



INTERNATIONAL STANDARD ISO/IEC 9594-9:1998
TECHNICAL CORRIGENDUM 2

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INTERNATIONAL ELECTROTECHNICAL COMMISSION • МЕЖДУНАРОДНАЯ ЭЛЕКТРОТЕХНИЧЕСКАЯ КОМИССИЯ • COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

Information technology — Open Systems Interconnection — The Directory: Replication

TECHNICAL CORRIGENDUM 2

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

RECTIFICATIF TECHNIQUE 2

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ISO/IEC 9594-9:1998/Cor 2:2002

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INTERNATIONAL STANDARD
ITU-T RECOMMENDATION

Information technology – Open Systems Interconnection – The Directory:
Replication

TECHNICAL CORRIGENDUM 2

NOTE – This Technical Corrigendum covers the result of the ballot resolutions of Draft Technical Corrigenda 2, 3, and 4.

1) Defect reports covered by Draft Technical Corrigendum 2

(Covering resolutions to defect report 187, 208 and 243)

1.1) This corrects the defects reported in defect report 9594/187

In 7.2.1.1, add **root** to the list of SDSE types.

In 11.3.1.1, delete **root** from the list of SDSE types.

1.2) This corrects the defects reported in defect report 9594/208

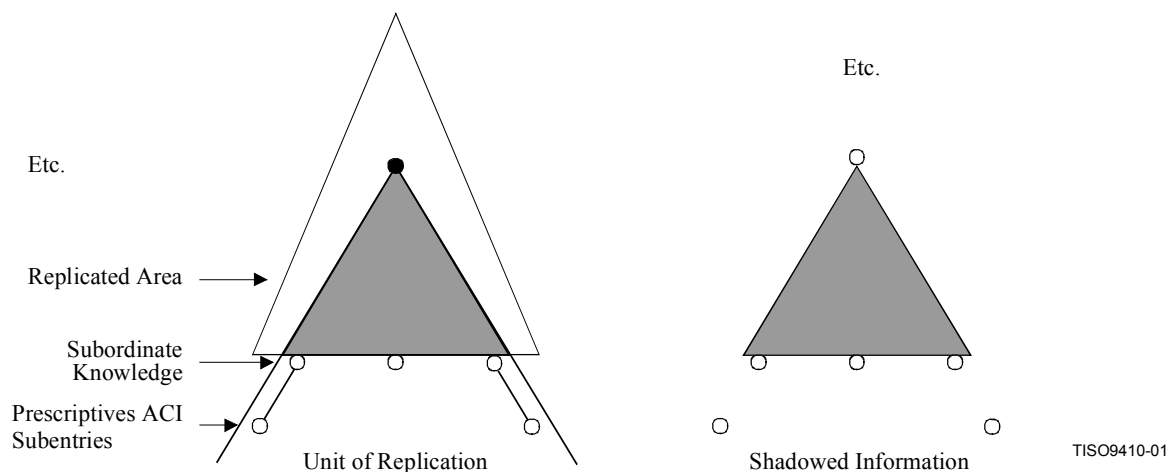
Insert the following text into 7.2.2.3, at the end of both the second paragraph and the first sentence of the third paragraph (after "appropriate knowledge"): [ISO/IEC 9594-9:1998/Cor 2:2002](https://standards.iteh.ai/catalog/standards/sist/ad20617f-bb40-45da-b0e5-2ebd12665c79/iso-iec-9594-9-1998-cor-2-2002)
and access control information.

Insert a new third paragraph into 7.2.2.3 as follows:

If subordinate knowledge is supplied, and the supplying DSE (of type **subr**) is also of type **admPoint**, then the SDSE shall additionally be of type **admPoint** and the **administrativeRole** attribute shall be supplied. If such a DSE has any immediately subordinate subentries containing **PrescriptiveACI** relating to the administrative point, then they shall also be supplied as SDSEs in the shadowed information.

NOTE – A DSE can be of type **subr** and **admPoint** in a superior DSA, when the naming context in the subordinate DSA is the start of a new administrative area.

Update Figure 3 as follows to show a subentry immediately below a subordinate reference. The subentry contains **prescriptiveACI** and is part of the shadowed information.



Add supporting text to 7.2 in the paragraph after Figure 3. Insert the following sentences after the sentence "Subordinate knowledge may also be replicated":

Implicit in the subordinate knowledge is the access control information which governs access to the RDN of the subordinate knowledge. When the subordinate entry is an administrative point in another DSA, then part of this access control information may be held in **prescriptiveACI** subentries beneath the subordinate knowledge.

