INTERNATIONAL STANDARD

ISO/IEC
13248-2

First edition
1998-12-15

Information technology — Open Systems Interconnection — The Directory: Protocol Implementation Conformance Statement (PICS) proforma for the Directory System Protocol

Technologies de l'information — Interconnexion de systèmes ouverts (OSI) — L'annuaire: Proformes de déclaration de conformité de mise en œuvre du protocole (PICS) pour le protocole système de l'annuaire

Contents

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 13248-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 33, *Distributed application services*, in collaboration with ITU-T. The identical text is published as ITU-T Recommendation X.584.

ISO/IEC 13248 consists of the following parts, under the general title *Information technology — Open Systems Interconnection — The Directory*:

— *Part 1: Protocol Implementation Conformance Statement (PICS) proforma for the Directory Access Protocol*

— *Part 2: Protocol Implementation Conformance Statement (PICS) proforma for the Directory System Protocol*

— *Part 3: Protocol Implementation Conformance Statement (PICS) proforma for the Directory Operational Binding Management Protocol*

— *Part 4: Protocol Implementation Conformance Statement (PICS) proforma for the Directory Information Shadowing Protocol*

Annex A forms an integral part of this part of ISO/IEC 13248.

Introduction

This Recommendation | International Standard has been produced to facilitate the interconnection of information processing systems to provide directory services. The set of all such systems, together with the directory information which they hold, can be viewed as an integrated whole, called the **Directory**. The information held by the Directory, collectively known as the Directory Information Base (DIB), is typically used to facilitate communication between, with or about objects such as application entities, people, terminals and distribution lists.

The Directory plays a significant role in Open Systems Interconnection, whose aim is to allow, with a minimum of technical agreement outside of the interconnection standards themselves, the interconnection of information processing systems:

–   from different manufacturers;

–   under different management;

–   of different levels of complexity; and

–   of different ages.

To evaluate conformance of a particular implementation, it is necessary to have a statement of which capabilities and options have been implemented for a given OSI protocol. Such statement is called a Protocol Implementation Conformance Statement (PICS).

This Recommendation | International Standard provides the Protocol Implementation Conformance Statement (PICS) proforma for the Dirctory System Protocol (DSP) specified in ITU-T Rec. X.500-Series (1993) | ISO/IEC 9594:1995. All references to the Directory Specifications, made throughout this Recommendation | International Standard, are to the second edition of those specifications (ITU-T Rec. X.500-Series (1993) | ISO/IEC 9594:1995).

Annex A specifies the PICS proforma for the Directory System Protocol as defined in ITU-T Rec. X.500-Series | ISO/IEC 9594.

INTERNATIONAL STANDARD

ITU-T RECOMMENDATION

INFORMATION TECHNOLOGY – OPEN SYSTEMS INTERCONNECTION – THE DIRECTORY: PROTOCOL IMPLEMENTATION CONFORMANCE STATEMENT (PICS) PROFORMA FOR THE DIRECTORY SYSTEM PROTOCOL

1   Scope

This Recommendation | International Standard provides the PICS proforma for the Directory System Protocol (DSP) specified in ITU-T Rec. X.500-Series (1993) | ISO/IEC 9594:1995. This PICS proforma is in compliance with the relevant requirements, and in accordance with the relevant guidance for PICS proforma, given in ITU-T Rec. X. 296 | ISO/IEC 9646-7.

The supplier of a DSP implementation that is claimed to conform to ITU-T Rec. X.500-Series | ISO/IEC 9594 is required to complete a copy of the PICS proforma provided in Annex A and is required to provide the information necessary to identify both the supplier and the implementation.

The scope of this Recommendation | International Standard is the specification of the conformance statements for a Directory System Agent (DSA).

2   Normative references

The following Recommendations and International Standards contain provisions which, through reference in this text, constitute provisions of this Recommendation | International Standard. Members of IEC and ISO maintain registers of currently valid International Standards. The Telecommunication Standardization Bureau of the ITU maintains a list of currently valid ITU-T Recommendations.

2.1   Identical Recommendations | International Standards

– ITU-T Recommendation X.500 (1993) | ISO/IEC 9594-1:1995, *Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models and services*.

– ITU-T Recommendation X.501 (1993) | ISO/IEC 9594-2:1995, *Information technology – Open Systems Interconnection – The Directory: Models*.

– ITU-T Recommendation X.509 (1993) | ISO/IEC 9594-8:1995, *Information technology – Open Systems Interconnection – The Directory: Authentication framework*.

– ITU-T Recommendation X.511 (1993) | ISO/IEC 9594-3:1995, *Information technology – Open Systems Interconnection – The Directory: Abstract service definition*.

– ITU-T Recommendation X.518 (1993) | ISO/IEC 9594-4:1995, *Information technology – Open Systems Interconnection – The Directory: Procedures for distributed operation*.

– ITU-T Recommendation X.519 (1993) | ISO/IEC 9594-5:1995, *Information technology – Open Systems Interconnection – The Directory: Protocol specifications*.

– ITU-T Recommendation X.520 (1993) | ISO/IEC 9594-6:1995, *Information technology – Open Systems Interconnection – The Directory: Selected attribute types*.

– ITU-T Recommendation X.521 (1993) | ISO/IEC 9594-7:1995, *Information technology – Open Systems Interconnection – The Directory: Selected object classes.*

– ITU-T Recommendation X.525 (1993) | ISO/IEC 9594-9:1995, *Information technology – Open Systems Interconnection – The Directory: Replication*.

2.2   Paired Recommendations | International Standard equivalent in technical content

–   ITU-T Recommendation X. 290 (1995), *OSI conformance testing methodology and framework for protocol Recommendations for ITU-T applications – General concepts*.

ISO/IEC 9646-1:1994, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts*.

–   ITU-T Recommendation X. 296 (1995), *OSI conformance testing methodology and framework for protocol Recommendation for ITU-T applications – Implementation Conformance Statements*.

ISO/IEC 9646-7:1995, *Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements*.

3   Definitions

For the purposes of this Recommendation | International Standard, the following definitions apply.

3.1   Directory definitions

This Recommendation | International Standard uses terms defined in ITU-T Rec. X.500-Series | ISO/IEC 9594.

3.2   Conformance definitions

This Recommendation | International Standard uses the following terms defined in ITU-T Rec. X.290 | ISO/IEC 9646-1:

a)   Protocol Implementation Conformance Statement (PICS);

b)   PICS proforma;

c)   conformance;

d)   mandatory requirement;

e)   optional requirement;

f)   conditional requirement

3.3   Basic directory conformance definitions

The following terms are defined in this Recommendation | International Standard.

3.3.1   centralized DSA: A DSA that is not capable of holding knowledge information about other DSAs. Such a DSA is not capable of returning referrals.

3.3.2   cooperating DSA: A DSA that is capable of holding knowledge references. Such a DSA is capable of returning referrals, and may also be a chaining DSA.

3.3.3   chaining DSA: A cooperating DSA that is capable of invoking chained operations, functioning as a DSP invoker. A chaining DSA is also a cooperating DSA.

3.3.4   initiator DSA: An initiator DSA is the first DSA of a number of DSAs which cooperate to progress a user's request. See Figures 1 and 2.

3.3.5   relay DSA: A DSA that initiates a chained operation as a result of relaying in the Name Resolution Phase. See Figure 2.

3.3.6   responder DSA: A responder DSA is a DSA that processes a request and generates a result or error. See Figures 1 and 2.

