INTERNATIONAL STANDARD ISO/IEC 9594-2:2005
TECHNICAL CORRIGENDUM 4

Published 2012-09-15

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION
INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОМИССИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

Information technology — Open Systems Interconnection — The Directory: Models

TECHNICAL CORRIGENDUM 4

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — L'annuaire: Les modèles

RECTIFICATIF TECHNIQUE 4

Technical Corrigendum 4 to ISO/IEC 9594-2:2005 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*, in collaboration with ITU-T. The identical text is published as Rec. ITU-T X.501 (2005)/Cor.4 (04/2012).

ICS 35.100.70 **Ref. No. ISO/IEC 9594-2:2005/Cor.4:2012(E)**

Published in Switzerland

INTERNATIONAL STANDARD
RECOMMENDATION ITU-T

~~Rec. ITU-T X.501 (2005) | ISO/IEC 9594-2:2005~~
Information technology – Open Systems Interconnection – The Directory: Models

Technical Corrigendum 4

(covering resolution to defect reports 357, 359, 360, 361, 363, 370 and 371)

1) Correction of the defects reported in defect report 357

In clause 13.7.6 and Annex B replace the **STRUCTURE-RULE** *information object with:*

```
STRUCTURE-RULE ::= CLASS {
  &nameForm                NAME-FORM,
  &SuperiorStructureRules  STRUCTURE-RULE.&id OPTIONAL,
  &id                      RuleIdentifier }
WITH SYNTAX {
  NAME FORM                &nameForm
  [ SUPERIOR RULES         &SuperiorStructureRules ]
  ID                       &id }
```

2) Correction of the defects reported in defect report 359

Update the ASN.1 in clause 28.3 and Annex G as shown:

```
ModifyOperationalBindingResult ::= CHOICE {
  null        ~~[0]~~  NULL,
  protected   [1]  OPTIONALLY-PROTECTED-SEQ{SEQUENCE {
    newBindingID     OperationalBindingID,
    bindingType      OPERATIONAL-BINDING.&id({OpBindingSet}),
    newAgreement     OPERATIONAL-BINDING.&Agreement
                     ({OpBindingSet}{@.bindingType}),
    valid            Validity OPTIONAL,
    COMPONENTS OF    CommonResultsSeq }}}
```

3) Correction of the defects reported in defect report 360

Update the ASN.1 in clause 13.9.2 and Annex B as shown:

```
CONTEXT ::= CLASS {
  &Type,
  &~~D~~defaultValue  &Type OPTIONAL,
  &Assertion       OPTIONAL,
  &absentMatch     BOOLEAN DEFAULT TRUE,
  &id              OBJECT IDENTIFIER UNIQUE }
WITH SYNTAX {
  ~~WITH~~ SYNTAX      &Type
  [DEFAULT-VALUE   &~~D~~defaultValue]
  [ASSERTED AS     &Assertion]
  [ABSENT-MATCH    &absentMatch]
  ID               &id }
```

4) Correction of the defects reported in defect report 361

Update ~~the~~ clause 18.4.2.4, item b), fourth bullet as shown:

– **userGroup** is the set of users who are members of the groupOf~~Unique~~Names or **groupOfUniqueNames** entry, identified by the specified distinguished name (with an optional unique identifier). Members of a group of unique names are treated as individual object names, and not as the names of other groups of unique names. How group membership is determined is described in 18.4.2.5.

5) Correction of the defects reported in defect report 363

Update item a) of clause 13.10.2 ~~of X.501~~ as shown:

a) the **attributeType** component identifies the attribute type to which the DIT Context Use applies;~~,~~ if it applies to any attribute type the object identifier ~~or any attribute type (~~**id-oa-allAttributeTypes**~~)~~ may be used (defined in Annex B);

In Annex B ~~of X.501~~ add to the end of the allocation of object identifiers for operational attributes:

```
id-oa-allAttributeTypes    OBJECT IDENTIFIER    ::=  {id-oa 48}
```

6) Correction of the defects reported in defect report 370

In clause 22.5 just before the note, add a new paragraph:

The subordinate references making up the root naming context are conceptually placed in DSA specific entries (DSEs) immediately subordinate to the root DSE (see 24.2). The DSE type shall be **subr**.

