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The Directory - Protocol Specifications

KT S - 1C(X519)

DSA, DAP/ DSP

1	1994. 2. 7	

The Directory

Protocol Specifications

KTS-1C(X519)

ABSTRACT

This standard defines directory capabilities, directory models, a framework for the provision of authentication services, the service provided by the directory the behaviour of DSAs taking part in the Distributed Directory application, application service element and application contexts for DAP and DSP, selected attribute types, selected attribute sets and selected object classes.

This standard has been produced to facilitate the interconnection of information processing systems to directory services.

HISTORY

Version	Issue Date	Contents
1	1994. 2. 7	Established

The Directory - Protocol Specifications

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0

0.1

(DIB)

0.2

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- ;
- ;
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0.3

(DSP)

(DSP)

. DAP

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1

X.511 X.518

2

X.200 - open Systems Interconnection - Basic Reference Model

X.208 - Open Systems Interconnection- Specificatiton of Abstract Syntax
Notation (ASN.1)

X.209 - Open Systems Interconnection-Specification of Basic Encoding rules for
Abstract Syntax notation One (ASN.1)

X.500 - ,

X.501 -

X.511 -

X.518 -

X.520 -

X.521 -

X.219 - Remote Operations - Model, Notation and Service Definition

X.229 - Remote Operations - Protocol Specification

X.217 - Open Systems Interconnection - Association Control : Service Definition

X.227 - Open Systems Interconnectitn - Association Control : Protocol
Specification

X.216 - Open Systems Interconnection - Presentation Layer Service Definition.

3

4

3.1 OSI

X.200

:

- a) - - ;
- b) - - - ;
- c) - - - ;
- d) - ;
- e) - ;
- f) - .

3.2

X.501

- a) ;
- b) () ;
- c) (DSA);
- d) (DUA).

3.3

X.518

- a) (chaining);
- b) (referral).

4

AC
ACSE
AE
APCI
APDU
ASE
DAP
DSA
DSP
DUA
ROSE

5

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a) 7

X.208

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b)

(RO-)

- - , -

X.219

c)

o

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(Proper Name)

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6

6.1

X.511

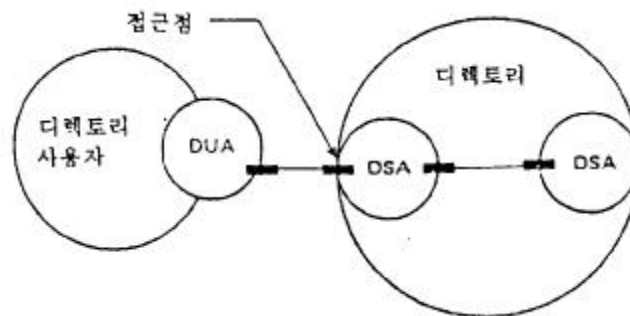
DUA

DSA

X.518

DSA

1/X.519



1/X.519

DUA가

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DSP OSI

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DAP DSP

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(AE)

. AE

(ASE)

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ASE

ASE

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/

ASE ROSE

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(ACSE) AE

-

. DUA DSA DUA .

6.2

(DSP) ROSE
ACSE 3 ASE , readASE, searchASE
modifyASE raddPort, searchPort modifyPort
. directoryAccessAC readASE, searchASP modifyASE, Acse, Rose

6.3

(DSP) X.518
ROSE ACSE 3 ASE , chainedReadASE, chainedSearchASE
ChainedModifyASE chainedReadPort, chainedSearchPort
chainedModifyPort directorySystemAC chainedReadASE,
chainedSearchASE chainedModifyASE, Acse, Rose

6.4

DAP DSP

6.4.1 ROSE

(ROSE) X.219
ROSE /
ASE ROSE RO-INVOKE, RO-RESULT, RO-ERROR, RO-REJECT-U RO-REJECT-P
DAP DSP 2 ((DUA
DAP DAP
DAP 1 DSA7+ DUA
DSP 3 DSA7+ DSA ,

6.4.2 ACSE

(ACSE) X.217 .]
ACES AE (, ,)
(DSA DSA)
ACSE A-ASSOCIATE A-RELEASE - ACSE
A-ABORT A-P-ABORT .