TISO8750-98/d01

Figure 1

TISO8760-98/d02
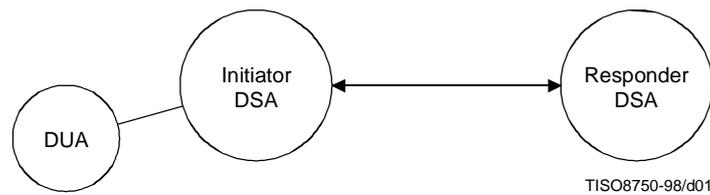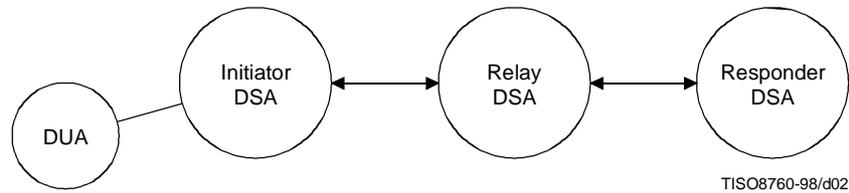
Figure 2

3.3.7   **security level**: Security levels shall be declared for peer entity authentication, originator authentication and results authentication, respectively:

a)   for originator authentication, there are five security levels which are "none", "simple without password", "simple with unprotected password", "simple with protected password" and "strong";

b)   for peer entity authentication, there are three security levels which are "none", "simple with distinguished name" and "strong";

c)   for results authentication, there are two security levels which are "none" and "strong".

4   Abbreviations

For the purposes of this Protocol Implementation Conformance Statement, the following abbreviations apply:

ACI	Access Control Information
CCITT	International Telegraph & Telephone Consultative Committee
DAP	Directory Access Protocol
DIB	Directory Information Base
DISP	Directory Information Shadowing Protocol
DIT	Directory Information Tree
DOP	Directory Operational Binding Management Protocol
DSA	Directory System Agent
DSP	Directory System Protocol
DUA	Directory User Agent
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ITU	International Telecommunication Union
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
IUT	Implementation Under Test
NSSR	Non-Specific Subordinate Reference
NSAP	Network Service Access Point
PDU	Protocol Data Unit
PICS	Protocol Implementation Conformance Statement
RDN	Relative Distinguished Name
ROSE	Remote Operations Service Element

5   Conventions

This Recommendation | International Recommendation refers exclusively to the second edition of the Directory Specifications listed in clause 2.

6   Conformance

A conforming PICS proforma shall be technically equivalent to ITU-T Rec. X.500-Series | ISO/IEC 9594 and shall preserve the numbering and ordering of the items in ITU-T Rec. X.500-Series (1993) | ISO/IEC 9594:1995.

A PICS which conforms to this Recommendation | International Standard shall:

   a)   describe an implementation which conforms to ITU-T Rec. X.500-Series | ISO/IEC 9594;

   b)   be a conforming PICS proforma, which has been completed in accordance with the instructions for completion given in A.2;

   c)   include information necessary to uniquely identify both the supplier and the implementation.

Annex A[1)]

**Directory system protocol –
Protocol Implementation Conformance Statement (PICS) proforma**
(This annex forms an integral part of this Recommendation | International Standard)

A.1   Identification of the ICS proforma corrigenda

The supplier of the PICS proforma shall identify any corrigenda (i.e. Technical Corrigenda or equivalent) to the published proforma that have been applied. Suppliers of the proforma should modify the proforma, or attach relevant additional pages in order to apply the corrigenda, and then record the application of the corrigenda in the table below.

Identification of corrigenda applied to this PICS proforma	ITU-T X.584 (1997) | ISO/IEC 13248-2:1998
	Corr:
	Corr:
	Corr:
	Corr:

A.2   Instructions

A.2.1   Purpose and structure of the proforma

The purpose of this PICS proforma is to provide suppliers of implementations of ITU-T Rec. X.500-Series (1993) | ISO/IEC 9594:1995 with consistent means of stating which capabilities have been implemented.

The proforma is in the form of a questionnaire and consists of a set of items. An item is provided for each capability for which an implementation choice is allowed. Items are also provided for mandatory capabilities for which no implementation choice is allowed. Each item includes an item number, item description, a status value specifying the support requirement, and room for a support answer to be provided by the supplier.

This subclause provides general information and instructions for completion of the proforma.

Subclause A.3 is for the identification of the implementation.

Subclause A.4 is for identifying the protocol within ITU-T Rec. X.500-Series | ISO/IEC 9594.

Subclause A.5 is for the identification of the Technical Corrigenda to the protocol.

Subclause A.6 contains tables in which the supplier specifies details of the implementation options chosen.

A.2.2   Symbols, terms, and abbreviations

A.2.2.1   Introduction

Notations have been introduced in order to reduce the size of the tables in the PICS proforma. These have allowed the use of multi-column layout where the columns are headed 'Status' and 'Support'. Definitions of each are given below. Additionally, the following definitions apply.

A.2.2.1.1 (PICS) item: A row in the PICS proforma table.

A.2.2.1.2 (PICS) question: The question to be answered in the intersection of a PICS item and either a support column (i.e. "Is this item supported in the context applying to this table and column?") or supported value column (i.e. "What values are supported for this item in the context applying to this table and column?") in a PICS proforma table.

[1)] **Copyright release for ICS proforma**

Users of this Recommendation | International Standard may freely reproduce the ICS proforma in this annex so that it can be used for its intended purpose, and may further publish the completed ICS.

A.2.2.1.3 status (value): An allowed entry in the status column for an item in a PICS proforma table.

A.2.2.1.4 (support) answer: An allowed entry in the support or supported values columns for an item in a PICS, in answer to a PICS question.

A.2.2.2 Prerequisite notation

If a predicate applies to a whole table, a prerequisite line may be specified in front of the table to which it applies. A prerequisite line takes the form:

> Prerequisite: <Predicate>

The meaning of such a line is that if <predicate> is True, then the table applies, else it is not applicable.

A.2.2.3 Item reference numbers

Each line within the PICS proforma is numbered at the left-hand edge of the line. This numbering is included as a means of uniquely identifying all possible implementation details within the PICS proforma. This referencing is used both inside the PICS proforma, and for references from other test specification documents.

The means of referencing individual responses is done by the following sequence:

> – a reference to the smallest enclosing the relevant item;
>
> – a solidus character, '/';
>
> – the reference number of the row in which the response appears;
>
> – if, and only if, more than one response occurs in the row identified by the reference number, then each possible entry is implicitly labeled a, b, c, etc., from left to right, and this letter is appended to the sequence.

An example of the use of this notation would be A.6.3.3.1.1/1, which refers to the support for credentials in a DirectoryBind protocol data unit.

A.2.2.4 Status column

This column indicates the level of support required for conformance to this Recommendation | International Standard. The values are as follows:

> m   The capability is required to be implemented in conformance with the related specification
>
> o   The capability may be implemented and if it is implemented it is required to conform to the related specification
>
> c   The requirement on the capability depends on the selection of other optional or conditional items
>
> i   The capability is outside the scope of this PICS and hence irrelevant and not subject to conformance testing
>
> –   In the given context it is impossible to use this capability

Nested conditionals are denoted by nested numbering (e.g. 1, 1.1, 1.1.1, etc.) of the item descriptions in the tables. A table may have zero, one or more levels of nesting. The status of a leading item is specified by its status entry, as defined above. The status of a subordinate (that is nested) item is specified as follows: if the superior item is supported, the status of the subordinate item is determined by its status column entry and applicable predicate, if any. If the superior item is not supported, the subordinate item is not applicable, independent of its status column entry.

The Status "Initiator", "Responder", or "Relay" identifies whether the implementation is an Initiator, Responder, or Relay DSA.

A.2.2.5 Support column

This column shall be completed by the supplier or implementor, to indicate the level of implementation of each item. An item is not considered implemented simply because a default value has been defined by the standard. In order for an Implementation Under Test (IUT) to claim a protocol element is implemented, it must have the ability, where appropriate, to generate, receive, and perform the appropriate action.

The proforma is designed such that support values are:

> Y   Yes, the item has been implemented
>
> N   No, the item has not been implemented
>
> –   The item is not applicable

A.2.2.6   Definition of support

A DSA implementation may be an invoker and/or a consumer of a DSA operation unless "Chaining Mode" is supported, then the DSA implementation must be able to invoke and consume DSA operations.

A capability is said to be supported if the Implementation Under Test (IUT) is able:

–   to generate the corresponding operation parameters (either automatically or because the invoker explicitly requires that capability);

–   to interpret, handle and, when required, make available to the invoker the corresponding error or result.

