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DE L'UIT

X.583

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SÉRIE X: RÉSEAUX POUR DONNÉES ET
COMMUNICATION ENTRE SYSTÈMES OUVERTS

Annuaire

**Technologies de l'information – Interconnexion
des systèmes ouverts – L'annuaire: formulaire
de déclaration de conformité d'une
implémentation du protocole d'accès à
l'annuaire**

Recommandation UIT-T X.583

(Antérieurement Recommandation du CCITT)

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NORME INTERNATIONALE 13248-1

RECOMMANDATION UIT-T X.583

**TECHNOLOGIES DE L'INFORMATION – INTERCONNEXION DES SYSTÈMES
OUVERTS – L'ANNUAIRE: FORMULAIRE DE DÉCLARATION DE
CONFORMITÉ D'UNE IMPLÉMENTATION DU PROTOCOLE
D'ACCÈS À L'ANNUAIRE**

Résumé

La présente Recommandation | Norme internationale contient le formulaire de déclaration de conformité d'une implémentation de protocole (PICS) pour le protocole d'accès à l'annuaire (DAP, *directory access protocol*), spécifié dans les Recommandations UIT-T de la série X.500 (1993) | ISO/CEI 9594:1995.

La présente Recommandation | Norme internationale a pour objet la spécification des déclarations de conformité pour un agent d'utilisateur d'annuaire (DUA, *directory user agent*) et pour un agent de système d'annuaire (DSA, *directory system agent*).

Source

La Recommandation X.583 de l'UIT-T a été approuvée le 12 décembre 1997. Un texte identique est publié comme Norme internationale ISO/CEI 13248-1.

AVANT-PROPOS

L'UIT (Union internationale des télécommunications) est une institution spécialisée des Nations Unies dans le domaine des télécommunications. L'UIT-T (Secteur de la normalisation des télécommunications) est un organe permanent de l'UIT. Il est chargé de l'étude des questions techniques, d'exploitation et de tarification, et émet à ce sujet des Recommandations en vue de la normalisation des télécommunications à l'échelle mondiale.

La Conférence mondiale de normalisation des télécommunications (CMNT), qui se réunit tous les quatre ans, détermine les thèmes d'études à traiter par les Commissions d'études de l'UIT-T, lesquelles élaborent en retour des Recommandations sur ces thèmes.

L'approbation des Recommandations par les Membres de l'UIT-T s'effectue selon la procédure définie dans la Résolution n° 1 de la CMNT.

Dans certains secteurs des technologies de l'information qui correspondent à la sphère de compétence de l'UIT-T, les normes nécessaires se préparent en collaboration avec l'ISO et la CEI.

NOTE

Dans la présente Recommandation, l'expression "Administration" est utilisée pour désigner de façon abrégée aussi bien une administration de télécommunications qu'une exploitation reconnue.

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A la date d'approbation de la présente Recommandation, l'UIT n'avait pas été avisée de l'existence d'une propriété intellectuelle protégée par des brevets à acquérir pour mettre en œuvre la présente Recommandation. Toutefois, comme il ne s'agit peut-être pas de renseignements les plus récents, il est vivement recommandé aux responsables de la mise en œuvre de consulter la base de données des brevets du TSB.

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Introduction

La présente Recommandation | Norme internationale a été élaborée en vue de faciliter l'interconnexion des équipements informatiques et permettre ainsi d'assurer des services d'annuaire. L'ensemble de ces équipements, avec les informations d'annuaire qu'ils contiennent, peut être considéré comme un tout intégré, appelé l'**Annuaire**. Les informations contenues dans l'Annuaire, appelées collectivement "base de données de l'annuaire" (*DIB, directory information base*), sont généralement utilisées pour faciliter la communication entre des objets tels que entités d'application, individus, terminaux, listes de distribution, ainsi que les communications avec ces objets ou au sujet de ces objets.

L'Annuaire joue un rôle important dans l'interconnexion des systèmes ouverts, dont le but est de permettre, moyennant un minimum d'accords techniques en dehors des normes d'interconnexion, l'interconnexion d'équipements informatiques:

- provenant de divers fabricants;
- gérés différemment;
- de niveaux de complexité différents;
- de générations différentes.

Pour évaluer la conformité d'une implémentation particulière, il est nécessaire de disposer d'une déclaration des capacités et des options qui ont été incluses pour un protocole OSI donné. Une telle déclaration est appelée déclaration de conformité d'une implémentation de protocole (PICS).

La présente Recommandation | Norme internationale contient le formulaire de déclaration de conformité d'une implémentation de protocole (PICS) pour le protocole d'accès à l'annuaire (DAP, *directory access protocol*) spécifié dans les Recommandations UIT-T de la série X.500 (1993) | ISO/CEI 9594:1995. Toutes les références concernant les spécifications d'Annuaire paraissant dans la présente Recommandation | Norme internationale se rapportent à la deuxième version de ces spécifications (Recommandations UIT-T de la série X.500 (1993) | ISO/CEI 9594:1995).

L'Annexe A contient la spécification du formulaire PICS pour le protocole d'accès à l'annuaire, tel qu'il est défini dans les Recommandations UIT-T de la série X.500 | ISO/CEI 9594.

TECHNOLOGIES DE L'INFORMATION – INTERCONNEXION DES SYSTÈMES OUVERTS – L'ANNUAIRE: FORMULAIRE DE DÉCLARATION DE CONFORMITÉ D'UNE IMPLÉMENTATION DU PROTOCOLE D'ACCÈS À L'ANNUAIRE

1 Domaine d'application

La présente Recommandation | Norme internationale contient le formulaire PICS pour le protocole d'accès à l'annuaire (DAP), spécifié dans les Recommandations UIT-T de la série X.500 (1993) | ISO/CEI 9594:1995. Ce formulaire est conforme aux prescriptions applicables et respecte les directives relatives aux formulaires PICS, données dans la Rec. UIT-T X.296 | ISO/CEI 9646-7.

Le fournisseur d'une implémentation de protocole DAP qu'il déclare conforme aux spécifications des Recommandations UIT-T de la série X.500 | ISO/CEI 9594 doit remplir un exemplaire du formulaire PICS reproduit à l'Annexe A et fournir les renseignements nécessaires pour permettre d'identifier le fournisseur et l'implémentation.

La présente Recommandation | Norme internationale a pour objet la spécification des déclarations de conformité pour un agent d'utilisateur d'annuaire (DUA) et pour un agent de système d'annuaire (DSA).

2 Références normatives

Les Recommandations et les Normes internationales suivantes contiennent des dispositions qui, par suite de la référence qui y est faite, constituent des dispositions valables pour la présente Recommandation | Norme internationale. Les membres de la CEI et de l'ISO possèdent le registre des Normes internationales en vigueur. Le Bureau de la normalisation des télécommunications de l'UIT tient à jour une liste des Recommandations de l'UIT-T en vigueur.