6.4.3

X.216
()
- - -
ACSE P-CONNECT, P-RELEASE, P-U-ABORT P-P-ABORT
ROSE P-DATA

6.4.4

- X.215 .
 .
 - .
 X.214 .
 .
 .
 0 () .
 .
 , DAP DSP
 가
 .
 X.213 OSI - .
 - X.121, E.163/E.164 X.200 (OSI NSAP -)

7

7.1
 7.2.1, 7.2.3 7.2.5 ASE ,
 id-as-directoryAccessAS . 7.2.2, 7.2.4 7.2.6 ASE
 , id-as-directrySystemAS . ROSE
 APDU - - - (APCI)
 APDU ASE ROSE ACSE
 APDU
 ACSE id-as-acse가
 ASN.1 .

7.2

7.3 “ ” ASE
 .
 - ASE
 ASE .

7.2.1 ASE

readASE ReadPort, , X.511 ,

readASE

APPLICATION-SERVICE-ELEMENT

CONSUMER INVOKES

{read, compare, abandon}

::= id-ase-readASE

read Read ::= 1

compare Compare ::= 2

abandon Abandon ::= 3

7.2.2 ASE

~~chainedReadASE~~ ~~ChainedReadPot~~ , X.518 ~~ChainedRead,~~
~~ChainedCompare~~ ~~ChainedAbandon~~ .
~~chainedReadASE~~
~~APPLICATION-SERVICE-ELEMENT~~
~~OPERATIONS {~~
~~chainedRead,~~
~~chainedCompare~~
~~chainedAbandon}~~
~~::= id-ase-chainedReadASE~~
~~chainedRead~~ ~~ChainedRead~~ ::= 1
~~chainedCompare~~ ~~ChainedCompare~~ ::= 2
~~chainedAbandon~~ ~~ChainedAbandon~~ ::= 3

7.2.3 ASE

~~searchASE~~ ~~SearchPort~~ , X.511
~~.~~
~~searchASE~~
~~APPLICATION-SERVICE-ELEMENT~~
~~CONSUMER INVOKES {list, search}~~
~~::= id-ase-searchASE}~~
~~list~~ ~~List~~ ::=4
~~search~~ ~~Search~~ ::=5

7.2.4 ASE

~~ChainedSearchASE~~ ~~ChainedSearchPort~~ , X.518 ~~ChainedList~~
~~ChainedList~~ ~~ChainedSearch~~ .
~~chainedSearchASE~~
~~APPLICATION-SERVICE-ELEMENT~~
~~OPERATIONS {~~
~~chainedList, chainedSearch}~~
~~::= id-ase-chainedSearchASE~~
~~chainedList~~ ~~ChainedList~~ ::= 4
~~chainedSearch~~ ~~ChainedSearch~~ ::= 5

7.2.5 ASE

~~modifyASE~~ ~~ModifyPort~~ , X.511 ~~AddEntry, RemoveEntry,~~
~~ModifyEntry~~ ~~ModifyRDN~~ .
~~modifyASE~~
~~APPLICATION-SERVICE-ELEMENT~~
~~CONSUMER INVOKES~~
~~{addEntry, removeEntry,~~
~~modifyEntry, modifyRDN}~~
~~::= id-ase-modifyASE~~
~~addEntry~~ ~~AddEntry~~ ::= 6
~~removeEntry~~ ~~RemoveEntry~~ ::= 7