A protocol element is said to be supported for a sending implementation if the IUT is able to generate it under some circumstances (either automatically or because the invoker requires relevant services explicitly).

A protocol element is said to be supported for a receiving implementation if it is correctly interpreted and handled and, when appropriate, made available to the invoker.

An object class is said to be supported if the IUT is able to construct entries of that object class. Support of an object class also requires support of the object identifier(s) of the superclass(es) of that object class.

An attribute type is said to be supported by a DSA implementation if the DSA supports the specified syntax, and hence data types, to which every value in such attributes shall conform.

A.2.2.7   Predicate column

The item number contained in the predicate column, if any, means that the status in the "Status" column applies only when the PICS states that one or more features identified by the item is supported.

A.2.2.8   Predicate Name

The predicate name indicates that name upon which the predicate is based. A predicate name flagged with an asterisk preceding the predicate name indicates the condition by which the predicate is being set. A predicate name not flagged with an asterisk indicates the predicate on which the conditional support is based.

Note that the predicate may be set by the Initiator, Responder, or Relay DSA but only applies for the type of DSA claiming support. For example, in an implementation which includes both an Initiator and a Responder DSA, if the Responder DSA supports the ChainedRead operation (which is mandatory for a Responder DSA), the "Read" predicate will be set for the Responder DSA only. If the ChainedRead operation is also supported for the Initiator DSA (which is optional), the predicate would be set for both the Initiator and Responder DSAs.

A.2.2.9   Note column

This column indicates the following:

notexx   Refers to Note xx

d(xx)   A default value xx within ( ) is defined in the standard. When absent in the PDU, both sender and receiver shall interpret it as having the default value specified in the standard.

See xx   Refers to Table xx

A.2.3   Instructions for completing the PICS proforma

The supplier shall complete all entries in the column marked 'Support'. In certain clauses of the PICS proforma, further guidance for completion may be necessary. Such guidance shall supplement the guidance given in this clause and shall have a scope restricted to the clause in which it appears. In addition, other specifically identified information shall be provided by the implementor where requested. No changes shall be made to the proforma except the completion as required. Recognizing that the level of detail required may, in some instances, exceed the space available for responses, a number of responses specifically allow for the addition of appendices to the PICS.

All entries within the PICS proforma shall be made in ink. Alterations to such entries shall be made by crossing out, not erasing or making the original entry illegible, and writing the new entry alongside the alteration. All such alterations to records shall be initialized by the staff making them.

A.3 Identification of the implementation

A.3.1 Identification of PICS

Item No.	Question	Response
1	Date of Statement (DD/MM/YY)	
2	PICS Serial Number	
3	System Conformance Statement Cross Reference	

A.3.2 Identification of the implementation and/or system

Item No.	Question	Response
1	Implementation Name	
2	Version Number	
3	Machine Name	
4	Machine Version Number	
5	Operating System Name	
6	Operating System Version No.	
7	Special Configuration	Note
8	Other information	

NOTE – Shall be a "cooperating" DSA as defined in clause 3 of this PICS. Other responses may be given, provided they do not conflict with other parts of the conformance statement. Some examples of other configurations:

– Chaining DSAs;

– First-level DSAs.

A.3.3 Identification of the system supplier

Item No.	Question	Response
1	Organization Name	
2	Contact Name(s)	
3	Address	
4	Telephone Number	
5	Telex Number	
6	Fax Number	
7	E-Mail Address	
8	Other information	

A.3.4   Identification of the testlab client

Item No.	Question	Response
1	Organization Name	
2	Contact Name(s)	
3	Address	
4	Telephone Number	
5	Telex Number	
6	Fax Number	
7	E-Mail Address	
8	Other information	

A.4   Identification of the protocol

Item No.	Identification of protocol specification	Support
1	ITU-T Rec. X.500 (1993) | ISO/IEC 9594-1:1995, Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models and services	
2	ITU-T Rec. X.501 (1993) | ISO/IEC 9594-2:1995, Information technology – Open Systems Interconnection – The Directory: Models	
3	ITU-T Rec. X.509 (1993) | ISO/IEC 9594-8:1995, Information technology – Open Systems Interconnection – The Directory: Authentication framework	
4	ITU-T Rec. X.511 (1993) | ISO/IEC 9594-3:1995, Information technology – Open Systems Interconnection – The Directory: Abstract service definition	
5	ITU-T Rec. X.518 (1993) | ISO/IEC 9594-4:1995, Information technology – Open Systems Interconnection – The Directory: Procedures for distributed operations	
6	ITU-T Rec. X.519 (1993) | ISO/IEC 9594-5:1995, Information technology – Open Systems Interconnection – The Directory: Protocol specifications	
7	ITU-T Rec. X.520 (1993) | ISO/IEC 9594-6:1995, Information technology – Open Systems Interconnection – The Directory: Selected attribute Types	
8	ITU-T Rec. X.521 (1993) | ISO/IEC 9594-7:1995, Information technology – Open Systems Interconnection – The Directory: Selected object classes	
9	ITU-T Rec. X.525 (1993) | ISO/IEC 9594-9:1995, Information technology – Open Systems Interconnection – The Directory: Replication	

A.5   Identification of corrigenda to the protocol

Item No.	Specification	Technical Corrigenda	Support
1	ITU-T Rec. X.501 (1993) | ISO/IEC 9594-2:1995	Cor.1: 1995	
2	ITU-T Rec. X.501 (1993) | ISO/IEC 9594-2:1995	Cor.2: 1995	
3	ITU-T Rec. X.509 (1993) | ISO/IEC 9594-8:1995	Cor.1: 1995	
4	ITU-T Rec. X.509 (1993) | ISO/IEC 9594-8:1995	Cor.2: 1995	
5	ITU-T Rec. X.509 (1993) | ISO/IEC 9594-8:1995	Cor.3: 1995	
6	ITU-T Rec. X.511 (1993) | ISO/IEC 9594-3:1995	Cor.1: 1995	
7	ITU-T Rec. X.511 (1993) | ISO/IEC 9594-3:1995	Cor.2: 1995	
8	ITU-T Rec. X.518 (1993) | ISO/IEC 9594-4:1995	Cor.1: 1995	
9	ITU-T Rec. X.518 (1993) | ISO/IEC 9594-4:1995	Cor.2: 1995	
10	ITU-T Rec. X.519 (1993) | ISO/IEC 9594-5:1995	Cor.1: 1995	
11	ITU-T Rec. X.520 (1993) | ISO/IEC 9594-6:1995	Cor.1: 1995	
12	ITU-T Rec. X.525 (1993) | ISO/IEC 9594-9:1995	Cor.1: 1995	
13	ITU-T Rec. X.525 (1993) | ISO/IEC 9594-9:1995	Cor.2: 1995	

A.6   ICS proforma tables

A.6.1   Roles

Item No.	Role	Status	Support	Predicate Name
1	Cooperating DSA	m		
2	Chaining DSA	o		
3	First-level DSA	o		*FirstLevel-DSA
4	Relay DSA	o		

A.6.2   General capabilities and global statement of conformance

Answering "No" to A.6.2.1/1 indicates non-conformance to the protocol specification. Non-supported mandatory capabilities are to be identified in the PICS, with an explanation of why the implementation is non-conformant. Such information shall be provided in A.6.5 "Other information". Parts of the PICS proforma tables are defined by the DSA role (initiator, relay, or responder) and by the type of operation (signed or unsigned). The Supplier of the implementation shall answer the appropriate columns for which support is being claimed.