Add the following new point d) to 9.2.4.1:

- d) if subordinate knowledge (not extended knowledge) is shadowed then any **prescriptiveACI** in subordinate subentries shall also be copied.

1.3) This corrects the defects reported in defect report 9594/243

In 2.1, change all references ISO/IEC 9594-x:1997 to ISO/IEC 9594-x:1998.

In clause 6, change ITU-T Rec. X.518 | ISO/IEC 9594-5 to ITU-T Rec. X.519 | ISO/IEC 9594-5.

In 9.2 in the **UnitOfReplication** type, change **ContextType** to **CONTEXT.&id**.

In 11.1:

Change **CoordinateShadowUpdate** to **coordinateShadowUpdate**.

Remove the last right curly parenthesis in the **CoordinateShadowUpdateArgument**.

Replace the ASN.1 in Annex A with:

DirectoryShadowAbstractService

{joint-iso-itu-t ds(5) module(1) directoryShadowAbstractService(15) 3}

DEFINITIONS IMPLICIT TAGS ::=
BEGIN

-- **EXPORTS All** --

-- The types and values defined in this module are exported for use in the other ASN.1 modules contained
-- within the Directory Specifications, and for the use of other applications which will use them to access
-- directory services. Other applications may use them for their own purposes, but this will not constrain
-- extensions and modifications needed to maintain or improve the directory service.

IMPORTS

-- from ITU-T Rec. X.501 | ISO/IEC 9594-2

directoryAbstractService, directoryOperationalBindingTypes, informationFramework,
disp, distributedOperations, dsaOperationalAttributeTypes, enhancedSecurity,
opBindingManagement

FROM UsefulDefinitions {joint-iso-itu-t ds(5) module(1) usefulDefinitions(0) 3}

Attribute, AttributeType, CONTEXT, DistinguishedName, RelativeDistinguishedName,
SubtreeSpecification

FROM InformationFramework informationFramework

OPERATIONAL-BINDING, OperationalBindingID

FROM OperationalBindingManagement opBindingManagement

DSETType, SupplierAndConsumers

FROM DSAOperationalAttributeTypes dsaOperationalAttributeTypes

OPTIONALLY-PROTECTED, OPTIONALLY-PROTECTED-SEQ

FROM EnhancedSecurity enhancedSecurity

-- from ITU-T Rec. X.511 | ISO/IEC 9594-3

CommonResultsSeq, ContextSelection, directoryBind, directoryUnbind, EntryModification,
SecurityParameters

FROM DirectoryAbstractService directoryAbstractService

-- from ITU-T Rec. X.518 | ISO/IEC 9594-4

AccessPoint

FROM DistributedOperations distributedOperations

-- from ITU-T Rec. X.519 | ISO/IEC 9594-5

id-op-binding-shadow

FROM DirectoryOperationalBindingTypes directoryOperationalBindingTypes

id-errcode-shadowError, id-opcode-coordinateShadowUpdate, id-opcode-requestShadowUpdate,
id-opcode-updateShadow, reliableShadowSupplierInitiatedAC,
reliableShadowConsumerInitiatedAC,
shadowConsumerInitiatedAC, shadowSupplierInitiatedAC
FROM DirectoryInformationShadowProtocol disp

-- from ITU-T Rec. X.880 | ISO/IEC 13712-1

ERROR, OPERATION

FROM Remote-Operations-Information-Objects

{joint-iso-itu-t remote-operations(4) informationObjects(5) version1(0) } ;

-- bind and unbind operations --

dSAShadowBind OPERATION ::= directoryBind

dSAShadowUnbind OPERATION ::= directoryUnbind

-- shadow operational binding

shadowOperationalBinding OPERATIONAL-BINDING ::= {
AGREEMENT ShadowingAgreementInfo
APPLICATION CONTEXTS {
{ shadowSupplierInitiatedAC
APPLIES TO { All-operations-supplier-initiated } } |
{ shadowConsumerInitiatedAC
APPLIES TO { All-operations-consumer-initiated } } |
{ reliableShadowSupplierInitiatedAC
APPLIES TO { All-operations-supplier-initiated } } |
{ reliableShadowConsumerInitiatedAC
APPLIES TO { All-operations-consumer-initiated } } }
ASYMMETRIC
ROLE-A { -- shadow supplier role
ESTABLISHMENT-INITIATOR TRUE
ESTABLISHMENT-PARAMETER NULL
MODIFICATION-INITIATOR TRUE
TERMINATION-INITIATOR TRUE }
ROLE-B { -- shadow consumer role
ESTABLISHMENT-INITIATOR TRUE
ESTABLISHMENT-PARAMETER NULL
MODIFICATION-INITIATOR TRUE
MODIFICATION-PARAMETER ModificationParameter
TERMINATION-INITIATOR TRUE }
ID id-op-binding-shadow }

