680 (1997) | ISO/IEC 8824-1:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*.
- ITU-T Recommendation X.681 (1997) | ISO/IEC 8824-2:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Information object specification*.
- ITU-T Recommendation X.682 (1997) | ISO/IEC 8824-3:1998, *Information technology – Abstract Syntax Notation One (ASN.1): Constraint specification*.
- ITU-T Recommendation X.690 (1997) | ISO/IEC 8825-1:1998, *Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)*.
- ITU-T Recommendation X.691 (1997) | ISO/IEC 8825-2:1998, *Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*.
- ITU-T Recommendation X.880 (1994) | ISO/IEC 13712-1:1995, *Information technology – Remote Operations: Concepts, model and notation*.
- ITU-T Recommendation X.881 (1994) | ISO/IEC 13712-2:1995, *Information technology – Remote Operations: OSI realizations – Remote Operations Service Element (ROSE) service definition.*
- ITU-T Recommendation X.882 (1994) | ISO/IEC 13712-3:1995, *Information technology – Remote Operations: OSI realizations – Remote Operations Service Element (ROSE) protocol specification*.

### 2) Subclause 2.2

*Replace subclause 2.2 with the following:*

#### 2.2 Paired Recommendations | International Standards equivalent in technical content

- CCITT Recommendation X.700 (1992), *Management framework for Open Systems Interconnection (OSI) for CCITT applications*.

  ISO/IEC 7498-4:1989, *Information processing systems – Open Systems Interconnection – Basic Reference Model – Part 4: Management framework.*

### 3) Subclause 3.3

*Replace subclause 3.3 with the following:*

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### 3.3 Remote Operations definitions

This Recommendation | International Standard makes use of the following term defined in ITU-T Rec. X.880 | ISO/IEC 13172-1:

a) linked-operation.

This Recommendation | International Standard makes use of the following terms defined in ITU-T Rec. X.881 | ISO/IEC 13172-2:

a) association-initiator;

b) association-responder;

c) Remote Operation Service Element;

d) invoker;

e) performer.

## 4) Subclause 5.2

*Replace the first paragraph with the following:*

This Recommendation | International Standard uses the RO-INVOKE, RO-RESULT, RO-ERROR and RO-REJECT-U services of the Remote Operations Service Element (ROSE) defined in ITU-T Rec. X.880 | ISO/IEC 13712-1. ROSE assumes the use of the presentation service defined in ITU-T Rec. X.216 | ISO/IEC 8822. The confirmed operations of CMIP are asynchronous or synchronous as required by the application. The choice of asynchronous or synchronous is a local matter implemented by the application. The unconfirmed operations of CMIP are asynchronous, outcome not reported. Both the association-initiating and the association-responding application entities can invoke operations.

## 5) Subclause 5.2.2

*Replace* CCITT Rec. X.229 and ISO/IEC 9072-2 *with* ITU-T Rec. X.882 | ISO/IEC 13712-3.

## 6) Subclause 6.2.1

*Replace* CCITT Rec. X.229 and ISO/IEC 9072-2 *with* ITU-T Rec. X.882 | ISO/IEC 13712-3.

*Replace* InvokeID *with* invokeId *in Table 2*.

*Replace* Linked-ID *with* linkedId *in Table 2*.

## 7) Subclause 6.4.3

*Replace* linked-ID *with* linkedId *(occurs 4 times).*

## 8) Subclause 6.4.4

*Replace* linked-ID *with* linkedId *(occurs twice).*

## 9) Subclause 6.5.3

*Replace* linked-ID *with* linkedId *(occurs 4 times).*

## 10) Subclause 6.5.4

*Replace* linked-ID *with* linkedId *(occurs twice).*

## 11) Subclause 6.6.3

*Replace* linked-ID *with* linkedId *(occurs 4 times).*



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## 12) Subclause 6.6.4

*Replace* linked-ID with linkedId *(occurs twice).*

## 13) Subclause 6.8.3

*Replace* linked-ID *with* linkedId *(occurs 4 times).*

## 14) Subclause 6.8.4

*Replace* linked-ID *with* linkedId *(occurs twice).*

## 15) Subclause 7.1

*Replace the first paragraph with the following:*

The abstract syntax is defined using the notation specified in ITU-T Rec. X.680 | ISO/IEC 8824-1.