A.6.2.1 General capabilities

Item No.	Question		Status	Support	Predicate Name
1	Are all mandatory general capabilities for the DSA implemented?		m		
2	Are all mandatory First-level DSA requirements (ITU-T Rec. X.518 | ISO/IEC 9594-4) implemented?		c1		
3	Are minimum knowledge requirements (ITU-T Rec. X.501 | ISO/IEC 9594-2) implemented?		m		
4	Supported Reference(s)	Superior Reference	m		
		Subordinate Reference	m		
		Cross Reference	o		
		Non-Specific Subordinate Reference	o		
		Immediate Superior Reference	o		
5	Is asynchronous (ROSE class 2) mode of operation supported?		m		
6	Does the DSA follow the rules of extensibility as defined in 7.5 of ITU-T Rec. X.519	ISO/IEC 9594-5?		m		
7	Is the alias mechanism implemented?		m		
8	Does the DSA support the application-context(s) directorySystemAC?		m		
9	Is the DSA capable of supporting collective attributes?		o		*Coll-Attr
10	Is the DSA capable of supporting hierarchical attributes (Subtypes)?		o		*Hier-Attr
11	Is the DSA capable of supporting auxiliary object classes?		o		
12	Is the DSA capable of supporting the subschema administrative operational attributes?		o		*SubSchema
13	Does the DSA support signed DSP operations and results?		o		*Signed-Ops
14	Does the DSA support NSSR?		o		*NSSR
c1:	If [FirstLevel-DSA] then m else i.				

A.6.2.2 Supported Security Levels

Item No.	Security Level	Status	Support	Predicate Name
1	none	o.1		
2	simple	o.1		*Simple-DSA
3	strong	o.1		*Strong-DSA
4	external	i		
o.1:	The DSA must support at least one security level, unless the external mechanism is supported.			

A.6.2.3 Supported Access Control Schemes

Item No.	Access Control Scheme	Status	Support	Predicate Name
1	Simplified Access Control	o		*SAC-DSA
2	Basic Access Control	o		*BAC-DSA
3	Other	i		

A.6.3   Capabilities and options

This part of the PICS proforma identifies the supported application context, the PDUs and operations. Finally, the operation arguments and PDU parameters are identified.

The ICS tables are divided into Initiator, Responder, and Relay columns. Suppliers of implementations claiming conformance as Initiator, Responder, and/or Relay DSAs should supply responses to the appropriate status/support columns under the appropriate DSA type.

A.6.3.1   Supported application context

The only application context supported by this PICS proforma is Directory System application context.

A.6.3.2   Operations and extensions

A.6.3.2.1   Operations (Ref. X.511 | 9594-3)

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate Name	Note
		Status	Support	Status	Support	Status	Support		
1	DirectoryBind	m		m		m			
2	DirectoryUnbind	m		m		m			
3	ChainedRead	o		m		m		*Read	
4	ChainedCompare	o		m		m		*Compare	
5	ChainedAbandon	o		m		m		*Abandon	
6	ChainedList	o		m		m		*List	
7	ChainedSearch	o		m		m		*Search	
8	ChainedAddEntry	o		m		m		*AddEntry	
9	ChainedRemoveEntry	o		m		m		*RemoveEntry	
10	ChainedModifyEntry	o		m		m		*ModifyEntry	
11	ChainedModifyDN	o		m		m		*ModifyDN	Note
NOTE – 1988-edition systems may use the operation only to change the Relative Distinguished Name of a leaf entry.									

A.6.3.2.2   Extensions (Ref. X.511 | 9594-3, 7.3.1)

This table defines a number of extensions which are available in the 1993 edition of the Directory. The supplier of the implementation shall indicate in the following table, for which extensions conformance is claimed.

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate Name	Note
		Status	Support	Status	Support	Status	Support		
1	subentries	o		o		o		*Subentries	
2	copyShallDo	o		o		o		*copyshalldo	
3	attributesizelimit	o		o		o		*attrsizelimit	
4	extraAttributes	o		o		o		*extraAttr	
5	modifyRightsRequest	o		o		o		*modrightsreq	
6	pagedResultsRequest	–		–		–			
7	matchValuesOnly	o		o		o		*matchvalonly	
8	extendedFilter	o		o		o		*extfilter	
9	targetSystem	o		o		o		*targetsystem	
10	useAliasOnUpdate	o		o		o			
11	newSuperior	o		o		o		*newsuperior	

A.6.3.3 Protocol Elements

Some protocol elements may be digitally signed. In those cases where an operation can be signed, the PICS table is divided into signed/unsigned columns for the Initiator, Responder, and Relay DSAs respectively. Suppliers of implementations claiming conformance to signed protocol elements, for a given operation, should supply responses to the appropriate status/support columns under the signed column. Suppliers of implementations not claiming conformance to signed protocol elements should supply responses to the status/support columns under the unsigned column. Note that update operations return NULL results and that errors are often single integers. They therefore are not digitally signed. To do so could compromise the private key of the digital signature.

A.6.3.3.1 DSA Bind Elements (Ref. X.511 | 9594-3, 8.1)

A.6.3.3.1.1 DSA Bind Arguments (Ref. X.511 | 9594-3, 8.1.2)

Item No.	Protocol Element	Status	Support	Predicate	Note
1	credentials	c2			
1.1	simple	c:c3			
1.1.1	name	c:m			
1.1.2	validity	c:o			
1.1.2.1	time1	c:o			
1.1.2.2	time2	c:o			
1.1.2.3	random1	c:o			
1.1.2.4	random2	c:o			
1.1.3	password	c:o		*Password	
1.1.3.1	unprotected	c:o.2			
1.1.3.2	protected	c:o.2			
1.1.3.2.1	algorithmIdentifier	c:m		*Algor-ID	See A.6.3.3.28.2
1.1.3.2.2	encrypted	c:m			
1.2	strong	c:c4			
1.2.1	certification-path	c:o		*Cert-Path	See A.6.3.3.28
1.2.2	bind-token	c:m			
1.2.2.1	toBeSigned	c:m			
1.2.2.1.1	algorithm	c:m			
1.2.2.1.2	name	c:m			
1.2.2.1.3	time	c:m			
1.2.2.1.4	random	c:m			
1.2.2.2	algorithmIdentifier	c:m		*Algor-ID	See A.6.3.3.28.2
1.2.2.3	encrypted	c:m			
1.2.3	name	c:o			
1.3	externalProcedure	i			
2	versions	m			d(v1)
2.1	v1	m			

c2:   If [Simple-DSA or Strong-DSA] then support of this feature is m else o.

c3:   If [Simple-DSA] then support of this feature is m else o.

c4:   If [Strong-DSA] then support of this feature is m else o.

o.2:   At least one of the items must be supported.

A.6.3.3.1.2   DSA Bind Result (Ref. X.511 | 9594-3, 8.1.2)

Item No.	Protocol Element	Status	Support	Predicate	Notes
1	credentials	c2			
1.1	simple	c:c3			
1.1.1	name	c:m			
1.1.2	validity	c:o			
1.1.2.1	time1	c:o			
1.1.2.2	time2	c:o			
1.1.2.3	random1	c:o			
1.1.2.4	random2	c:o			
1.1.3	password	c:o		*Password	
1.1.3.1	unprotected	c:o.2			
1.1.3.2	protected	c:o.2			
1.1.3.2.1	algorithmIdentifier	c:m		*Algor-ID	See A.6.3.3.28.2
1.1.3.2.2	encrypted	c:m			
1.2	strong	c: c4			
1.2.1	certification-path	c:o		*Cert-Path	See A.6.3.3.28
1.2.2	bind-token	c:m			
1.2.2.1	toBeSigned	c:m			
1.2.2.1.1	algorithm	c:m			
1.2.2.1.2	name	c:m			
1.2.2.1.3	time	c:m			
1.2.2.1.4	random	c:m			
1.2.2.2	algorithmIdentifier	c:m		*Algor-ID	See A.6.3.3.28.2
1.2.2.3	encrypted	c:m			
1.2.3	name	c:o			
1.3	externalProcedure	i			
2	versions	m			d(v1)
2.1	v1	m			
c2:	If [Simple-DSA or Strong-DSA] then support of this feature is m else o.				
c3:	If [Simple-DSA] then support of this feature is m else o.				
c4:	If [Strong-DSA] then support of this feature is m else o.				
o.2:	At least one of the items must be supported.				