-- types --

ModificationParameter ::= SEQUENCE {
secondaryShadows SET OF SupplierAndConsumers }

AgreementID ::= OperationalBindingID

ShadowingAgreementInfo ::= SEQUENCE {
shadowSubject UnitOfReplication,
updateMode UpdateMode DEFAULT supplierInitiated : onChange : TRUE,
master AccessPoint OPTIONAL,
secondaryShadows [2] BOOLEAN DEFAULT FALSE }

UnitOfReplication ::= SEQUENCE {
 area AreaSpecification,
 attributes AttributeSelection,
 knowledge Knowledge OPTIONAL,
 subordinates BOOLEAN DEFAULT FALSE,
 contextSelection ContextSelection OPTIONAL,
 supplyContexts [0] CHOICE {
 allContexts NULL,
 selectedContexts SET SIZE (1..MAX) OF CONTEXT.&id } OPTIONAL }

AreaSpecification ::= SEQUENCE {
 contextPrefix DistinguishedName,
 replicationArea SubtreeSpecification }

Knowledge ::= SEQUENCE {
 knowledgeType ENUMERATED {
 master (0),
 shadow (1),
 both (2) },
 extendedKnowledge BOOLEAN DEFAULT FALSE }

AttributeSelection ::= SET OF ClassAttributeSelection

ClassAttributeSelection ::= SEQUENCE {
 class OBJECT IDENTIFIER OPTIONAL,
 classAttributes ClassAttributes DEFAULT allAttributes : NULL }

ClassAttributes ::= CHOICE {
 allAttributes NULL,
 [0] **AttributeTypes**,
 [1] **AttributeTypes** }

AttributeTypes ::= SET OF AttributeType

UpdateMode ::= CHOICE {
 supplierInitiated [0] **SupplierUpdateMode**,
 consumerInitiated [1] **ConsumerUpdateMode** }

SupplierUpdateMode ::= CHOICE {
 onChange BOOLEAN,
 scheduled SchedulingParameters }

ConsumerUpdateMode ::= SchedulingParameters

SchedulingParameters ::= SEQUENCE {
 periodic PeriodicStrategy OPTIONAL, -- must be present if **othertimes** is set to FALSE --
 othertimes BOOLEAN DEFAULT FALSE }

PeriodicStrategy ::= SEQUENCE {
 beginTime Time OPTIONAL,
 windowSize INTEGER,
 updateInterval INTEGER }

Time ::= GeneralizedTime
 -- as per 41.3 b) and c) of ITU-T Rec. X.680 | ISO/IEC 8824-1

-- shadow operations, arguments, and results --

All-operations-consumer-initiated OPERATION ::= {
 requestShadowUpdate | updateShadow }

All-operations-supplier-initiated OPERATION ::= {
 coordinateShadowUpdate | updateShadow }

coordinateShadowUpdate OPERATION ::= {
 ARGUMENT CoordinateShadowUpdateArgument
 RESULT CoordinateShadowUpdateResult
 ERRORS { shadowError }
 CODE id-opcode-coordinateShadowUpdate }

CoordinateShadowUpdateArgument ::= **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 agreementID **AgreementID**,
 lastUpdate **Time OPTIONAL**,
 updateStrategy **CHOICE** {
 standard **ENUMERATED** {
 noChanges (0),
 incremental (1),
 total (2) },
 other **EXTERNAL** },
 securityParameters **SecurityParameters OPTIONAL** } }

CoordinateShadowUpdateResult ::= **CHOICE** {
 null **NULL**,
 information **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 greementID **AgreementID**,
 lastUpdate **Time OPTIONAL**,
 COMPONENTS OF **CommonResultsSeq** } } }

requestShadowUpdate **OPERATION** ::= {
 ARGUMENT **RequestShadowUpdateArgument**
 RESULT **RequestShadowUpdateResult**
 ERRORS { **shadowError** }
 CODE **id-opcode-requestShadowUpdate** }