## 16) Subclause 7.2

*Replace* Linked-ID *with* linkedId *in Table 4.*

*Remove the last line of Table 4.*

## 17) Subclause 7.4

*Replace with the following:*

### 7.4 CMIP data units

The protocol is described in terms of Common Management Information Protocol Data Units exchanged between the peer CMISEs. The PDUs are specified using ASN.1 and the ROSE information objects defined in ITU-T Rec. X.880 | ISO/IEC 13712-1.

```
-- Common Management Information Protocol (CMIP)

CMIP-1 {joint-iso-itu-t ms(9) cmip(1) modules(0) protocol(3)}

DEFINITIONS ::= BEGIN

-- This ASN.1 specification has been checked for conformance with the ASN.1 standard by the OSS ASN.1 Tools

IMPORTS

ERROR, OPERATION
    FROM Remote-Operations-Information-Objects
        {joint-iso-itu-t remote-operations(4) informationObjects(5) version1(0)}

ROS{}, InvokeId, noInvokeId
    FROM Remote-Operations-Generic-ROS-PDUs
        {joint-iso-itu-t remote-operations(4) generic-ROS-PDUs(6) version1(0)};

CMIP-Operations OPERATION ::= {
    m-Action                  |
    m-Action-Confirmed        |
    m-CancelGet               |
    m-Create                  |
    m-Delete                  |
    m-EventReport             |
    m-EventReport-Confirmed   |
    m-Get                     |
    m-Linked-Reply            |
    m-Set                     |
    m-Set-Confirmed           }
```



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```
CMIP-Confirmed-Operations OPERATION ::= {
    m-Action-Confirmed          |
    m-CancelGet                 |
    m-Create                    |
    m-Delete                    |
    m-EventReport-Confirmed     |
    m-Get                       |
    m-Set-Confirmed             }
```

*-- CMISE error definitions*

```
accessDenied ERROR ::= {
    PRIORITY        {0}
    CODE            local : 2 }

classInstanceConflict ERROR ::= {
    PARAMETER       BaseManagedObjectId
    PRIORITY        {1}
    CODE            local : 19 }

complexityLimitation ERROR ::= {
    PARAMETER       ComplexityLimitation OPTIONAL TRUE
    PRIORITY        {1}
    CODE            local : 20 }

duplicateManagedObjectInstance ERROR ::= {
    PARAMETER       ObjectInstance
    PRIORITY        {1}
    CODE            local : 11 }

getListError ERROR ::= {
    PARAMETER       GetListError
    PRIORITY        {1}
    CODE            local : 7 }

invalidArgumentValue ERROR ::= {
    PARAMETER       InvalidArgumentValue
    PRIORITY        {1}
    CODE            local : 15 }

invalidAttributeValue ERROR ::= {
    PARAMETER       Attribute
    PRIORITY        {1}
    CODE            local : 6 }

invalidFilter ERROR ::= {
    PARAMETER       CMISFilter
    PRIORITY        {1}
    CODE            local : 4 }

invalidObjectInstance ERROR ::= {
    PARAMETER       ObjectInstance
    PRIORITY        {1}
    CODE            local : 17 }

invalidScope ERROR ::= {
    PARAMETER       Scope
    PRIORITY        {1}
    CODE            local : 16 }

missingAttributeValue ERROR ::= {
    PARAMETER       SET OF AttributeId
    PRIORITY        {1}
    CODE            local : 18 }

mistypedOperation ERROR ::= {
    PRIORITY        {1}
    CODE            local : 21 }
```



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```
noSuchAction ERROR ::= {
    PARAMETER     NoSuchAction
    PRIORITY      {1}
    CODE          local : 9 }

noSuchArgument ERROR ::= {
    PARAMETER     NoSuchArgument
    PRIORITY      {1}
    CODE          local : 14 }

noSuchAttribute ERROR ::= {
    PARAMETER     AttributeId
    PRIORITY      {1}
    CODE          local : 5 }

noSuchEventType ERROR ::= {
    PARAMETER     NoSuchEventType
    PRIORITY      {1}
    CODE          local : 13 }

noSuchInvokeId ERROR ::= {
    PARAMETER     InvokeIDType
    PRIORITY      {1}
    CODE          local : 22 }

noSuchObjectClass ERROR ::= {
    PARAMETER     ObjectClass
    PRIORITY      {1}
    CODE          local : 0 }

noSuchObjectInstance ERROR ::= {
    PARAMETER     ObjectInstance
    PRIORITY      {1}
    CODE          local : 1 }

noSuchReferenceObject ERROR ::= {
    PARAMETER     ObjectInstance
    PRIORITY      {1}
    CODE          local : 12 }

operationCancelled ERROR ::= {
    PRIORITY      {1}
    CODE          local : 23 }

processingFailure ERROR ::= {
    PARAMETER     ProcessingFailure OPTIONAL TRUE
    PRIORITY      {1}
    CODE          local : 10 }

setListError ERROR ::= {
    PARAMETER     SetListError
    PRIORITY      {1}
    CODE          local : 8 }

syncNotSupported ERROR ::= {
    PARAMETER     CMISSync
    PRIORITY      {1}
    CODE          local : 3 }

-- CMISE operations

-- Action operation (M-ACTION)

m-Action OPERATION ::= {
    ARGUMENT            ActionArgument
    RETURN RESULT       FALSE
    ALWAYS RESPONDS     FALSE
    CODE                local : 6 }

m-Action-Confirmed OPERATION ::= {
    ARGUMENT      ActionArgument
```