A.6.3.3.1.3   DSA Bind Error (Ref. X.511 | 9594-3, 8.1.4)

Item No.	Protocol Element	Status	Support	Predicate	Note
1	versions	m			d(v1)
1.1	v1	m			
2	error	m			
2.1	ServiceError	m			
2.2	SecurityError	m			

A.6.3.3.2 DSA Unbind Elements (Ref. X.511 | 9594-3, 8.2)

DSAUnbind has no arguments (see 8.2 of ITU-T Rec. X.511 | ISO/IEC 9594-3).

A.6.3.3.3 Chained Read Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [Read]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
1	chainedReadArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	ReadArgument	m		m		m		m		m		m			Note 1
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	selection	m		m		m		m		m		m			d({})
1.3.4	modifyRightsRequest	m		m		c5		c5		m		m			d(false)
1.3.5	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.6	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.7	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedReadResult	m		m		m		m		m		m			
2.1	toBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	ReadResult	m		m		m		m		m		m			Note 2
2.3.1	toBeSigned	–		m		–		m		m		m			
2.3.2	entry	m		m		m		m		m		m			
2.3.3	modifyRights	m		m		c5		c5		m		m			
2.3.3.1	item	m		m		c:m		c:m		m		m			
2.3.3.1.1	entry	m		m		c:o		c:o		m		m			
2.3.3.1.2	attribute	m		m		c:o		c:o		m		m			
2.3.3.1.3	value	m		m		c:o		c:o		m		m			
2.3.3.2	permission	m		m		c:o		c:o		m		m			
2.3.4	commonResults	m		m		m		m		m		m		*Comm-Res	See A.6.3.3.14
2.3.5	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
2.3.6	encrypted	–		m		–		m		m		m			
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12

c5:   If [modrightsreq] then support of this feature is m else o.

NOTE 1 – The original operation argument and signature are defined in DAP. They should be passed unaltered by DSP.

NOTE 2 – The original operation result and signature are defined in DAP. They should be passed unaltered by DSP.

A.6.3.3.4   **Chained Compare Elements** (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [Compare]

Item No.	Protocol Element	Initiator Unsigned Status	Initiator Unsigned Support	Initiator Signed Status	Initiator Signed Support	Responder Unsigned Status	Responder Unsigned Support	Responder Signed Status	Responder Signed Support	Relay Unsigned Status	Relay Unsigned Support	Relay Signed Status	Relay Signed Support	Predicate	Note
1	chainedCompareArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	CompareArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	purported	m		m		m		m		m		m			
1.3.4	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.5	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.6	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m				m			
2	chainedCompareResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	CompareResult	m		m		m		m		m		m			
2.3.1	ToBeSigned	–		m				m		–		m			
2.3.2	name	m		m		m		m		m		m			
2.3.3	matched	m		m		m		m		m		m			
2.3.4	fromEntry	m		m		m		m		m		m			d(true)
2.3.5	matchedSubtype	c6		c6		c6		c6		c6		c6			
2.3.6	CommonResults	m		m		m		m		m		m		*Comm-Res	See A.6.3.3.14
2.3.7	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
2.3.8	encrypted	–		m		–		m		m		m			
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12
c6:	If [Hier-Attr] then support of this feature is m else o.														

A.6.3.3.5   Chained Abandon Elements (Ref. X.518 | 9594-4, 12.2)

Prerequisite: [Abandon]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	AbandonArgument	m		m		m			
1.1	invokeID	m		m		m			
2	AbandonResult	m		m		m			
3	Errors	m		m		m			AbandonFailederror

A.6.3.3.6   Chained List Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [List]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
1	chainedListArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	ListArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	pagedResults	–		–		–		–		–		–			
1.3.4	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.5	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.6	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedListResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23

A.6.3.3.6 Chained List Elements (Ref. X.518 | 9594-4, 12.1) *(continued)*

Prerequisite: [List]

Item No.	Protocol Element	Initiator Unsigned Status	Support	Signed Status	Support	Responder Unsigned Status	Support	Signed Status	Support	Relay Unsigned Status	Support	Signed Status	Support	Predicate	Note
2.3	ListResult	m		m		m		m		m		m				
2.3.1	ToBeSigned	–		m		–		m		m		m				
2.3.2	listInfo	m		m		m		m		m		m				
2.3.2.1	name	m		m		m		m		m		m				
2.3.2.2	subordinates	m		m		m		m		m		m				
2.3.2.2.1	rdn	m		m		m		m		m		m				
2.3.2.2.2	aliasEntry	m		m		m		m		m		m				d(false)
2.3.2.2.3	fromEntry	m		m		m		m		m		m				d(true)
2.3.2.3	partialOutcomeQualifier	m		m		m		m		m		m				
2.3.2.3.1	limitProblem	m		m		m		m		m		m				
2.3.2.3.1.1	timeLimitExceeded	m		m		m		m		m		m				
2.3.2.3.1.2	sizeLimitExceeded	m		m		m		m		m		m				
2.3.2.3.1.3	administrativeLimitExceeded	m		m		m		m		m		m				
2.3.2.3.2	unexplored	m		m		m		m		m		m				See A.6.3.3.21
2.3.2.3.3	unavailableCriticalExt	m		m		m		m		m		m				d(false)
2.3.2.3.4	unknownErrors	m		m		m		m		m		m				
2.3.2.3.5	queryReference	–		–		–		–		–		–				
2.3.2.4	CommonResults	m		m		m		m		m		m			*Comm-Res	See A.6.3.3.14
2.3.3	uncorrelatedListInfo	m		m		m		m		m		m				
2.3.4	algorithmIdentifier	–		m		–		m		m		m			*Algor-ID	See A.6.3.3.28.2
2.3.5	encrypted			m		–		m		m		m				
2.4	algorithmIdentifier	–		m		–		m		–		m			*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m				
3	Errors	m		m		m		m		m		m				See A.6.3.3.12

A.6.3.3.7 Chained Search Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [Search]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
1	chainedSearchArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	SearchArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	baseObject	m		m		m		m		m		m			
1.3.3	subset	m		m		m		m		m		m			d({})
1.3.4	filter	m		m		m		m		m		m		*Filter	d(and {}), See A.6.3.3.18
1.3.5	searchAlias	m		m		m		m		m		m			d(true)
1.3.6	selection	m		m		m		m		m		m		*Info-Sel	d({}), See A.6.3.3.16
1.3.7	pagedResults	–		–		–		–		–		–			
1.3.8	matchValuesOnly	c7		c7		c7		c7		c7		c7			d(false)
1.3.9	extendedFilter	c8		c8		c8		c8		c8		c8			See A.6.3.3.18
1.3.10	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.11	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.12	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedSearch Result	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23

A.6.3.3.7 Chained Search Elements (Ref. X.518 | 9594-4, 12.1) *(continued)*

Prerequisite: [Search]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
2.3	SearchResult	m		m		m		m		m		m			
2.3.1	ToBeSigned	–		m		–		m		m		m			
2.3.2	searchInfo	m		m		m		m		m		m			
2.3.2.1	name	m		m		m		m		m		m			
2.3.2.2	entries	m		m		m		m		m		m		*Entry-Info	See A.6.3.3.17
2.3.2.3	PartialOutcomeQualifier	m		m		m		m		m		m			
2.3.2.3.1	limitProblem	m		m		m		m		m		m			
2.3.2.3.1.1	timeLimitExceeded	m		m		m		m		m		m			
2.3.2.3.1.2	sizeLimitExceeded	m		m		m		m		m		m			
2.3.2.3.1.3	administrativeLimitExceeded	m		m		m		m		m		m			
2.3.2.3.2	unexplored	m		m		m		m		m		m			See A.6.3.3.20
2.3.2.3.3	unavailableCriticalExt	m		m		m		m		m		m			
2.3.2.3.4	unknownErrors	m		m		m		m		m		m			
2.3.2.3.5	queryReference	–		–		–		–		–		–			
2.3.2.4	CommonResults	m		m		m		m		m		m		*Comm-Res	See A.6.3.3.14
2.3.3	uncorrelatedSearchInfo	m		m		m		m		m		m			
2.3.4	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
2.3.5	encrypted	–		m		–		m		m		m			
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12

c7:   If [matchvalonly] then support of this feature is m else o.

c8:   If [extfilter] then support of this feature is m else o.