7) Correction of the defects reported in defect report 371

In clause 27.3.3, change the OP-BIND-ROLE information object class as shown

```
OP-BIND-ROLE ::= CLASS {
  &establish                  BOOLEAN DEFAULT FALSE,
  &EstablishParam             ~~OPTIONAL~~,
  &modify                     BOOLEAN DEFAULT FALSE,
  &ModifyParam                OPTIONAL,
  &terminate                  BOOLEAN DEFAULT FALSE,
  &TerminateParam             OPTIONAL }
WITH SYNTAX {
  [ESTABLISHMENT-INITIATOR    &establish]
  ~~[~~ESTABLISHMENT-PARAMETER  &EstablishParam~~]~~
  [MODIFICATION-INITIATOR     &modify]
  [MODIFICATION-PARAMETER     &ModifyParam]
  [TERMINATION-INITIATOR      &terminate]
  [TERMINATION-PARAMETER      &TerminateParam] }
```

~~In 27.3.3~~Also, change item b) as shown:

b) The **ESTABLISHMENT-PARAMETER** field defines the ASN.1 type for the parameters exchanged by a DSA assuming the defined role when an instance of the operational binding type is established. If no parameters are to be exchanged, then the NULL ASN.1 type shall be specified.

Replace clauses 28.2, 28.3 and 28.4 with:

28.2 Establish Operational Binding operation

28.2.1 Establish Operational Binding syntax

The Establish Operational Binding operation allows establishment of an operational binding instance of a predefined type between two DSAs. This is achieved through the transfer of the establishment parameters and the terms of agreement which were defined in the definition of the operational binding type. The arguments of the operation may be signed (see 17.3) by the requestor. If the **target** component of the **SecurityParameters** (see 7.10 of Rec. ITU-T X.511 | ISO/IEC 9594-3) in the request is set to **signed** and a result is to be returned, the result may be signed. Otherwise, the result shall not be signed.

In the case of a symmetrical operational binding, either of the two DSAs may take the initiative to establish an operational binding instance of the predefined type.

In the case of an asymmetrical operational binding, just one of the roles are designated to initiate the establishment of an operational binding or either of the two DSAs may take the initiative depending on the definition of the operational binding type.

```
establishOperationalBinding OPERATION ::= {
  ARGUMENT    EstablishOperationalBindingArgument
  RESULT      EstablishOperationalBindingResult
  ERRORS      {operationalBindingError | securityError}
  CODE        id-op-establishOperationalBinding }

EstablishOperationalBindingArgument ::=
  OPTIONALLY-PROTECTED-SEQ { EstablishOperationalBindingArgumentData }

EstablishOperationalBindingArgumentData ::= SEQUENCE {
  bindingType         [0]  OPERATIONAL-BINDING.&id({OpBindingSet}),
  bindingID           [1]  OperationalBindingID OPTIONAL,
  accessPoint         [2]  AccessPoint,
                  -- symmetric, Role A initiates, or Role B initiates
  initiator                CHOICE {
    symmetric           [3]  OPERATIONAL-BINDING.&both.&EstablishParam
                             ({OpBindingSet}{@bindingType}),
    roleA-initiates     [4]  OPERATIONAL-BINDING.&roleA.&EstablishParam
                             ({OpBindingSet}{@bindingType}),
    roleB-initiates     [5]  OPERATIONAL-BINDING.&roleB.&EstablishParam
                               ({OpBindingSet}{@bindingType})},
  agreement           [6]  OPERATIONAL-BINDING.&Agreement
                             ({OpBindingSet}{@bindingType}),
  valid               [7]  Validity DEFAULT {},
  securityParameters  [8]  SecurityParameters OPTIONAL,
  ...}
}

OpBindingSet OPERATIONAL-BINDING ::=
  {shadowOperationalBinding | hierarchicalOperationalBinding |
   nonSpecificHierarchicalOperationalBinding}

OperationalBindingID ::= SEQUENCE {
  identifier  INTEGER,
  version     INTEGER,
  ...}

Validity ::= SEQUENCE {
  validFrom             [0]  CHOICE {
    now                   [0]  NULL,
    time                  [1]  Time,
  ...} DEFAULT now:NULL,
  validUntil            [1]  CHOICE {
    explicitTermination   [0]  NULL,
    time                  [1]  Time,
  ... } DEFAULT explicitTermination:NULL,
  ...}

Time ::= CHOICE {
  utcTime          UTCTime,
  generalizedTime  GeneralizedTime,
  ...}

EstablishOperationalBindingResult ::=
  OPTIONALLY-PROTECTED-SEQ { EstablishOperationalBindingResultData }

EstablishOperationalBindingResultData ::= SEQUENCE {
  bindingType    [0]  OPERATIONAL-BINDING.&id({OpBindingSet}),
  bindingID      [1]  OperationalBindingID OPTIONAL,
  accessPoint    [2]  AccessPoint,
  -- symmetric, Role A replies, or Role B replies
  initiator           CHOICE {
    symmetric      [3]  OPERATIONAL-BINDING.&both.&EstablishParam
                          ({OpBindingSet}{@bindingType}),
```

```
    roleA-replies [4]  OPERATIONAL-BINDING.&roleA.&EstablishParam
                         ({OpBindingSet}{@bindingType}),
    roleB-replies [5]  OPERATIONAL-BINDING.&roleB.&EstablishParam
                         ({OpBindingSet}{@bindingType})} OPTIONAL,
    ...,
    ...,
  COMPONENTS OF       CommonResultsSeq }
```