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```
    RESULT              ActionResult OPTIONAL TRUE      -- this result is conditional;
                                                        -- for conditions see 8.3.3.2.9 of ITU-T Rec. X.710
    ERRORS              {accessDenied | classInstanceConflict | complexityLimitation | invalidScope |
                         invalidArgumentValue | invalidFilter | noSuchAction | noSuchArgument |
                         noSuchObjectClass | noSuchObjectInstance | processingFailure | syncNotSupported}
    LINKED              {m-Linked-Reply}
    CODE                local : 7 }

-- Cancel get operation (M-CANCEL-GET)

m-CancelGet OPERATION ::= {
    ARGUMENT        InvokeIDType
    RETURN RESULT       TRUE
    ERRORS              {mistypedOperation | noSuchInvokeId | processingFailure}
    CODE                local : 10 }

-- Create operation (M-CREATE)

m-Create OPERATION ::= {
    ARGUMENT        CreateArgument
    RESULT              CreateResult OPTIONAL TRUE      -- this result is conditional;
                                                        -- for conditions see 8.3.4.1.3 of ITU-T Rec. X.710
    ERRORS              {accessDenied | classInstanceConflict | duplicateManagedObjectInstance |
                         invalidAttributeValue | invalidObjectInstance | missingAttributeValue | noSuchAttribute |
                         noSuchObjectClass | noSuchObjectInstance | noSuchReferenceObject | processingFailure}
    CODE                local : 8 }

-- Delete operation (M-DELETE)

m-Delete OPERATION ::= {
    ARGUMENT            DeleteArgument
    RESULT              DeleteResult OPTIONAL TRUE      -- this result is conditional;
                                                        -- for conditions see 8.3.5.2.8 of ITU-T Rec. X.710
    ERRORS              {accessDenied | classInstanceConflict | complexityLimitation | invalidFilter | invalidScope |
                         noSuchObjectClass | noSuchObjectInstance | processingFailure | syncNotSupported}
    LINKED              {m-Linked-Reply}
    CODE                local : 9 }

-- Event Reporting operations (M-EVENT-REPORT)

m-EventReport OPERATION ::= {
    ARGUMENT            EventReportArgument
    RETURN RESULT           FALSE
    ALWAYS RESPONDS         FALSE
    CODE                    local : 0 }

m-EventReport-Confirmed OPERATION ::= {
    ARGUMENT            EventReportArgument
    RESULT                  EventReportResult OPTIONAL TRUE
    ERRORS                  {invalidArgumentValue | noSuchArgument | noSuchEventType |
                            noSuchObjectClass | noSuchObjectInstance | processingFailure}
    CODE                    local : 1 }

-- Get operation (M-GET)

m-Get OPERATION ::= {
    ARGUMENT            GetArgument
    RESULT                  GetResult OPTIONAL TRUE     -- this result is conditional;
                                                        -- for conditions see 8.3.1.2.8 of ITU-T Rec. X.710
    ERRORS                  {accessDenied | classInstanceConflict | complexityLimitation | getListError |
                            invalidFilter |
                            invalidScope | noSuchObjectClass | noSuchObjectInstance | operationCancelled|
                            processingFailure | syncNotSupported}
    LINKED                  {m-Linked-Reply}
    CODE                    local : 3 }

-- Linked operation to M-GET, M-SET (Confirmed), M-ACTION (Confirmed), and M-DELETE
```

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