2.1 Recommandations | Normes internationales identiques

- Recommandation UIT-T X.500 (1993) | ISO/CEI 9594-1:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: vue d'ensemble des concepts, modèles et services.*
- Recommandation UIT-T X.501 (1993) | ISO/CEI 9594-2:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: les modèles.*
- Recommandation UIT-T X.509 (1993) | ISO/CEI 9594-8:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: cadre d'authentification.*
- Recommandation UIT-T X.511 (1993) | ISO/CEI 9594-3:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: définition du service abstrait.*
- Recommandation UIT-T X.518 (1993) | ISO/CEI 9594-4:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: procédures pour le fonctionnement réparti.*
- Recommandation UIT-T X.519 (1993) | ISO/CEI 9594-5:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: spécification du protocole.*
- Recommandation UIT-T X.520 (1993) | ISO/CEI 9594-6:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: types d'attributs sélectionnés.*
- Recommandation UIT-T X.521 (1993) | ISO/CEI 9594-7:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: classes d'objets sélectionnées.*
- Recommandation UIT-T X.525 (1993) | ISO/CEI 9594-9:1995, *Technologies de l'information – Interconnexion des systèmes ouverts – L'annuaire: duplication.*

2.2 Paires de Recommandations | Normes internationales équivalentes par leur contenu technique

- Recommandation UIT-T X.290 (1995), *Cadre général et méthodologie des tests de conformité d'interconnexion des systèmes ouverts pour les Recommandations sur les protocoles pour les applications de l'UIT-T – Concepts généraux.*

ISO/CEI 9646-1:1994, *Technologies de l'information – Interconnexion de systèmes ouverts – Cadre général et méthodologie des tests de conformité OSI – Partie 1: Concepts généraux.*

- Recommandation UIT-T X.296 (1995), *Cadre général et méthodologie des tests de conformité OSI pour les Recommandations sur les protocoles pour les applications de l'UIT-T – Déclarations de conformité d'instance.*

ISO/CEI 9646-7:1995, *Technologies de l'information – Interconnexion de systèmes ouverts (OSI) – Essais de conformité – Méthodologie générale et procédures – Partie 7: Déclarations de conformité des mises en œuvre.*

2.3 Autres références

ISO/CEI 10646-1:1993 (telle que modifiée), *Technologies de l'information – Jeu universel de caractères codés à plusieurs octets – Partie 1: Architecture et table multilingue.*

3 Définitions

Pour les besoins de la présente Recommandation | Norme internationale, les définitions suivantes s'appliquent.

3.1 Définitions relatives à l'annuaire

La présente Recommandation | Norme internationale utilise les termes définis dans les Recommandations UIT-T de la série X.500 | ISO/CEI 9594.

3.2 Définitions relatives à la conformité

Les termes suivants sont définis dans la Recommandation UIT-T X.290 | ISO/CEI 9646-1:

- a) déclaration de conformité d'une implémentation de protocole (PICS);
- b) formulaire PICS;
- c) conformité;
- d) prescription obligatoire;
- e) prescription optionnelle;
- f) prescription conditionnelle.

3.3 Définitions de base pour la conformité relative à l'annuaire

Pour les besoins de la présente Recommandation | Norme internationale, les définitions suivantes s'appliquent.

3.3.1 agent DSA centralisé: agent de système d'annuaire (DSA) qui n'est pas capable de disposer d'informations sur d'autres agents DSA. Un tel agent DSA n'est pas capable de retourner des éléments en référence.

3.3.2 agent DSA coopérant: agent DSA capable de détenir des informations sur les références. Un tel agent DSA est capable de retourner des éléments en référence et peut aussi être un agent DSA de chaînage.

3.3.3 agent DSA de chaînage: agent DSA coopérant capable d'invoquer des opérations chaînées, fonctionnant comme un invocateur de protocole DSP. Un agent DSA de chaînage est aussi un agent DSA coopérant.

3.3.4 niveau de sécurité: des niveaux de sécurité seront déclarés pour l'authentification de l'entité homologue, pour l'authentification de l'expéditeur et pour l'authentification des résultats.

- a) Pour l'authentification de l'expéditeur, il existe cinq niveaux de sécurité: "aucune", "simple sans mot de passe", "simple avec mot de passe non protégé", "simple avec mot de passe protégé" et "forte".

- b) Pour l'authentification de l'entité homologue, il existe trois niveaux de sécurité: "aucune", "simple avec nom distinctif" et "forte".
- c) Pour l'authentification des résultats, il existe deux niveaux de sécurité: "aucune" et "forte".

4 Abréviations

Pour les besoins de la présente déclaration de conformité d'implémentation de protocole, les abréviations suivantes s'appliquent.

ACI	Information de contrôle d'accès (<i>access control information</i>)
CCITT	Comité consultatif international télégraphique et téléphonique
CEI	Commission électrotechnique internationale
DAP	Protocole d'accès à l'annuaire (<i>directory access protocol</i>)
DIB	Base de données de l'annuaire (<i>directory information base</i>)
DISP	Protocole de duplication miroir des informations d'annuaire (<i>directory information shadowing protocol</i>)
DIT	Arbre d'informations de l'annuaire (<i>directory information tree</i>)
DOP	Protocole de gestion de liens opérationnels de l'annuaire (<i>directory operational binding management protocol</i>)
DSA	Agent de système d'annuaire (<i>directory system agent</i>)
DSP	Protocole de système d'annuaire (<i>directory system protocol</i>)
DUA	Agent d'utilisateur d'annuaire (<i>directory user agent</i>)
ISO	Organisation internationale de normalisation (<i>International organization for standardization</i>)
IUT	Implémentation sous test (<i>implementation under test</i>)
NSAP	Point d'accès aux services de couche Réseau (<i>network service access point</i>)
NSSR	Référence subordonnée non spécifique (<i>non-specific subordinate reference</i>)
PDU	Unité de données protocolaires (<i>protocol data unit</i>)
PICS	Déclaration de conformité d'une implémentation de protocole (<i>protocol implementation conformance statement</i>)
RDN	Nom distinctif relatif (<i>relative distinguished name</i>)
ROSE	Élément de service d'opérations distantes (<i>remote operations service element</i>)
UIT	Union internationale des télécommunications
UIT-T	Union internationale des télécommunications – Secteur de la normalisation des télécommunications

5 Conventions

La présente Recommandation | Norme internationale se rapporte exclusivement à la deuxième édition des spécifications relatives à l'annuaire, énumérées à l'article 2.

6 Conformité

Un formulaire PICS conforme doit être techniquement équivalent au formulaire PICS publié par les Recommandations UIT-T de la série X.500 (1993) | ISO/CEI 9594:1995 et doit en conserver la numérotation et l'ordre des articles.

Un formulaire PICS qui obéit aux dispositions de la présente Recommandation | Norme internationale doit:

- a) décrire une implémentation qui obéit aux dispositions des Recommandations UIT-T de la série X.500 | ISO/CEI 9594;
- b) être un formulaire PICS conforme, qui a été rempli selon les règles données en A.2;
- c) contenir les renseignements nécessaires pour permettre d'identifier de façon univoque le fournisseur et l'implémentation.

Annexe A¹⁾

**Protocole d'accès à l'annuaire –
Formulaire de déclaration de conformité d'implémentation de protocole**

(Cette annexe fait partie intégrante de la présente Recommandation | Norme internationale)

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.583 (1997) ISO/IEC 13248-1:1998 Corr: Corr: Corr: Corr:
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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.

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

¹⁾ **Droits de reproduction du formulaire ICS**

Les utilisateurs de la présente Recommandation | Norme internationale sont autorisés à reproduire le formulaire ICS de la présente annexe pour utiliser celui-ci conformément à son objet.