modifyEntry ModifyEntry ::= 8

modifyRDN ModifyRDN ::= 9

7.2.6 ASE

ChainedModifyASE ChainedModifyPort , X.518

ChainedAddEntry, ChainedRemoveEntry, ChainedModifyEntry ChainedModifyRDN

chainedModifyASE

APPLICATION-SERVICE-ELEMENT

OPERATIONS

{ChainedAddEntry,
chainedRemoveEntry,
chainedModifyEntry,
chainedModifyRDN}

::= id-ase-chainedModifyASE

chainedAddEntry ChainedAddEntry ::= 6

chainedRemoveEntry ChainedRemoveEntry ::= 7

chainedModifyEntry ChainedModifyEntry ::= 8

chainedModifyRDN ChainedModifyRDN ::= 9

7.3

7.3.1

directoryAccessAC DUA7+ ASE , readASE, searchASE, modifyASE

directoryAccessAC

APPLICATION-CONTEXT

APPLICATION SERVICE ELEMENTS

{aCSE}

BIND DirectoryBind

UNBIND DirectoryUnbind

REMOVE OPERATIONS {rCSE}

INITIATOR CONSUMER OF {

readASE,
searchASE,
modifyASE }

ABSTRACT SYNTAXES {

id-as-acse,

id-as-directoryAccessAS}

::= id-ac-directoryAccessAC

7.3.2

directorySystemAC DSA

DirectorySystemAC

APPLICATION-CONTEXT

APPLICATION SERVICE ELEMENTS

{aCSE}

BIND DSABind

```

UNBIND DSAUnbind
REMOTE OPERATIONS {rOSE}
OPERATIONS OF
    {chainedReadASE,
     chainedSearchASE,
     chainedModifyASE}
ABSTRACT SYNTAX {
    id-as-acse,
    id-as-directorySystemAS}
::= id-ac-directorySystemAC

```

7.4

abandoned	abandoned	::= 5
attributeError	attributeError	::= 1
nameError	nameError	::= 2
referral	referral	::= 4
securityError	securityError	::= 6
serviceError	serviceError	::= 3
updateError	updateError	::= 8
dSAReferral	dSAReferral	::= 9
abandonFailed	abandonFailed	::= 7

8

DSP DSP

8.1 ACSE

(ACSE DSA) - (DSA) - ACSE X.217

8.1.1 A-ASSOCIATE

- ACSE A-ASSOCIATE A-ASSOCIATE

8.1.1.1

A-ASSOCIATE ,
“ ”

8.1.1.2

directoryAccessAC directorySystemAC -

8.1.1.3

A-ASSOCIATE -
X.219

8.1.1.4
ACSE - (id-as-acse) DAP - (id-as-directoryAccessAS)
, DSP - (id-as-directorySystemAS) A-ASSOCIATE

8.1.1.5
A-ASSOCIATE A-SSOCIATE
” “ ” “ ” “

8.1.1.6
A-ASSOCIATE
A-ASSOCIATE

a) ;
b) .
8.1.1.7

) DUA가
DUA(DSA)가 DSA
Continuation Reference AccessPoint DSA가
, ,

8.1.2 A-RELEASE -
ACSE A-RELEASE A-RELEASE

8.1.2.1
“ ” 가

8.1.3 A-ABORT A-P-ABORT
- ACSE A-ABORT A-P-ABORT

8.2 ROSE
ASE ROSE RO-INVOKE, RO-RESULT, RO-ERROR, RO-REJECT-U
RO-PROJECT-P ROSE ASE -
X.219

9

9.1 DUA
DUA 9.1.1 - 9.1.3

9.1.1

- a) DUA가 directoryAccessAC -
- b) (0, ,)

9.1.2

- DUA
- a) 7 directoryAccessAC -

9.1.3

- DUA
- a) 8

9.2 DSA

DSA 9.2.1 - 9.2.3

9.2.1

- a) , directoryAccessAC, directorySystemAC
DSA가 , DMD DSA DSA
directorySystemAC ;
- ,
- b) X.518 , DSA가 1 DSA 가 ;
- c) directorySystemAC - . X.518
;
- d) - (0, ,);
- e) . X.520 ;
- f) . X.521 .

9.2.2

- DSA
- a) 7 -
- b) X.501
- c) X.518
- d) 1 DSA , X.518
- e)

f)

9.2.3

DSA

a) 8

b) X.518, (referral)

c) directoryAccessAC - DSP
X.518

d) directorySystemAC - X.518

e) X.518

- directorySystemAC DSA

A

ASN.1 DAP

ASN.1 ASN.1, Direct
oryAccessProtocol

DirectoryAccessProtocol {joint-iso-ccitt ds(5) modules(1) dap(11)}

DEFINITIONS ::=

BEGIN

EXPORTS

directoryAccessAc, readASE, searchASE, modifyASE;