28.2.2 Establish Operational Binding arguments

The **bindingType** component shall specify which type of operational binding is to be established. An operational binding type is defined by an instance of the **OPERATIONAL-BINDING** information object class which assigns an object identifier value to the operational binding type. If the receiver does not recognisze or support the operational binding type, it shall return an **operationalBindingError** with problem **unsupportedBindingType**.

The **bindingID** component, when present, shall hold an identification of the new operational binding instance. If the **bindingID** is absent within the operation argument, the responding DSA shall assign an ID to the operational binding instance and return it in the **bindingID** component of the **EstablishOperationalBindingResult** data type. In either case, when establishing an operational binding, both the **identifier** and **version** components of the **OperationalBindingID** value shall be assigned and issued by the DSA making the assignment. The **identifier** component of the **OperationalBindingID** data type shall be unique for all operational bindings between any two DSAs. However, the DSA not making the assignment shall accept an **identifier** component that is only unique within a specific operational binding type. If the identifier component specifies an identifier already in use for the particular binding type, the responding DSA shall return an **operationalBindingError** with problem **duplicateID**.

NOTE – A pre-edition 5 system may not follow the above rule for assigning identities.

The **accessPoint** component shall specify the access point of the initiator for subsequent interactions.

The **initiator** component shall specify the role the DSA issuing the Establish Operational Binding operation assumes. The semantics of the roles are defined as part of the definition of the operational binding type. It is a choice of three alternatives:

- The **symmetric** alternative shall be taken, if the type of operational binding requires identical roles for the two DSAs. The establishment parameter for the initiating DSA is determined by the **OP-BIND-ROLE** associated with the **SYMMETRIC** field of the instance of **OPERATIONAL-BINDING** information object class. If this alternative is chosen in the request, but the operational binding type specifies asymmetric roles, then the responding DSA shall return an **operationalBindingError** with problem **notAllowedForRole**.
- The **roleA-initiates** alternative may be taken if both roles may be the initiator of an asymmetric operational binding and it shall be taken when only the initiating DSA may take ROLE-A~~.~~. The establishment parameter for the initiating DSA is determined by the **OP-BIND-ROLE** associated with ROLE-A field of the instance of **OPERATIONAL-BINDING** information object class. If the DSA in ROLE-A is not allowed to initiate the operational binding, the responding DSA shall return an **operationalBindingError** with problem **notAllowedForRole**. If the responding system does not accept the role allocation, it shall return an **operationalBindingError** with problem **roleAssignment**.
- The **roleB-initiates** alternative may be taken if both roles may be the initiator of an asymmetric operational binding and it shall be taken when only the initiating DSA may take ROLE-B. The establishment parameter for the initiating DSA is determined by the **OP-BIND-ROLE** associated with ROLE-B field of the instance of **OPERATIONAL-BINDING** information object class. If the DSA in ROLE-B is not allowed to initiate the operational binding, the responding DSA shall return an **operationalBindingError** with problem **notAllowedForRole**. If the responding DSA does not accept the role allocation, it shall return an **operationalBindingError** with problem **roleAssignment**.