A.2.2.1.4 (support) answer: An allowed entry in the support values columns for an item in 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 "DUA" or "DSA" identifies whether the implementation is a DUA or DSA, respectively.

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 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 end user explicitly requires that capability);
- to interpret, handle and, when required, make available to the end user the corresponding error or result.

A protocol element is said to be supported for a sending implementation if it is able to generate it under some circumstances (either automatically or because the end user 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 end user.

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 DUA implementation if the DUA supports those aspects of the attribute syntax which are pertinent to encoding, decoding or both of the attribute.

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 DUA or DSA but only applies for the type of agent claiming support. For example, if an implementation includes both a DUA and a DSA, then if the DSA supports the Read operation (which is mandatory for a DSA), the "Read" predicate will be set for the DSA only. If the Read operation is also supported for the DUA (which is optional) the predicate would be set for both the DUA and DSA.

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	Other information	

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, <i>Information technology – Open Systems Interconnection – The Directory: Overview of concepts, models and services</i>	
2	ITU-T Rec. X.501 (1993) ISO/IEC 9594-2:1995, <i>Information technology – Open Systems Interconnection – The Directory: Models</i>	
3	ITU-T Rec. X.511 (1993) ISO/IEC 9594-3:1995, <i>Information technology – Open Systems Interconnection – The Directory: Abstract service definition</i>	
4	ITU-T Rec. X.518 (1993) ISO/IEC 9594-4:1995, <i>Information technology – Open Systems Interconnection – The Directory: Procedures for distributed operations</i>	
5	ITU-T Rec. X.519 (1993) ISO/IEC 9594-5:1995, <i>Information technology – Open Systems Interconnection – The Directory: Protocol specifications</i>	
6	ITU-T Rec. X.520 (1993) ISO/IEC 9594-6:1995, <i>Information technology – Open Systems Interconnection – The Directory: Selected Attribute Types</i>	
7	ITU-T Rec. X.521 (1993) ISO/IEC 9594-7:1995, <i>Information technology – Open Systems Interconnection – The Directory: Selected object classes</i>	
8	ITU-T Rec. X.509 (1993) ISO/IEC 9594-8:1995, <i>Information technology – Open Systems Interconnection – The Directory: Authentication framework</i>	
9	ITU-T Rec. X.525 (1993) ISO/IEC 9594-9:1995, <i>Information technology – Open Systems Interconnection – The Directory: Replication</i>	

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	Centralized DSA	o		
2	Cooperating DSA	o		*CoOp-DSA
3	First-Level DSA	o		*FirstLevel-DSA
4	DUA for connection to centralized DSA	o		
5	DUA for connection to cooperating DSA	o		*CoOp-DUA

A.6.2 General capabilities and global statement of conformance

If the supplied implementation is a DSA implementation, A.6.2.1 is required to be answered by the supplier. In addition, appropriate DSA support/status columns in A.6.3, A.6.4 and A.6.5 apply.

If the supplied implementation is a DUA implementation, A.6.2.2 is required to be answered by the supplier. In addition, appropriate DUA support/status columns in A.6.3, A.6.4 and A.6.5 apply.

Answering "No" to A.6.2.1.1/1 or A.6.2.2.1/1 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.6.6 "Other information".

A.6.2.1 DSA Capabilities

A.6.2.1.1 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 the minimum knowledge requirements (ITU-T Rec. X.501 ISO/IEC 9594-2) implemented?	m		
4	Is asynchronous (ROSE class 2) mode of operation supported?	m		*Async-DSA
5	Does the DSA follow the rules of extensibility as defined in 7.5 of ITU-T Rec. X.519 ISO/IEC 9594-5?	m		
6	Is the alias mechanism implemented?	m		
7	Does the DSA support the directoryAccessAC application-context?	m		
8	Is the DSA capable of supporting collective attributes?	o		*Coll-Attr
9	Is the DSA capable of supporting hierarchical attributes (Subtypes)?	o		
10	Is the DSA capable of supporting auxiliary object classes?	o		
11	Is the DSA capable of supporting the subschema administrative operational attributes?	o		*SubSchema
12	Does the DSA support signed DAP operations and results?	o		*Signed-Ops
13	Does the DSA support NSSR?	o		*NSSR
c1: If [FirstLevel-DSA] then m else i				

A.6.2.1.2 Supported Security Levels

Item No.	Security Levels	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.6.2.1.3 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.6.2.2 DUA capabilities

A.6.2.2.1 General capabilities

Item No.	Question	Status	Support	Predicate Name
1	Are all mandatory general capabilities for the DUA implemented?	m		
2	Is the directoryAccessAC application-context supported?	m		
3	Is asynchronous (ROSE class 2) mode of operation supported?	o		*Async-DUA
4	Does the DUA follow the rules of extensibility as defined in 7.5 of ITU-T Rec. X.519 ISO/IEC 9594-5?	m		
5	Does the DUA support signed DAP operations and results?	o		*Signed-Ops

A.6.2.2.2 Supported Security Levels

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

A.6.2.2.3 Supported Access Control Schemes

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

A.6.3 Capabilities and options

This part of the PICS proforma identifies the supported application context, the PDUs and operations.

In addition, the operation arguments and PDU parameters are identified.

A.6.3.1 Supported application context

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

A.6.3.2 Operations and extensions

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

Item No.	Protocol Element	DUA		DSA		Predicate Name	Note
		Status	Support	Status	Support		
1	DirectoryBind	m		m			
2	DirectoryUnbind	m		m			
3	Read	o		m		*Read	
4	Compare	o		m		*Compare	
5	Abandon	c2		c3		*Abandon	Note 1
6	List	o		m		*List	
7	Search	o		m		*Search	
8	AddEntry	o		m		*AddEntry	
9	RemoveEntry	o		m		*RemoveEntry	
10	ModifyEntry	o		m		*ModifyEntry	
11	ModifyDN	o		m		*ModifyDN	Note 2

c2: If [[Async-DUA] then support of this feature is o else –.

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

NOTE 1 – The Abandon operation can only be supported if the asynchronous mode (ROSE class 2) of operation is supported in A.6.2.1.1/4 or A.6.2.2.1/3 for DSA and DUA respectively.

NOTE 2 – 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.	Extension	DUA		DSA		Predicate Name	Note
		Status	Support	Status	Support		
1	subentries	o		o		*Subentries	
2	copyShallDo	o		o			
3	attributesizelimit	o		o		*attrsizelimit	
4	extraAttributes	o		o			
5	modifyRightsRequest	o		o		*modrightsreq	
6	pagedResultsRequest	o		o		*pageresreq	Note
7	matchedValuesOnly	o		o		*matchvalonly	
8	extendedFilter	o		o		*extfilter	
9	targetSystem	o		o		*targetsystem	
10	useAliasOnUpdate	o		o			
11	newSuperior	o		o		*newsuperior	

NOTE – Paged results can only be supported for unsigned operations. DSAs which support signed operations should only return paged results when performing unsigned operations.