IMPORTS

abstractService

FROM UsefulDefinitions

{joint-iso-ccitt ds(5) modules(1) usefulDefinitions(0)}

APPLICATION-SERVICE-ELEMENT, APPLICATION-CONTEXT, acSE

FROM Remote-Operations-Notation-extension

{joint-iso-ccitt remoteOperations(4) notation - extension(2)}

id-ac-directoryAccessAc, id-ase-readASE, id-ase-searchASE,

id-ase-modifyASE, id-as-directoryAccessAs, id-as-acse

FROM ProtocolObjectIdentifiers

{joint-iso-ccitt ds(5) modules (1)

protocolObjectIdentifiers (4)}

DirectoryBind, DirectoryUnbind, Read, Compare, Abandon, List,

Search, AddEntry, RemoveEntry, ModifyEntry, ModifyRDN, Abandoned,

AbandonFailed,

AttributeError, NameError, Referral, SecurityError, ServiceError,

UpdateError


```

FROM      DirectoryAbstractService
          directoryAbstractService;
-- Application Contexts --
directoryAccessAc
  APPLICATION-CONTEXT
    APPLICATION SERVICE ELEMENTS {aCSE}
    BIND DirectoryBind
    UNBIND DirectoryUnbind
    REMOTE OPERATIONS {rCSE}
    INITIATOR CONSUMER OF {readASE, searchASE, modifyASE}
    ABSTRACT SYNTAXES {
      id-as-acse, id-as-directoryAccessAS}
    ::= id-ac-directoryAccessAC
-- Read ASE --
readASE
  APPLICATION-SERVICE-ELEMENT
    CONSUMER INVOKES {read, compare, abandon}
    ::= id-ase-readASE
-- Search ASE --
searchASE
  APPLICATION-SERVICE-ELEMENT
    CONSUMER INVOKES {list, search}
    ::= id-ase-searchASE
-- Modify ASE --
modifyASE
  APPLICATION-SERVICE-ELEMENT
    CONSUMER INVOKES {addEntry, removeEntry, modifyEntry, modifyRDN}
    ::= id-ase-modifyASE
-- Remote Operations --
read      Read      ::= 1
compare   Compare   ::= 2
abandon   Abandon    ::= 3
list      List       ::= 4
search    Search     ::= 5
addEntry  AddEntry   ::= 6
removeEntry RemoveEntry ::= 7
modifyEntry ModifyEntry ::= 8
modifyRDN ModifyRDN  ::= 9
-- Remote Errors --
attributeError AttributeError ::= 1
nameError      NameError      ::= 2
serviceError   ServiceError   ::= 3
referral       Referral       ::= 4
abandoned      Abandoned      ::= 5
securityError  SecurityError  ::= 6
abandonFailed  AbandonFailed  ::= 7

```

```

updateError      UpdateError      ::= 8
END

```

B

ASN.1 DSP

```

ASN.1
ASN.1
,
DirectorySystemProtocol
DirectorySystemProtocol {joint-is-ccitt ds(5) modules(1) dsp(12)}
DEFINITIONS ::=
BEGIN
EXPORTS
    directorySystemAC, chainedReadASE, chainedSearchASE, chainedModifyASE;
IMPORTS
    distributedOperations, directoryAbstractService
    FROM UsefulDefinitions
        {joint-iso-ccitt ds(5) modules(1) usefulDefinitions(0)}
    APPLICATION-SERVICE-ELEMENT, APPLICATION-CONTEXT, aCSE
    FROM Remote-Operations-Notation-extension
        {joint-iso-ccitt remoteOperations(4) notation-extension(2)}
    id-ac-directorySystemAC, id-ase-chainedReadASE,
    id-ase-chainedSearchASE, id-ase-chainedModifyASE,
    id-as-directorySystemAC, id-ase-acse;
    FROM ProtocolObjectIdentifiers
        {joint-iso-ccitt ds(5) modules (1)
        protocolObjectIdentifiers (4)}
    Abandoned, AttributeError, AbandonFailed,
    NameError, DSAREferral, SecurityError, ServiceError, UpdateError
    FROM DirectoryAbstractService directoryAbstractService
    DSABind, DSUnbind,
    ChainedRead, ChainedCompare, ChainedAbandon,
    ChainedList, ChainedSearch,
    ChainedAddEntry, ChainedRemoveEntry, ChainedModifyEntry,
    ChainedModifyRDN, DSAREferral,
    FROM DistributedOperations
        distributedOperations;
-- Application Contexts --
directorySystemAC
    APPLICATION-CONTEXT
        APPLICATION SERVICE ELEMENTS {aCSE}
        BIND DSABind
        UNBIND DSUnbind
        REMOTE OPERATIONS {rCSE}
        OPERATIONS CF {