A.6.3.3.8 Chained Add Entry Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [AddEntry]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
1	chainedAddEntryArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	AddEntryArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	entry	m		m		m		m		m		m			
1.3.4	targetSystem	c9		c9		c9		c9		c9		c9			See A.6.3.3.26
1.3.5	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.6	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.7	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m				m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedAddEntryResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	AddEntryResult	m		m		m		m		m		m			
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12
c9:	If [targetsystem] then support of this feature is m else o.														

A.6.3.3.9 Chained Remove Entry Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [RemoveEntry]

Item No.	Protocol Element	Initiator Unsigned Status	Support	Signed Status	Support	Responder Unsigned Status	Support	Signed Status	Support	Relay Unsigned Status	Support	Signed Status	Support	Predicate	Note
1	chainedRemoveEntry	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	RemoveEntryArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.4	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.5	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedRemoveEntryResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	RemoveEntryResult	m		m		m		m		m		m			NULL
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12

A.6.3.3.10   Chained Modify Entry Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [ModifyEntry]

Item No.	Protocol Element	Initiator				Responder				Relay				Predicate	Note
		Unsigned		Signed		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support	Status	Support	Status	Support		
1	chainedModifyEntryArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	ModifyEntryArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	changes	m		m		m		m		m		m			
1.3.3.1	addAttribute	m		m		m		m		m		m			
1.3.3.2	removeAttribute	m		m		m		m		m		m			
1.3.3.3	addValues	m		m		m		m		m		m			
1.3.3.4	removeValues	m		m		m		m		m		m			
1.3.4	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.5	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.6	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedModifyEntryResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	ModifyEntryResult	m		m		m		m		m		m			NULL
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted			m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12

A.6.3.3.11 Chained ModifyDN Elements (Ref. X.518 | 9594-4, 12.1)

Prerequisite: [ModifyDN]

Item No.	Protocol Element	Initiator Unsigned Status	Support	Initiator Signed Status	Support	Responder Unsigned Status	Support	Responder Signed Status	Support	Relay Unsigned Status	Support	Relay Signed Status	Support	Predicate	Note
1	chainedModifyDNArgument	m		m		m		m		m		m			
1.1	ToBeSigned	–		m		–		m		–		m			
1.2	ChainingArguments	m		m		m		m		m		m		*Chain-Arg	See A.6.3.3.22
1.3	ModifyDNArgument	m		m		m		m		m		m			
1.3.1	ToBeSigned	–		m		–		m		m		m			
1.3.2	object	m		m		m		m		m		m			
1.3.3	newRDN	m		m		m		m		m		m			
1.3.4	deleteOldRDN	m		m		m		m		m		m			d(false)
1.3.5	newSuperior	c10		c10		c10		c10		c10		c10			
1.3.6	CommonArguments	m		m		m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.3.7	algorithmIdentifier	–		m		–		m		m		m		*Algor-ID	See A.6.3.3.28.2
1.3.8	encrypted	–		m		–		m		m		m			
1.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
1.5	encrypted	–		m		–		m		–		m			
2	chainedModifyEntryResult	m		m		m		m		m		m			
2.1	ToBeSigned	–		m		–		m		–		m			
2.2	ChainingResults	m		m		m		m		m		m		*Chain-Res	See A.6.3.3.23
2.3	ModifyDNResult	m		m		m		m		m		m			NULL
2.4	algorithmIdentifier	–		m		–		m		–		m		*Algor-ID	See A.6.3.3.28.2
2.5	encrypted	–		m		–		m		–		m			
3	Errors	m		m		m		m		m		m			See A.6.3.3.12

c10: If [newsuperior] then support of this feature is m else o.

A.6.3.3.12 **Errors and Parameters** (Ref. X.511 | 9594-3, 12)

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	Abandoned	m		m		m			
2	AbandonFailed	m		m		m			
2.1	problem	m		m		m			
2.1.1	noSuchOperation	m		m		m			
2.1.2	tooLate	m		m		m			
2.1.3	cannotAbandon	m		m		m			
2.2	operation	m		m		m			
3	AttributeError	m		m		m			
3.1	object	m		m		m			
3.2	problems	m		m		m			
3.2.1	problem	m		m		m			
3.2.1.1	noSuchAttributeOrValue	m		m		m			
3.2.1.2	invalidAttributeSyntax	m		m		m			
3.2.1.3	undefinedAttributeType	m		m		m			
3.2.1.4	inappropriateMatching	m		m		m			
3.2.1.5	constraintViolation	m		m		m			
3.2.1.6	attributeOrValueAlreadyExists	m		m		m			
3.2.2	type	m		m		m			
3.2.3	value	m		m		m			
4	NameError	m		m		m			
4.1	problem	m		m		m			
4.1.1	noSuchObject	m		m		m			
4.1.2	aliasProblem	m		m		m			
4.1.3	invalidAttributeSyntax	m		m		m			
4.1.4	aliasDereferencingProblem	m		m		m			
4.2	matched	m		m		m			
5	DSAReferral	m		m		m			
5.1	continuationReference	m		m		m			See A.6.3.3.21
5.2	contextPrefix	m		m		m			

A.6.3.3.12   Errors and Parameters (Ref. X.511 | 9594-3, 12) *(continued)*

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
6	SecurityError	m		m		m			
6.1	problem	m		m		m			
6.1.1	InappropriateAuthentication	m		m		m			
6.1.2	invalidCredentials	m		m		m			
6.1.3	insufficientAccessRights	m		m		m			
6.1.4	invalidSignature	m		c11		m			
6.1.5	protectionRequired	m		c11		m			
6.1.6	noInformation	m		m		m			
7	ServiceError	m		m		m			
7.1	problem	m		m		m			
7.1.1	busy	m		m		m			
7.1.2	unavailable	m		m		m			
7.1.3	unwillingToPerform	m		m		m			
7.1.4	chainingRequired	m		m		m			
7.1.5	unableToProceed	m		m		m			
7.1.6	invalidReference	m		m		m			
7.1.7	timeLimitExceeded	m		m		m			
7.1.8	administrativeLimitExceeded	m		m		m			
7.1.9	loopDetected	m		m		m			
7.1.10	unavailableCriticalExtension	m		m		m			
7.1.11	outOfScope	m		m		m			
7.1.12	ditError	m		m		m			
7.1.13	invalidQueryReference	i		i		i			
8	UpdateError	m		m		m			
8.1	problem	m		m		m			
8.1.1	namingViolation	m		m		m			
8.1.2	objectClassViolation	m		m		m			
8.1.3	notAllowedOnNonLeaf	m		m		m			
8.1.4	notAllowedOnRDN	m		m		m			
8.1.5	entryAlreadyExists	m		m		m			
8.1.6	affectsMultipleDSAs	m		m		m			
8.1.7	objectClassModificationProhibited	m		m		m			
c11: If [Signed-Ops] then support of this feature is m else –.									

A.6.3.3.13 **Common Arguments Elements** (Ref. X.511 | 9594-3, 7.3)

Prerequisite: [Comm-Arg]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	serviceControls	m		m		m		* Serv-Ctrls	d({}), See A.6.3.3.15
2	securityParameters	c11		c11		c11		*Sec-Param	See A.6.3.3.27
3	requestor	o		o		o			Note 1
4	operationProgress	m		m		m			d(nameResolutio nPhaseNotStarted)
4.1	nameResolutionPhase	m		m		m			
4.1.1	notStarted	m		m		m			
4.1.2	proceeding	m		m		m			
4.1.3	completed	m		m		m			
4.2	nextRDNToBeResolved	m		m		m			
5	aliasedRDNs	o		o		o			Note 2
6	criticalExtensions	m		m		m			
7	referenceType	o		o		o			
8	entryOnly	m		m		m			d(true)
9	exclusions	o		o		o			
10	nameResolveOnMaster	o		o		o			d(false)
c11: If [Signed-Ops] then support of this feature is m else –. NOTE 1 – This parameter may be ignored unless the request is signed. NOTE 2 – This parameter is provided for compatibility with the 1988 edition of the Directory. DSAs implemented according to later editions shall always omit this parameter.									