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 DUA and DSA 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 DirectoryBind Element (Ref. X.511 | 9594-3, 8.1)

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	credentials	c4		c4			
1.1	simple	c:c5		c:c5			
1.1.1	name	c:m		c:m			
1.1.2	validity	c:o		c:o			
1.1.2.1	time1	c:o		c:o			
1.1.2.2	time2	c:o		c:o			
1.1.2.3	random1	c:o		c:o			
1.1.2.4	random2	c:o		c:o			
1.1.3	password	c:o		c:o		*Password	
1.1.3.1	unprotected	c:o.3		c:o.3			
1.1.3.2	protected	c:o.3		c:o.3			
1.1.3.2.1	algorithmIdentifier	c:m		c:m		*Algor-ID	See A.6.3.3.23.2
1.1.3.2.2	encrypted	c:m		c:m			

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1.2	strong	c:c6		c:c6			
1.2.1	certification-path	c:o		c:o		*Cert-Path	See A.6.3.3.23
1.2.2	bind-token	c:m		c:m			
1.2.2.1	toBeSigned	c:m		c:m			
1.2.2.1.1	algorithm	c:m		c:m			
1.2.2.1.2	name	c:m		c:m			
1.2.2.1.3	time	c:m		c:m			
1.2.2.1.4	random	c:m		c:m			
1.2.2.2	algorithmIdentifier	c:m		c:m		*Algor-ID	See A.6.3.3.23.2
1.2.2.3	encrypted	c:m		c:m			
1.2.3	name	c:o		c:o			
1.3	externalProcedure	i		i			
2	versions	m		m			d(v1)
2.1	v1	m		m			
<p>c4: If [Strong-DUA or Simple-DUA, Simple-DSA or Strong-DSA] then support of this feature is m else o. c5: If [Simple-DUA, Simple-DSA] then support of this feature is m else o. c6: If [Strong-DUA, Strong-DSA] then support of this feature is m else o. o.3: At least one of the items must be supported.</p>							

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	credentials	c4		c4			
1.1	simple	c:c5		c:c5			
1.1.1	name	c:m		c:m			
1.1.2	validity	c:o		c:o			
1.1.2.1	time1	c:o		c:o			
1.1.2.2	time2	c:o		c:o			
1.1.2.3	random1	c;o		c;o			
1.1.2.4	random2	c:o		c:o			
1.1.3	password	c:o		c:o		*Password	
1.1.3.1	unprotected	c:o.3		c:o.3			
1.1.3.2	protected	c:o.3		c:o.3			
1.1.3.2.1	algorithmIdentifier	c:m		c:m		*Algor-ID	See A.6.3.3.23.2
1.1.3.2.2	encrypted	c:m		c:m			

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1.2	strong	c:c6		c:c6			
1.2.1	certification-path	c:o		c:o		*Cert-Path	See A.6.3.3.23
1.2.2	bind-token	c:m		c:m			
1.2.2.1	toBeSigned	c:m		c:m			
1.2.2.1.1	algorithm	c:m		c:m			
1.2.2.1.2	name	c:m		c:m			
1.2.2.1.3	time	c:m		c:m			
1.2.2.1.4	random	c:m		c:m			
1.2.2.2	algorithmIdentifier	c:m		c:m		*Algor-ID	See A.6.3.3.23.2
1.2.2.3	encrypted	c:m		c:m			
1.2.3	name	c:o		c:o			
1.3	externalProcedure	i		i			
2	versions	m		m			d(v1)
2.1	v1	m		m			
c4: If [Strong-DUA or Simple-DUA, Simple-DSA or Strong-DSA] then support of this feature is m else o. c5: If [Simple-DUA, Simple-DSA] then support of this feature is m else o. c6: If [Strong-DUA, Strong-DSA] then support of this feature is m else o. o.3: At least one of the items must be supported.							

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

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

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

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

A.6.3.3.3 Read Elements (Ref. X.511 | 9594-3, 9.1)

Prerequisite: [Read]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	ReadArgument	m		m		m		m			
1.1	toBeSigned	–		m		–		m			
1.2	object	m		m		m		m			
1.3	selection	m		m		m		m			d({})
1.4	modifyRightsRequest	c7		c7		c7		c7			d(false)
1.5	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.6	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
1.7	encrypted	–		m		–		m			
2	ReadResult	m		m		m		m			
2.1	toBeSigned	–		m		–		m			
2.2	entry	m		m		m		m			
2.3	modifyRights	o		o		o		o			
2.3.1	item	c:m		c:m		c:m		c:m			
2.3.1.1	entry	c:o		c:o		c:m		c:m			
2.3.1.2	attribute	c:o		c:o		c:m		c:m			
2.3.1.3	value	c:o		c:o		c:m		c:m			
2.3.2	permission	c:o		c:o		c:m		c:m			
2.4	CommonResults	m		m		m		m		*Comm-Res	See A.6.3.3.14
2.5	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
2.6	encrypted	–		m		–		m			
3	Errors	m		m		m		m			See A.6.3.3.12

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

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A.6.3.3.4 Compare Elements (Ref. X.511 | 9594-3, 9.2)

Prerequisite: [Compare]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	CompareArgument	m		m		m		m			
1.1	toBeSigned	-		m		-		m			
1.2	object	m		m		m		m			
1.3	purported	m		m		m		m			
1.4	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.5	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
1.6	encrypted	-		m		-		m			
2	CompareResult	m		m		m		m			
2.1	toBeSigned	-		m		-		m			
2.2	name	o		o		o		o			
2.3	matched	m		m		m		m			
2.4	fromEntry	o		o		m		m			d(true)
2.5	matchedSubtype	o		o		o		o			
2.6	CommonResults	m		m		m		m		*Comm-Res	See A.6.3.3.14
2.7	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
2.8	encrypted	-		m		-		m			
3	Errors	m		m		m		m			See A.6.3.3.12

A.6.3.3.5 Abandon Elements (Ref. X.511 | 9594-3, 9.3)

Prerequisite: [Abandon]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	AbandonArgument	m		m			
1.1	InvokeID	m		m			
2	AbandonResult	m		m			
3	Errors	m		m			AbandonFailed error

A.6.3.3.6 List Elements (Ref. X.511 | 9594-3, 10.1)

Prerequisite: [List]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	ListArgument	m		m		m		m			
1.1	toBeSigned	–		m		–		m			
1.2	object	m		m		m		m			
1.3	pagedResults	c8		c8		c8		c8			See A.6.3.3.20
1.4	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.5	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
1.6	encrypted	–		m		–		m			
2	ListResult	m		m		m		m			
2.1	toBeSigned	–		m		–		m			
2.2	listInfo	m		m		m		m			
2.2.1	name	o		o		o		o			
2.2.2	subordinates	m		m		m		m			
2.2.2.1	rdn	m		m		m		m			
2.2.2.2	aliasEntry	o		o		m		m			d(false)
2.2.2.3	fromEntry	o		o		m		m			d(true)
2.2.3	partialOutcomeQualifier	o		o		m		m			
2.2.3.1	limitProblem	c:o		c:o		–o		–o			
2.2.3.1.1	timeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.1.2	sizeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.1.3	administrativeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.2	unexplored	c:o		c:o		o		o			See A.6.3.3.21
2.2.3.3	unavailableCriticalExtensions	c:m		c:m		m		m			d(false)
2.2.3.4	unknownErrors	c:o		c:o		o		o			
2.2.3.5	queryReference	c:c8		c:c8		c8		c8			
2.2.4	CommonResults	m		m		m		m		*Comm-Res	See A.6.3.3.14
2.3	uncorrelatedListInfo	o		c9		–		c9			
2.4	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
2.5	encrypted	–		m		–		m			
3	Errors	m		m		m		m			See A.6.3.3.12

c8: If [pageresreq] then support of this feature is m else o.
c9: If [CoOp-DUA, CoOp-DSA] then support of this feature is m else o.