If for any of the three alternatives the data type for establishment parameters is the **NULL** ASN.1 type, where ~~it~~ according to the operational binding type should be another data type, then the responding DSA shall return an **operationalBindingError** with problem **parametersMissing.**

The **agreement** component, when present, shall specify the terms of agreement governing the operational binding instance. Its actual content depends on the type of operational binding to be established. The ASN.1 type for this parameter is defined by the **AGREEMENT** field of the **OPERATIONAL-BINDING** information object for the operational binding type.

The **valid** component shall specify the duration of the operational binding.

- The **validFrom** subcomponent shall specify the starting time of the operational binding instance. If the **now** alternative is taken, the operational binding becomes active when the operation has successfully completed. If the **time** alternative is taken, the operational binding becomes active at the specified time. If the receiving DSA cannot accept the starting time, e.g., the starting time makes no sense or for other reasons, it shall return an **operationalBindingError** with problem **invalidStartTime**.
- The **validUntil** shall specify the time that the operational binding instance is terminated. If the **explicitTermination** alternative is taken, the operational binding is active until explicitly terminated. If the **time** alternative is taken, the operational binding is terminated at the time specified. If the receiving DSA cannot accept the ending time, e.g., the ending time makes no sense or for other reasons, it shall return an **operationalBindingError** with problem **invalidEndTime**.

When a value of **Time** in the **UTCTime** syntax, the value of the two-digit year field shall be normalised into a four-digit year value as follows:

- If the 2-digit value is 00 through 49 inclusive, the value shall have 2000 added to it.
- If the 2-digit value is 50 through 99 inclusive, the value shall have 1900 added to it.

The use of **GeneralizedTime** may prevent interworking with implementations unaware of the possibility of choosing either **UTCTime** or **GeneralizedTime**. It is the responsibility of those specifying the domains in which this Directory Specification will be used, e.g., profiling groups, as to when the **GeneralizedTime** may be used. In no case shall **UTCTime** be used for representing dates beyond 2049.

If the **Validity** data type is an empty sequence or if the **valid** component is not present, then the operational binding is valid from the current time and until it is explicitly terminated.

The **securityParameters** component shall be present if the request is signed or if the result or error is requested to be signed.

28.2.3 Establish Operational Binding results

If the Establish Operational Binding operation succeeds, the result shall be returned.

The **bindingType** component shall have the same value as that provided by the establishment initiator.

The **bindingID** component shall hold a valid identification of the established operational binding instance if the corresponding component of the request was absent (see 28.2.2). Otherwise, it may be present, but shall then echo the value in the request.

The **accessPoint** component shall specify the access point of the responding DSA for subsequent interactions.

The **initiator** component shall specify the role that the responding DSA assumes. The semantics of the roles are defined as part of the definition of the operational binding type. It is a choice of three alternatives:

- The **symmetric** alternative shall be taken if the corresponding alternative was taken in the received request. The establishment parameter for the responding DSA is the same as given in the request.
- The **roleA-replies** alternative shall be taken, if the initiating DSA took the ROLE-B. The establishment parameter for the responding DSA is determined by the **OP-BIND-ROLE** associated with **ROLE-A** field of the instance of **OPERATIONAL-BINDING** information object class.
- The **roleB-replies** alternative shall be taken if the initiating DSA took ROLE-A. The establishment parameter for the responding DSA is determined by the **OP-BIND-ROLE** associated with **ROLE-B** field of the instance of **OPERATIONAL-BINDING** information object class.