A.6.3.3.14 **Common Results Elements** (Ref. X.511 | 9594-3, 7.4)

Prerequisite: [Comm-Res]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	SecurityParameters	c11		c11		c11		*Sec-Param	See A.6.3.3.27
2	performer	o		o		o			
3	aliasedDereferenced	m		m		m			d(false)
c11: If [Signed-Ops] then support of this feature is m else –.									

A.6.3.3.15   Service Controls (Ref. X.511 | 9594-3, 7.5)

Prerequisite: [Serv-Ctrls]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	options	m		m		m			d({ })
1.1	preferChaining	m		m		m			
1.2	chainingProhibited	m		m		m			
1.3	localScope	m		m		m			
1.4	dontUseCopy	m		m		m			
1.5	dontDereferenceAliases	m		m		m			
1.6	subentries	c12		c12		c12			
1.7	copyShallDo	c13		c13		c13			
2	priority	m		m		m			d(medium)
3	timeLimit	o		o		o			
4	sizeLimit	o		o		o			
5	scopeOfReferral	o		o		o			
6	attributeSizeLimit	c14		c14		c14			
c12: If [Subentries] then support of this feature is m else o.									
c13: If [copyshalldo] then support of this feature is m else o.									
c14: If [attrsizelimit] then support of this feature is m else o.									

A.6.3.3.16   Entry Information Selection (Ref. X.511 | 9594-3, 7.6)

Prerequisite: [Info-Sel]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	attributes	m		m		m			d(allUserAttributes)
1.1	allUserAttributes	m		m		m			
1.2	select	m		m		m			
2	infoTypes	m		m		m			d(attributeTypesAndValues)
2.1	attributeTypesOnly	m		m		m			
2.2	attributeTypesAndValues	m		m		m			
3	extraAttributes	o		o		o			
3.1	allOperationalAttributes	c:m		c:m		c:m			
3.2	select	c:m		c:m		c:m			

A.6.3.3.17   Entry Information (Ref. X.511 | 9594-3, 7.7)

Prerequisite: [Entry-Info]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	name	m		m		m			
2	fromEntry	m		m		m			d(true)
3	Information	m		m		m			
3.1	AttributeType	m		m		m			
3.2	Attribute	m		m		m			
4	incompleteEntry	m		m		m			d(false)

A.6.3.3.18   Filter Elements (Ref. X.511 | 9594-3, 7.8)

Prerequisite: [Filter or extfilter]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	item	m		m		m		*Filt-Item	See A.6.3.3.19
2	and	m		m		m			
3	or	m		m		m			
4	not	m		m		m			

A.6.3.3.19   Filter Item Elements (Ref. X.511 | 9594-3, 7.8.2)

Prerequisite: [Filt-Item]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	equality	m		m		m			
2	substrings	m		m		m			
2.1	type	m		m		m			
2.2	strings	m		m		m			
2.2.1	initial	m		m		m			
2.2.2	any	m		m		m			
2.2.3	final	m		m		m			
3	greaterOrEqual	m		m		m			
4	lessOrEqual	m		m		m			
5	present	m		m		m			
6	approximateMatch	m		m		m			
7	extensibleMatch	c8		c8		c8			
7.1	MatchingRule	c:m		c:m		c:m			
7.2	type	c:m		c:m		c:m			
7.3	matchValue	c:m		c:m		c:m			
7.4	dnAttributes	c:m		c:m		c:m			d(false)
c8: If [extfilter] then support of this feature is m else o.									

A.6.3.3.20 **Paged Results** (Ref. X.511 | 9594-3, 7.9)

PagedResults is out of scope for DSP.

A.6.3.3.21 **Continuation Reference** (Ref. X.518 | 9594-4, 10.10)

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	targetObject	m		m		m			
2	aliasedRDNs	o		o		o			
3	operationProgress	m		m		m			
3.1	nameResolutionPhase	m		m		m			
3.2	nextRDNToBeResolved	m		m		m			
4	rdnsResolved	m		o		m			
5	referenceType	m		m		m			
6	accessPoints	m		m		m			
6.1	MasterOrShadowAccessPoint	m		m		m			
6.1.1	AccessPoint	m		m		m			See A.6.3.3.26
6.1.2	category	m		m		m			d{master}
6.1.2.1	master	m		m		m			
6.1.2.2	shadow	m		m		m			
6.2	additionalPoints	m		o		m			
6.2.1	AccessPoint	m		m		m			See A.6.3.3.26
6.2.2	category	m		m		m			
6.2.2.1	master	m		m		m			
6.2.2.2	shadow	m		m		m			
7	entryOnly	m		m		m			d(false)
8	exclusions	o		o		o			
9	returnToDUA	o		o		o			d(false)
10	nameResolveOnMaster	m		c15		m			d(false)
c15: If [NSSR] then support of this feature is m else –.									

A.6.3.3.22   Chaining Argument Elements (Ref. X.518 | 9594-4, 10.3)

Prerequisite: [Chain-Arg]

Item No.	Argument	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	originator	m		m		m			
2	targetObject	o		m		m			
3	operationProgress	m		m		m			d(nameResolutionPhaseNotStarted)
3.1	nameResolutionPhase	m		m		m			
3.1.1	notStarted	m		m		m			
3.1.2	proceeding	m		m		m			
3.1.3	completed	m		m		m			
3.2	nextRDNToBeResolved	m		m		m			
4	traceInformation	m		m		m		*Trace-Info	See A.6.3.3.25
5	aliasDereferenced	m		m		m			d(false)
6	aliasedRDNs	o		o		o			
7	returnCrossRefs	o		o		o			d(false)

A.6.3.3.22 **Chaining Argument Elements**) (Ref. X.518 | 9594-4, 10.3) *(continued)*

Prerequisite: [Chain-Arg]

Item No.	Argument	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
8	referenceType	m		m		m			d(superior)
8.1	superior	m		m		m			
8.2	subordinate	m		m		m			
8.3	cross	m		m		m			
8.4	nonSpecificSubordinate	m		m		m			
8.5	supplier	m		m		m			
8.6	master	m		m		m			
8.7	immediateSuperior	m		m		m			
8.8	self	m		m		m			
9	info	o		o		o			
10	timeLimit	m		m		m			
11	securityParameters	c11		c11		c11		*Sec-Param	d({}), See A.6.3.3.27
12	entryOnly	m		m		m			
13	uniqueIdentifier	o		o		o			
14	authenticationLevel	o		o		o			
15	exclusions	o		o		o			
16	excludeShadows	o		m		m			d(false)
17	nameResolveOnMaster	m		c15		m			d(false)
c11: If [Signed-Ops] then support of this feature is m else –.									
c15: If [NSSR] then support of this feature is m else –.									

A.6.3.3.23 **Chaining Result Elements**(Ref. X.518 | 9594-4, 10.4)

Prerequisite: [Chain-Res]

Item No.	Protocol Elements	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	info	o		o		o			
2	crossReferences	o		o		o		*Cross-Ref	See A.6.3.3.24
3	securityParameters	c11		c11		c11		*Sec-Param	d({}), See A.6.3.3.27
4	alreadysearched	m		m		m			
c11: If [Signed-Ops] then support of this feature is m else –.									