A.6.3.3.7 Search Elements (Ref. X.511 | 9594-3, 10.2)

Prerequisite: [Search]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	SearchArgument	m		m		m		m			
1.1	toBeSigned	-		m		-		m			
1.2	baseObject	m		m		m		m			
1.3	subset	o		o		m		m			d(0)
1.4	filter	o		o		m		m		*Filter	d(and{ }), See A.6.3.3.18
1.5	searchAliases	o		o		m		m			d(true)
1.6	selection	o		o		m		m		*Info-Sel	d({ }), See A.6.3.3.16
1.7	pagedResults	c8		c8		c8		c8			See A.6.3.3.20
1.8	matchedValuesOnly	o		o		c10		c10			d(false)
1.9	extendedFilter	c11		c11		c11		c11			See A.6.3.3.18
1.10	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.11	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
1.12	encrypted	-		m		-		m			
2	SearchResult	m		m		m		m			
2.1	toBeSigned	-		m		-		m			
2.2	searchInfo	m		m		m		m			
2.2.1	name	o		o		o		o			
2.2.2	entries	m		m		m		m		*Entry-Info	See A.6.3.3.17
2.2.3	partialOutcomeQualifier	o		o		m		m			
2.2.3.1	limitProblem	c:o		c:o		o		o			
2.2.3.1.1	timeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.1.2	sizeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.1.3	administrativeLimitExceeded	c:m		c:m		c:m		c:m			
2.2.3.2	unexplored	c:o		c:o		o		o			See A.6.3.3.21
2.2.3.3	unavailableCriticalExtensions	c:o		c:o		m		m			d(false)
2.2.3.4	unknownErrors	c:o		c:o		o		o			
2.2.3.5	queryReference	c:c8		c:c8		c8		c8			
2.2.4	CommonResults	m		m		m		m		*Comm-Res	See A.6.3.3.14
2.3	uncorrelatedSearchInfo	o		c9		-		c9			
2.4	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
2.5	encrypted	-		m		-		m			
3	Errors	m		m		m		m			See A.6.3.3.12

c8: If [pageresreq] then support of this feature is m else o.
c9: If [CoOp-DUA, CoOp-DSA] then support of this feature is m else o.
c10: If [matchvalonly] then support of this feature is m else o.
c11: If [extfilter] then support of this feature is m else o.

A.6.3.3.8 Add Entry Elements (Ref. X.511 | 9594-3, 11.1)

Prerequisite: [AddEntry]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	AddEntryArgument	m		m		m		m			
1.1	toBeSigned	–		m		–		m			
1.2	object	m		m		m		m			
1.3	entry	m		m		m		m			
1.4	targetSystem	c12		c12		c12		c12			See A.6.3.3.26
1.5	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.6	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
1.7	encrypted	–		m		–		m			
2	AddEntryResult	m		m		m		m			NULL (NOTE)
3	Errors	m		m		m		m			See A.6.3.3.12

c12: If [targetsystem] then support of this feature is m else o.

NOTE – Results return a NULL and cannot be signed. Implementation should return unsigned results.

A.6.3.3.9 Remove Entry Elements (Ref. X.511 | 9594-3, 11.2)

Prerequisite: [RemoveEntry]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	RemoveEntryArgument	m		m		m		m			
1.1	toBeSigned	–		m		–		m			
1.2	object	m		m		m		m			
1.3	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.4	algorithmIdentifier	–		m		–		m		*Algor-ID	See A.6.3.3.23.2
1.5	encrypted	–		m		–		m			
2	RemoveEntryResult	m		m		m		m			NULL (NOTE)
3	Errors	m		m		m		m			See A.6.3.3.12

NOTE – Results return a NULL and cannot be signed. Implementation should return unsigned results.

A.6.3.3.10 Modify Entry Elements (Ref. X.511 | 9594-3, 11.3)

Prerequisite: [ModifyEntry]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	ModifyEntryArgument	m		m		m		m			
1.1	toBeSigned	-		m		-		m			
1.2	object	m		m		m		m			
1.3	changes	m		m		m		m			
1.3.1	addAttribute	m		m		m		m			
1.3.2	removeAttribute	m		m		m		m			
1.3.3	addValues	m		m		m		m			
1.3.4	removeValues	m		m		m		m			
1.4	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.5	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
1.6	encrypted	-		m		-		m			
2	ModifyEntryResult	m		m		m		m			NULL (NOTE)
3	Errors	m		m		m		m			See A.6.3.3.12

NOTE – Results return a NULL and cannot be signed. Implementation should return unsigned results.

A.6.3.3.11 ModifyDN Elements (Ref. X.511 | 9594-3, 11.4)

Prerequisite: [ModifyDN]

Item No.	Protocol Element	DUA				DSA				Predicate	Note
		Unsigned		Signed		Unsigned		Signed			
		Status	Support	Status	Support	Status	Support	Status	Support		
1	ModifyDNArgument	m		m		m		m			
1.1	toBeSigned	-		m		-		m			
1.2	object	m		m		m		m			
1.3	newRDN	m		m		m		m			
1.4	deleteOldRDN	o		o		m		m			d(false)
1.5	newSuperior	c13		c13		c13		c13			
1.6	CommonArguments	m		m		m		m		*Comm-Arg	See A.6.3.3.13
1.7	algorithmIdentifier	-		m		-		m		*Algor-ID	See A.6.3.3.23.2
1.8	encrypted	-		m		-		m			
2	ModifyDNResult	m		m		m		m			NULL (NOTE)
3	Errors	m		m		m		m			See A.6.3.3.12

c13: If [newsuperior] then support of this feature is m else o.

NOTE – Results return a NULL and cannot be signed. Implementation should return unsigned results.

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	Abandoned	c14		m			
2	AbandonFailed	c14		m			
2.1	problem	c:m		m			
2.1.1	noSuchOperation	c:m		m			
2.1.2	tooLate	c:m		m			
2.1.3	cannotAbandon	c:m		m			
2.2	operation	c:m		m			
3	AttributeError	c15		m			
3.1	object	c:m		m			
3.2	problems	c:m		m			
3.2.1	problem	c:m		m			
3.2.1.1	noSuchAttributeOrValue	c:m		m			
3.2.1.2	invalidAttributeSyntax	c:m		m			
3.2.1.3	undefinedAttributeType	c:m		m			
3.2.1.4	inappropriateMatching	c:m		m			
3.2.1.5	constraintViolation	c:m		m			
3.2.1.6	attributeOrValueAlreadyExists	c:m		m			
3.3	type	c:m		m			
3.4	value	c:o		o			
4	NameError	c16		m			
4.1	problem	c:m		m			
4.1.1	noSuchObject	c:m		m			
4.1.2	aliasProblem	c:m		m			
4.1.3	invalidAttributeSyntax	c:m		m			
4.1.4	aliasDereferencingProblem	c:m		m			
4.2	matched	c:m		m			
5	Referral	c16		c9			
5.1	candidate	c:m		c:m			See A.6.3.3.21
6	SecurityError	c16		m			
6.1	problem	c:m		m			
6.1.1	InappropriateAuthentication	c:m		m			
6.1.2	invalidCredentials	c:m		m			
6.1.3	insufficientAccessRights	c:m		m			
6.1.4	invalidSignature	c:c17		c17			
6.1.5	protectionRequired	c:c17		c17			
6.1.6	noInformation	c:m		m			