If the result is to be signed by the responding DSA, the **securityParameters** component of **CommonResultsSeq** shall be present.

28.3 Modify Operational Binding operation

28.3.1 Modify Operational Binding syntax

The Modify Operational Binding operation is used to modify an established operational binding. The right to modify is indicated by the **MODIFICATION INITIATOR** field(s) within the definition of the operational binding type using the **OP-BIND-ROLE** and **OPERATIONAL-BINDING** information object.

The components of an operational binding that can be modified are the content of the agreement for the operational binding and its period of validity. Further, a modification parameter can be specified by the initiator of the Modify

Operational Binding operation. The arguments of the operation may be signed (see 17.3) by the requestor. If the **target** component of the **SecurityParameters** (see 7.10 of Rec. ITU-T X.511 | ISO/IEC 9594-3) in the request is set to **signed** and a result is to be returned, the result may be signed. Otherwise, the result shall not be signed.

If the initiator of the Modify Operational Binding operation according to the operational binding type is not allowed to be the initiator, the responding DSA shall return an **operationalBindingError** with problem **notAllowedForRole**.

```
modifyOperationalBinding OPERATION ::= {
  ARGUMENT  ModifyOperationalBindingArgument
  RESULT    ModifyOperationalBindingResult
  ERRORS    {operationalBindingError | securityError}
  CODE      id-op-modifyOperationalBinding }

ModifyOperationalBindingArgument ::=
  OPTIONALLY-PROTECTED-SEQ { ModifyOperationalBindingArgumentData }

ModifyOperationalBindingArgumentData ::= SEQUENCE {
  bindingType       [0]  OPERATIONAL-BINDING.&id({OpBindingSet}),
  bindingID         [1]  OperationalBindingID,
  accessPoint       [2]  AccessPoint OPTIONAL,
  -- symmetric, Role A initiates, or Role B initiates
  initiator              CHOICE {
    symmetric         [3]  OPERATIONAL-BINDING.&both.&ModifyParam
                           ({OpBindingSet}{@bindingType}),
    roleA-initiates   [4]  OPERATIONAL-BINDING.&roleA.&ModifyParam
                           ({OpBindingSet}{@bindingType}),
    roleB-initiates   [5]  OPERATIONAL-BINDING.&roleB.&ModifyParam
                           ({OpBindingSet}{@bindingType})} OPTIONAL,
  newBindingID      [6]  OperationalBindingID,
  newAgreement      [7]  OPERATIONAL-BINDING.&Agreement
                         ({OpBindingSet}{@bindingType}) OPTIONAL,
  valid             [8]  ModifiedValidity OPTIONAL,
  securityParameters [9]  SecurityParameters OPTIONAL,
  ...}
}

ModifiedValidity ::= SEQUENCE {
  validFrom           [0]  CHOICE {
    now                 [0]  NULL,
    time                [1]  Time,
    ...} DEFAULT now:NULL,
  validUntil          [1]  CHOICE {
    explicitTermination [0]  NULL,
    time                [1]  Time,
    unchanged           [2]  NULL,
    ...} DEFAULT unchanged:NULL,
  ...}

ModifyOperationalBindingResult ::= CHOICE {
  null      [0] NULL,
  protected [1] OPTIONALLY-PROTECTED-SEQ{ ModifyOperationalBindingResultData },}
  ...}

ModifyOperationalBindingResultData ::= SEQUENCE {
    newBindingID    OperationalBindingID,
    bindingType     OPERATIONAL-BINDING.&id({OpBindingSet}),
    newAgreement    OPERATIONAL-BINDING.&Agreement ({OpBindingSet}{@.bindingType}),
    valid           Validity OPTIONAL,
    ...,
    ...,
    COMPONENTS OF   CommonResultsSeq
}
```

28.3.2 Modify Operational Binding argument

The **bindingType** component shall specify which type of operational binding is to be modified. If no operational binding of the specified type has been established between the two DSAs, the responding DSA shall return an **operationalBindingError** with problem **invalidBindingType**.