RequestShadowUpdateArgument ::= **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 agreementID **AgreementID**,
 lastUpdate **Time OPTIONAL**,
 requestedStrategy **CHOICE** {
 standard **ENUMERATED** {
 incremental (1),
 total (2) },
 other **EXTERNAL** },
 securityParameters **SecurityParameters OPTIONAL** } }

RequestShadowUpdateResult ::= **CHOICE** {
 null **NULL**,
 information **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 agreementID **AgreementID**,
 lastUpdate **Time OPTIONAL**,
 COMPONENTS OF **CommonResultsSeq** } } }

updateShadow **OPERATION** ::= {
 ARGUMENT **UpdateShadowArgument**
 RESULT **UpdateShadowResult**
 ERRORS { **shadowError** }
 CODE **id-opcode-updateShadow** }

UpdateShadowArgument ::= **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 agreementID **AgreementID**,
 updateTime **Time**,
 updateWindow **UpdateWindow OPTIONAL**,
 updatedInfo **RefreshInformation**,
 securityParameters **SecurityParameters OPTIONAL** } }

UpdateShadowResult ::= **CHOICE** {
 null **NULL**,
 information **OPTIONALLY-PROTECTED** { [0] **SEQUENCE** {
 agreementID **AgreementID**,
 lastUpdate **Time OPTIONAL**,
 COMPONENTS OF **CommonResultsSeq** } } }

UpdateWindow ::= **SEQUENCE** {
 start **Time**,
 stop **Time** }

RefreshInformation ::= **CHOICE** {
 noRefresh **NULL**,
 total [0] **TotalRefresh**,
 incremental [1] **IncrementalRefresh**,
 otherStrategy **EXTERNAL** }

```

TotalRefresh ::= SEQUENCE {
    sDSE          SDSEContent OPTIONAL,
    subtree       SET SIZE (1..MAX) OF Subtree OPTIONAL }

```

```

SDSEContent ::= SEQUENCE {
    sDSEType      SDSEType,
    subComplete   [0] BOOLEAN DEFAULT FALSE,
    attComplete   [1] BOOLEAN OPTIONAL,
    attributes     SET OF Attribute,
    attValIncomplete SET OF AttributeType DEFAULT {} }

```

```
SDSEType ::= DSEType
```

```

Subtree ::= SEQUENCE {
    rdn          RelativeDistinguishedName,
    COMPONENTS OF TotalRefresh }

```

```
IncrementalRefresh ::= SEQUENCE OF IncrementalStepRefresh
```

```

IncrementalStepRefresh ::= SEQUENCE {
    sDSEChanges CHOICE {
        add      [0] SDSEContent,
        remove   NULL,
        modify    [1] ContentChange } OPTIONAL,
    subordinateUpdates SEQUENCE SIZE (1..MAX) OF SubordinateChanges OPTIONAL }

```

```

ContentChange ::= SEQUENCE {
    rename CHOICE {
        newRDN RelativeDistinguishedName,
        newDN  DistinguishedName } OPTIONAL,
    attributeChanges CHOICE {
        replace [0] SET SIZE (1..MAX) OF Attribute,
        changes [1] SEQUENCE SIZE (1..MAX) OF EntryModification } OPTIONAL,
    sDSEType      SDSEType,
    subComplete   [2] BOOLEAN DEFAULT FALSE,
    attComplete   [3] BOOLEAN OPTIONAL,
    attValIncomplete SET OF AttributeType DEFAULT {} }

```

```

SubordinateChanges ::= SEQUENCE {
    subordinate RelativeDistinguishedName,
    changes      IncrementalStepRefresh }

```

-- errors and parameters --

```

shadowError ERROR ::= {
    PARAMETER  OPTIONALLY-PROTECTED-SEQ { SEQUENCE {
        problem      ShadowProblem,
        lastUpdate    Time OPTIONAL,
        updateWindow  UpdateWindow OPTIONAL,
        COMPONENTS OF CommonResultsSeq } }
    CODE        id-errcode-shadowError }

```

```

ShadowProblem ::= INTEGER {
    invalidAgreementID      (1),
    inactiveAgreement       (2),
    invalidInformationReceived (3),
    unsupportedStrategy      (4),
    missedPrevious          (5),
    fullUpdateRequired       (6),
    unwillingToPerform       (7),
    unsuitableTiming         (8),
    updateAlreadyReceived    (9),
    invalidSequencing        (10),
    insufficientResources     (11) }

```

END -- DirectoryShadowAbstractService