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

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
7	ServiceError	c16		m			
7.1	problem	c:m		m			
7.1.1	busy	c:m		m			
7.1.2	unavailable	c:m		m			
7.1.3	unwillingToPerform	c:m		m			
7.1.4	chainingRequired	c:m		m			
7.1.5	unableToProceed	c:m		m			
7.1.6	invalidReference	c:m		m			
7.1.7	timeLimitExceeded	c:m		m			
7.1.8	administrativeLimitExceeded	c:m		m			
7.1.9	loopDetected	c:m		m			
7.1.10	unavailableCriticalExtension	c:m		m			
7.1.11	outOfScope	c:m		m			
7.1.12	ditError	c:m		m			
7.1.13	invalidQueryReference	c:c18		c18			
8	UpdateError	c19		m			
8.1	problem	c:m		m			
8.1.1	namingViolation	c:m		m			
8.1.2	objectClassViolation	c:m		m			
8.1.3	notAllowedOnNonLeaf	c:m		m			
8.1.4	notAllowed OnRDN	c:m		m			
8.1.5	entryAlreadyExists	c:m		m			
8.1.6	affectsMultipleDSAs	c:m		m			
8.1.7	objectClassModificationPr- hibited	c:m		m			
<p>c9: If [CoOp-DUA, CoOp-DSA] then support of this feature is m else o.</p> <p>c14: If [Abandon] then support of this feature is m else o.</p> <p>c15: If [Read or Compare or Search or AddEntry or ModifyEntry] then support of this feature is m else o.</p> <p>c16: If [Read or Compare or List or Search or AddEntry or RemoveEntry or ModifyEntry or ModifyDN] then support of this feature is m else o.</p> <p>c17: If [Signed-Ops] then support of this feature is m else –.</p> <p>c18: If [pageresreq] then support of this feature is m else –.</p> <p>c19: If [AddEntry or RemoveEntry or ModifyEntry or ModifyDN] then support of this feature is m else o.</p>							

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

Prerequisite: [Comm-Arg]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	serviceControls	o		m		*Serv-Ctrls	d({}), See A.6.3.3.15
2	securityParameters	c17		c17		*Sec-Param	See A.6.3.3.22
3	requestor	o		o			Note 1
4	operationProgress	o		m			d(nameResolutionPhaseNotStarted)
4.1	nameResolutionPhase	c:o		m			
4.1.1	notStarted	c:m		m			
4.1.2	proceeding	c:m		m			
4.1.3	completed	c:m		m			
4.2	nextRDNTToBeResolved	c:o		o			
5	aliasedRDNs	o		o			Note 2
6	criticalExtensions	o		m			
7	referenceType	o		o			
8	entryOnly	o		m			d(true)
9	exclusions	o		o			
10	nameResolveOnMaster	o		o			d(false)

c17: 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. DUAs (and 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	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	securityParameters	c17		c17		*Sec-Param	See A.6.3.3.22
2	performer	o		o			
3	aliasDereferenced	o		m			d(false)

c17: If [Signed-Ops] then support of this feature is m else –.

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

Prerequisite: [Serv-Ctrls]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	options	o		m			d({})
1.1	preferChaining	c:m		m			
1.2	chainingProhibited	c:m		m			
1.3	localScope	c:m		m			
1.4	dontUseCopy	c:m		m			
1.5	dontDereferenceAliases	c:m		m			
1.6	subentries	c:m		m			
1.7	copyShallDo	c:m		m			
2	priority	o		m			d(medium)
3	timeLimit	o		o			
4	sizeLimit	o		o			
5	scopeOfReferral	o		o			
6	attributeSizeLimit	c20		c20			
c20: 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	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	attributes	o		m			d(allUserAttributes)
1.1	allUserAttributes	c:m		m			
1.2	select	c:m		m			
2	infoTypes	o		m			d(attributeTypesAndValues)
2.1	attributeTypesOnly	c:m		m			
2.2	attributeTypesAndValues	c:m		m			
3	extraAttributes	o		o			
3.1	allOperationalAttributes	c:m		c:m			
3.2	select	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	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	name	m		m			
2	fromEntry	o		m			d(true)
3	information	o		o			
3.1	attributeType	c:m		c:m			
3.2	attribute	c:m		c:m			
4	incompleteEntry	o		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	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	item	o		m		*Filt-Item	See A.6.3.3.19
2	and	o		m			
3	or	o		m			
4	not	o		m			

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

Prerequisite: [Filt-Item]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	equality	o		m			
2	substrings	o		m			
2.1	type	c:o		m			
2.2	strings	c:o		m			
2.2.1	initial	c:o		m			
2.2.2	any	c:o		m			
2.2.3	final	c:o		m			
3	greaterOrEqual	o		m			
4	lessOrEqual	o		m			
5	present	o		m			
6	approximateMatch	o		m			
7	extensibleMatch	c:l1		c:l1			
7.1	matchingRule	c:o		c:m			
7.2	type	c:o		c:m			
7.3	matchValue	c:o		c:m			
7.4	dnAttributes	c:o		c:m			d(false)

c11: If [extfilter] then support of this feature is m else o.

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

Prerequisite: [pageresreq]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	PagedResultsRequest	m		m			
1.1	newRequest	o.4		m			
1.1.1	pageSize	c:m		m			
1.1.2	sortkeys	c:o		o			
1.1.2.1	type	c:m		c:m			
1.1.2.2	orderingRule	c:o		c:o			
1.1.3	reverse	c:m		m			d(false)
1.1.4	unmerged	c:m		m			d(false)
1.2	queryReference	o.4		m			
o.4: At least one of newRequest or queryReference must be present for PagedResultsRequest.							

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

Prerequisite: [CoOp-DUA or CoOp-DSA]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	targetObject	m		m			
2	aliasedRDNs	o		o			
3	operationProgress	m		m			
3.1	nameResolutionPhase	m		m			
3.1.1	notStarted	m		m			
3.1.2	proceeding	m		m			
3.1.3	completed	m		m			
3.2	nextRDNToBeResolved	o		m			
4	rdnsResolved	o		o			
5	referenceType	m		m			
6	accessPoints	m		m			
6.1	MasterOrShadowAccessPoint	m		m			
6.1.1	AccessPoint	m		m			
6.1.1.1	ae-title	m		m			
6.1.1.2	address	m		m			
6.1.1.2.1	pSelector	o		m			
6.1.1.2.2	sSelector	o		m			
6.1.1.2.3	tSelector	o		m			
6.1.1.2.4	nAddresses	m		m			
6.1.1.3	protocolInformation	o		o			
6.1.2	category	o		m			d(master)
6.1.2.1	master	c:m		m			
6.1.2.2	shadow	c:m		m			

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

Prerequisite: [CoOp-DUA or CoOp-DSA]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
6.2	additionalPoints	o		o			
6.2.1	AccessPoint	c:m		c:m			
6.2.1.1	ae-title	c:m		c:m			
6.2.1.2	address	c:m		c:m			
6.2.1.2.1	pSelector	c:o		c:m			
6.2.1.2.2	sSelector	c:o		c:m			
6.2.1.2.3	tSelector	c:o		c:m			
6.2.1.2.4	nAddresses	c:m		c:m			
6.2.1.3	protocolInformation	c:o		c:o			
6.2.2	category	c:o		c:m			d(master)
6.2.2.1	master	c:m		c:m			
6.2.2.2	shadow	c:m		c:m			
7	entryOnly	o		m			d(false)
8	exclusions	o		o			
9	returnToDUA	o		m			d(false)
10	nameResolveOnMaster	o		c21			d(false)
c21: If [NSSR] then support of this feature is m else –.							