A.6.3.3.24 **Cross Reference** [Ref. X.518 | 9594-4, 10.4 b)]

Prerequisite: [Cross-Ref]

Item No.	Protocol Elements	Initiator Status	Initiator Support	Responder Status	Responder Support	Relay Status	Relay Support	Predicate	Note
1	contextPrefix	m		m		m			
2	accessPoint	m		m		m			
2.1	MasterOrShadowAccessPoint	m		m		m			
2.1.1	AccessPoint	m		m		m			See A.6.3.3.26
2.1.2	category	m		m		m			d(master)
2.1.2.1	master	m		m		m			
2.1.2.2	shadow	m		m		m			
2.2	additionalPoints	o		o		o			

A.6.3.3.25 **Trace Information** (Ref. X.518 | 9594-4, 10.6)

Prerequisite: [Trace-Info]

Item No.	Protocol Elements	Initiator Status	Initiator Support	Responder Status	Responder Support	Relay Status	Relay Support	Predicate	Note
1	TraceItem	m		m		m			
1.1	dsa	m		m		m			
1.2	targetObject	m		m		m			
1.3	operationProgress	m		m		m			
1.3.1	nameResolutionPhase	m		m		m			
1.3.1.1	notStarted	m		m		m			
1.3.1.2	proceeding	m		m		m			
1.3.1.3	completed	m		m		m			
1.3.2	nextRDNToBeResolved	m		m		m			

A.6.3.3.26 **Access Point** (Ref. X.518 | 9594-4, 10.8)

Item No.	Protocol Elements	Initiator Status	Initiator Support	Responder Status	Responder Support	Relay Status	Relay Support	Predicate	Note
1	ae-title	m		m		m			
2	address	m		m		m			
2.1	pSelector	o		m		m			
2.2	sSelector	o		m		m			
2.3	tSelector	o		m		m			
2.4	nAddresses	m		m		m			
3	protocolInformation	o		o		o			

ISO/IEC 13248-2 : 1998 (E)

A.6.3.3.27 **SecurityParameters** (Ref. X.511 | 9594-3, 7.10)

Prerequisite: [Sec-Param]

Item No.	Protocol Elements	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	certification-path	m		m		m		*Cert-Path	
2	name	m		m		m			
3	time	m		o		m			
4	random	m		o		m			
5	target	m		m		m			

A.6.3.3.28 **CertificationPath** (Ref. X.509 | 9594-8, 8)

Prerequisite: [Cert-Path]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	userCertificate	m		m		m			
2	theCACertificates	o		o		o			
2.1	forward	c:o.3		c:o.3		c:o.3			
2.2	reverse	c:o.3		c:o.3		c:o.3			
o.3: At least one of the pair shall be present as specified in clause 8 of ITU-T Rec. X.509	ISO/IEC 9594-8.									

A.6.3.3.28.1   Certificate (Ref. X.509 | 9594-8, 8)

Prerequisite: [Cert-Path]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	toBeSigned	m		m		m			
1.1	version	m		m		m			d(v1)
1.2	serialNumber	m		m		m			
1.3	signature	m		m		m			See A.6.3. 3.23.2
1.4	issuer	m		m		m			
1.5	validity	m		m		m			
1.5.1	notBefore	m		m		m			
1.5.2	notAfter	m		m		m			
1.6	subject	m		m		m			
1.7	subjectPublicKeyInfo	m		m		m			
1.7.1	algorithm	m		m		m			
1.7.2	subjectPublicKey	m		m		m			
1.8	issuerUniqueIdentifier	o		o		o			Note
1.9	subjectUniqueIdentifier	o		o		o			Note
1.10	extensions	c16		c16		c16		*Extensions	See A.6.3. 3.23.3
2	algorithmIdentifier	m		m		m		*Algor-ID	See A.6.3. 3.23.2
3	encrypted	m		m		m			
c16: If version 3 then support of this feature is m else o.									
NOTE – If present, version must be 2 or 3.									

A.6.3.3.28.2   Algorithm Identifier (Ref. X.509 | 9594-8, 8)

Prerequisite: [Algor-ID]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	algorithm	m		m		m			
2	parameters	m		m		m			

A.6.3.3.28.3   Extensions (Ref. X.509 | 9594-8, 8)

Prerequisite: [Extensions]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	extnID	m		m		m			
2	critical	m		m		m			
3	extnValue	m		m		m			

A.6.3.3.29 Access Control (Ref. X.501 | 9594-2, 16)

A.6.3.3.29.1 Access Control Information (Ref. X.501 | 9594-2, 16.4)

Item No.	Protocol Element	Initiator Status	Initiator Support	Responder Status	Responder Support	Relay Status	Relay Support	Predicate	Note
1	ACIItem	c17		c17		c17		*ACI	
1.1	identificationTag	c:m		c:m		c:m			
1.2	precedence	c:m		c:m		c:m			
1.3	authenticationLevel	c:m		c:m		c:m			
1.3.1	basicLevels	c:m		c:m		c:m			
1.3.1.1	level	c:m		c:m		c:m			
1.3.1.2	localQualifier	c:o		c:o		c:o			
1.3.2	other	i		i		i			
1.4	itemOrUserFirst	c:m		c:m		c:m			
1.4.1	itemFirst	c:m		c:m		c:m			
1.4.1.1	protectedItems	c:m		c:m		c:m			See A.6.3.3.29.2
1.4.1.2	itemPermissions	c:m		c:m		c:m			
1.4.1.2.1	precedence	c:o		c:o		c:o			d(A.6.3.3. 29.1/3)
1.4.1.2.2	userClasses	c:o		c:o		c:o		*User-Class	See A.6.3.3.29.3
1.4.1.2.3	grantsAndDenials	c:m		c:m		c:m			See A.6.3.3.29.4
1.4.2	userFirst	c:m		c:m		c:m			
1.4.2.1	userClasses	c:o		c:o		c:o		*User-Class	See A.6.3.3.29.3
1.4.2.2	userPermissions	c:m		c:m		c:m			
1.4.2.2.1	precedence	c:o		c:o		c:o			d(A.6.3.3. 29.1/3)
1.4.2.2.2	protectedItems	c:m		c:m		c:m			See A.6.3.3.29.2
1.4.2.2.3	grantsAndDenials	c:m		c:m		c:m			See A.6.3.3.29.4
c17: If [SAC-DSA or BAC-DSA] then support of this feature is m else –.									

A.6.3.3.29.2 Protected Items [Ref. X.501 | 9594-2, 16.4.2.4 a)]

Prerequisite: [ACI]

Item No.	Protocol Element	Initiator Status	Initiator Support	Responder Status	Responder Support	Relay Status	Relay Support	Predicate	Note
1	entry	o		o		o			
2	allUserAttributeTypes	o		o		o			
3	attributeType	o		o		o			
4	allAttributeValues	o		o		o			
5	allUserAttributeTypes&Values	o		o		o			
6	attributeValue	o		o		o			
7	selfValue	o		o		o			

A.6.3.3.29.3   UserClasses [Ref. X.501 | 9594-2, 16.4.2.4 b)]

Prerequisite: [User-Class]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	allUsers	o		o		o			
2	thisEntry	o		o		o			
3	name	o		o		o			
4	userGroup	o		o		o			
5	subtree	o		o		o		*Subtree	

A.6.3.3.29.4   Grants and Denials (Ref. X.501 | 9594-2, 16.4.1)

Prerequisite: [ACI]

Item No.	Protocol Element	Initiator		Responder		Relay		Predicate	Note
		Status	Support	Status	Support	Status	Support		
1	grantAdd	m		m		m			
2	denyAdd	m		m		m			
3	grantDiscloseOnError	m		m		m			
4	denyDiscloseOnError	m		m		m			
5	grantRead	m		m		m			
6	denyRead	m		m		m			
7	grantRemove	m		m		m			
8	denyRemove	m		m		m			
9	grantBrowse	m		m		m			
10	denyBrowse	m		m		m			
11	grantExport	m		m		m			
12	denyExport	m		m		m			
13	grantImport	m		m		m			
14	denyImport	m		m		m			
15	grantModify	m		m		m			
16	denyModify	m		m		m			
17	grantRename	m		m		m			
18	denyRename	m		m		m			
19	grantReturnDN	m		m		m			
20	denyReturnDN	m		m		m			
21	grantCompare	m		m		m			
22	denyCompare	m		m		m			
23	grantFilterMatch	m		m		m			
24	denyFilterMatch	m		m		m			