```

```

        chainedReadASE, chainedSearchASE, chainedModifyASE}
    ABSTRACT SYNTAXES {
        id-as-acse, id-ds-directorySystemAS}
    ::= {id-ac-directorySystemAC}
-- Chained Read ASE --
chainedReadASE
    APPLICATION-SERVICE-ELEMENT
        OPERATIONS {chainedRead, chainedCompare, chainedAbandon}
    ::= id-ase-chainedReadASE
-- Chained Search ASE --
chainedSearchASE
    APPLICATION-SERVICE-ELEMENT
        OPERATIONS {chainedList, chainedSearch}
    ::= id-ase-chainedSearchASE
-- Chained Modify ASE --
chainedModifyASE
    APPLICATION-SERVICE-ELEMENT
        OPERATIONS
            {chainedAddEntry, chainedRemoveEntry,
             chainedModifyEntry, chainedModifyRDN}
    ::= id-ase-chainedModifyASE
-- Remote Operations --
chainedRead          ChainedRead          ::= 1
chainedCompare       ChainedCompare        ::= 2
chainedAbandon       ChainedAbandon        ::= 3
chainedList          ChainedList           ::= 4
chainedSearch        ChainedSearch         ::= 5
chainedAddEntry      ChainedAddEntry       ::= 6
chainedRemoveEntry   ChainedRemoveEntry    ::= 7
chainedModifyEntry   ChainedModifyEntry    ::= 8
chainedModifyRDN     ChainedModifyRDN      ::= 9
-- Remote Errors --
attributeError       AttributeError        ::= 1
nameError            NameError            ::= 2
serviceError         ServiceError         ::= 3
abandoned            Abandoned            ::= 5
securityError        SecurityError        ::= 6
abandonFailed        Abandoned            ::= 7
updateError          UpdateError          ::= 8
dsaReferral          DSAREferral          ::= 9
END

```

C

ASN.1

ASN.1

ProtocolObjectIdentifier

ProtocolObjectIdentifiers {joint-iso-ccitt ds(5) modules(1) protocol
ObjectIdentifiers(4))

DEFINITIONS ::=

BEGIN

EXPORTS

id-ac-directoryAccessAC, id-ac-directorySystemAC, id-ase-readASE,
id-ase- suchASE,
id-ase-modifyASE, id-ase-chainedReadASE,
id-ase-chainedSearchASE, id-ase-chainedModifyASE, id-as-acse,
id-as-directotyAccessAS, id-as-directorySystemsAS;

IMPORTS

id-ac, id-ase, id-as

FROM UsefulDefinitions

(joint-iso-ccitt ds(5) modules(1) usefulDefinitions(0);

-- Application Contexts --

id-ac-directoryAccessAc OBJECT IDENTIFIER ::= {id-ac 1}

id-ac-directorySystemAc OBJECT IDENTIFIER ::= {id-ac 2}

-- ASEs --

id-ase-readASFE OBJECT IDENTIFIER ::= {id-ase 1}

id-ase-searchASE OBJECT IDENTIFIER ::= {id-ase 2}

id-ase-modifyASE OBJECT IDENTIFIER ::= {id-ase 3}

id-ase-chainedReadASE OBJECT IDENTIFIER ::= {id-ase 4}

id-ase-chainedSearchASE OBJECT IDENTIFIER ::= {id-ase 5}

id-ase-chainedModifyASE OBJECT IDENTIFIER ::= {id-ase 6}

-- ASs --

id-as-directoryAccessAS OBJECT IDENTIFIER ::= {id-as 1}

id-as-directorySystemAS OBJECT IDENTIFIER ::= {id-as 1}

id-as-acse OBJECT IDENTIFIER ::=

{joint-iso-ccitt association-control(2) abstract-syntax(1)

apdus(0) version1(1)}

END