A.6.3.3.22 Security Parameters (Ref. X.511 | 9594-3, 7.10)

Prerequisite: [Sec-Param]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	certification-path	m		m		*Cert-Path	See A.6.3.3.23
2	name	o		o			
3	time	o		o			
4	random	o		o			
5	target	o		o			

A.6.3.3.23 CertificationPath (Ref. X.509 | 9594-8, 8)

Prerequisite: [Cert-Path]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	userCertificate	m		m			
2	theCACertificates	o		o			
2.1	forward	c:o.5		c:o.5			
2.2	reverse	c:o.5		c:o.5			
o.5: 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.6.3.3.23.1 Certificate (Ref. X.509 | 9594-8, 8)

Prerequisite: [Cert-Path]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	toBeSigned	m		m			
1.1	version	m		m			d(v1)
1.2	serialNumber	m		m			
1.3	signature	m		m			See A.6.3.3.23.2
1.4	issuer	m		m			
1.5	validity	m		m			
1.5.1	notBefore	m		m			
1.5.2	notAfter	m		m			
1.6	subject	m		m			
1.7	subjectPublicKeyInfo	m		m			
1.7.1	algorithm	m		m			
1.7.2	subjectPublicKey	m		m			
1.8	issuerUniqueIdentifier	o		o			Note
1.9	subjectUniqueIdentifier	o		o			Note
1.10	extensions	c22		c22		*Extensions	See A.6.3.3.23.3
2	algorithmIdentifier	m		m		*Algor-ID	See A.6.3.3.23.2
3	encrypted	m		m			
c22: If version 3 then support of this feature is m else o. NOTE – If present, version must be 2 or 3.							

A.6.3.3.23.2 Algorithm Identifier (Ref. X.509 | 9594-8, 8)

Prerequisite: [Algor-ID]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	algorithm	m		m			
2	parameters	m		m			

A.6.3.3.23.3 Extensions (Ref. X.509 | 9594-8, 8)

Prerequisite: [Extensions]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	extnID	m		m			
2	critical	m		m			
3	extnValue	m		m			

A.6.3.3.24 Access Control (Ref X.501 | 9594-2, 16)

A.6.3.3.24.1 Access Control Information (Ref. X.501 | 9594-2, 16.4)

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	ACIItem	o		c23		*ACI	
1.1	identificationTag	c:m		c:m			
1.2	precedence	c:m		c:m			
1.3	authenticationLevel	c:m		c:m			
1.3.1	basicLevels	c:m		c:m			
1.3.1.1	level	c:o.6		c:m			
1.3.1.2	localQualifier	c:o.6		c:o			
1.3.2	other	i		i			
1.4	itemOrUserFirst	c:m		c:m			
1.4.1	itemFirst	c:o.7		c:m			
1.4.1.1	protectedItems	c:m		c:m			See A.6.3.3.24.2
1.4.1.2	itemPermissions	c:m		c:m			
1.4.1.2.1	precedence	c:o		c:o			d(A.6.3.3.24.1/3)
1.4.1.2.2	userClasses	c:m		c:m		*User-Class	See A.6.3.3.24.3
1.4.1.2.3	grantsAndDenials	c:m		c:m			See A.6.3.3.24.4
1.4.2	userFirst	c:o.7		c:m			
1.4.2.1	userClasses	c:m		c:m		*User-Class	See A.6.3.3.24.3
1.4.2.2	userPermissions	c:m		c:m			
1.4.2.2.1	precedence	c:o		c:o			d(A.6.3.3.24.1/3)
1.4.2.2.2	protectedItems	c:m		c:m			See A.6.3.3.24.2
1.4.2.2.3	grantsAndDenials	c:m		c:m			See A.6.3.3.24.4
o.6: At least one of level or localQualifier should be present. o.7: At least one of itemFirst or userFirst should be present. c23: If [SAC-DSA or BAC-DSA] then support of this feature is m else -.							

A.6.3.3.24.2 Protected Items [Ref. X.501 | 9594-2, 16.4.2.4 a)]

Prerequisite: [ACI]

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

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A.6.3.3.24.3 UserClasses [Ref. X.501 | 9594-2, 16.4.2.4 b)]

Prerequisite: [User-Class]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	allUsers	o		o			
2	thisEntry	o		o			
3	name	o		o			
4	userGroup	o		o			
5	subtree	o		o		*Subtree	See A.6.3.3.24.5

A.6.3.3.24.4 Grants and Denials (Ref. X.501 | 9594-2, 16.4.1)

Prerequisite: [ACI]

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

A.6.3.3.24.5 Subtree Specification (Ref. X.501 | 9594-2, 11.3)

Predicate: [Subentries or Subtree]

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	base	m		m			Note 1
2	ChopSpecification	m		m			
2.1	specificExclusions	o		o			
2.1.1	chopBefore	c:m		c:m			
2.1.2	chopAfter	c:m		c:m			
2.2	minimum	m		m			Note 2
2.3	maximum	o		o			
3	specificationFilter	o		o			
3.1	item	c:m		c:m			
3.2	and	c:m		c:m			
3.3	or	c:m		c:m			
3.4	not	c:m		c:m			
NOTE 1 – At least Null set is supported.							
NOTE 2 – At least a minimum of 0 is supported.							

A.6.3.3.25 Supported References (Ref. X.501 | 9594-2, 20.2.2)

Item No.	Reference	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	Self Reference	o		o			
2	Superior Reference	o		o			
3	Immediate Superior Reference	o		o			
4	Subordinate Reference	o		o			
5	Non-Specific Subordinate Reference	o		o			
6	Cross Reference	o		o			
7	Supplier Reference	i		i			
8	Consumer Reference	i		i			

A.6.3.3.26 Access Point

Item No.	Protocol Element	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	AccessPoint	m		m			
1.1	ae-title	m		m			
1.2	address	m		m			
1.2.1	pSelector	o		m			
1.2.2	sSelector	o		m			
1.2.3	tSelector	o		m			
1.2.4	nAddresses	m		m			
1.3	protocolInformation	o		o			

A.6.4 Directory Schema and Directory System Schema

A.6.4.1 Supported object classes (Ref. X.521 | 9594-7)

A.6.4.1.1 Standard Object Classes

The supplier of the DSA implementation shall indicate, in the table below, the selected object classes defined in ITU-T Rec. X.521 | ISO/IEC 9594-7 for which conformance is claimed.

Item No.	Object class	DUA		DSA		Note
		Status	Support	Status	Support	
1	top	m		m		
2	alias	m		m		
3	country	o		o		
4	locality	o		o		
5	organization	o		o		
6	organizationalUnit	o		o		
7	person	o		o		
8	organizationalPerson	o		o		
9	organizationalRole	o		o		
10	groupOfNames	o		o		
11	groupOfUniqueNames	o		o		
12	residentialPerson	o		o		
13	applicationProcess	o		o		
14	applicationEntity	o		o		
15	dSA	o		o		
16	device	o		o		
17	strongAuthenticationUser	o		o		
18	certificationAuthority	o		o		

A.6.4.1.2 Other Supported object classes

The supplier of the DSA implementation is required to list any other object classes provided for which conformance is claimed in the following table:

Index	Supported object classes	
	DUA	DSA

A.6.4.2 Directory String Types (Ref. X.520 | 9594-6)

Item No.	Attribute Type	Upperbound	DUA		DSA		Predicate	Note
			Status	Support	Status	Support		
1	DirectoryString		m		m			
1.1	teletexString		m		m			
1.2	printableString		m		m			
1.3	BMPString		o		o		*BMP	
1.4	universalString		o		o		*UCS	

A.6.4.3 Supported Attribute Types

A.6.4.3.1 Attribute Types (Ref. X.520 | 9594-6)

The supplier of the implementation shall indicate, in the following table, the selected attribute types defined in ITU-T Rec. X.520 | ISO/IEC 9594-6 for which conformance is claimed:

Item No.	Attribute Type	Upperbound	DUA		DSA		Note
			Status	Support	Status	Support	
1	objectClass		m		m		
2	aliasedEntryName		o		o		
3	knowledgeInformation		o		o		
4	name	32768	o		o		
5	commonName	64	c24		c24		
6	surname	64	o		o		
7	givenName	32768	o		o		
8	initials	32768	o		o		
9	generationQualifier	32768	o		o		
10	uniqueIdentifier		o		o		
11	dnQualifier		o		o		
12	serialNumber	64	o		o		
13	countryName		o		o		size = 2
14	localityName	128	o		o		
15	stateOrProvinceName	128	o		o		
16	streetAddress	128	o		o		
17	houseIdentifier	64	o		o		
18	organizationName	64	o		o		
19	organizationalUnitName	64	o		o		
20	title	64	o		o		
21	description	1024	o		o		
22	searchGuide		o		o		
23	enhancedSearchGuide		o		o		
24	businessCategory	128	o		o		

A.6.4.3.1 Attribute Types (Ref. X.520 | 9594-6) (*continued*)

The supplier of the implementation shall indicate, in the following table, the selected attribute types defined in ITU-T Rec. X.520 | ISO/IEC 9594-6 for which conformance is claimed:

Item No.	Attribute Type	Upperbound	DUA		DSA		Note
			Status	Support	Status	Support	
25	postalAddress	6(lines) × 30(chs)	o		o		
26	postalCode	40	o		o		
27	postOfficeBox	40	o		o		
28	physicalDeliveryOfficeName	128	o		o		
29	telephoneNumber	32	o		o		
30	telexNumber	14, 4, 8	o		o		
31	teletexTerminalIdentifier	1024	o		o		
32	facsimileTelephoneNumber	32	o		o		
33	X.121 Address	15	o		o		
34	internationalISDNNumber	16	o		o		
35	registeredAddress	6(lines) × 30(chs)	o		o		
36	destinationIndicator	128	o		o		
37	preferredDeliveryMethod		o		o		
38	presentationAddress		o		o		
39	supportedApplicationContext		o		o		
40	protocolInformation		o		o		
41	distinguishedName		o		o		
42	member		o		o		
43	uniqueMember		o		o		
44	owner		o		o		
45	roleOccupant		o		o		
46	seeAlso		o		o		
47	userPassword	128	c25		c25		
48	userCertificate		c26		c26		
49	cACertificate		c26		c26		
50	authorityRevocationList		o		o		
51	certificateRevocationList		o		o		
52	crossCertificatePair		o		o		
c24: If [Subentries] then support for this attribute is m else o. c25: If [Password] then support for this attribute is m else o. c26: If [Strong-DSA] then support of this feature is m else o.							

A.6.4.3.2 Collective Attribute Types

The supplier of the implementation shall indicate, in the following table, the selected collective attribute types defined in ITU-T Rec. X.520 | ISO/IEC 9594-6 for which conformance is claimed:

Item No.	Attribute Type	Upperbound	DUA		DSA		Note
			Status	Support	Status	Support	
1	collectiveLocalityName	128	o		o		
2	collectiveStateOrProvinceName	128	o		o		
3	collectiveStreetAddress	128	o		o		
4	collectiveOrganizationName	64	o		o		
5	collectiveOrganizationalUnitName	64	o		o		
6	collectivePostalAddress	6(lines) × 30(chs)	o		o		
7	collectivePostalCode	40	o		o		
8	collectivePostOfficeBox	40	o		o		
9	collectivePhysicalDeliveryOfficeName	128	o		o		
10	collectiveTelephoneNumber	32	o		o		
11	collectiveTelexNumber	14,4,8	o		o		
12	collectiveTeletexTerminalIdentifier	1024	o		o		
13	collectiveFacsimileTelephoneNumber	32	o		o		
14	collectiveInternationalISDNNumber	16	o		o		

A.6.4.3.3 Other Supported Attribute Types

The supplier of the DSA implementation is required to list any other object classes provided for which conformance is claimed in the following table:

Index	Attribute types	
	DUA	DSA

A.6.4.4 Matching Rules (Ref. X.520 | 9594-6)

The supplier of the implementation shall indicate, in the following table, the matching rules defined in ITU-T Rec. X.520 | ISO/IEC 9594-6 for which support is claimed:

Item No.	Matching Rule	DUA		DSA		Note
		Status	Support	Status	Support	
1	caseIgnoreMatch	o		o		
2	caseIgnoreOrderingMatch	o		o		
3	caseIgnoreSubstringMatch	o		o		
4	caseExactMatch	o		o		
5	caseExactOrderingMatch	o		o		
6	caseExactSubstringsMatch	o		o		
7	numericStringMatch	o		o		
8	numericStringOrderingMatch	o		o		
9	numericStringSubstringsMatch	o		o		
10	caseIgnoreListMatch	o		o		
11	caseIgnoreListSubstringsMatch	o		o		
12	booleanMatch	o		o		
13	integerMatch	o		o		
14	integerOrderingMatch	o		o		
15	bitStringMatch	o		o		
16	octetStringMatch	o		o		
17	octetStringOrderingMatch	o		o		
18	octetStringSubStringsMatch	o		o		
19	telephoneNumberMatch	o		o		
20	telephoneNumberSubstringsMatch	o		o		
21	presentationAddressMatch	o		o		
22	uniqueMemberMatch	o		o		
23	protocolInformationMatch	o		o		
24	uTCTimeMatch	o		o		
25	uTCTimeOrderingMatch	o		o		
26	generalizedTimeMatch	o		o		
27	generalizedTimeOrderingMatch	o		o		
28	integerFirstComponentMatch	o		o		
29	objectIdentifierFirstComponentMatch	o		o		
30	directoryStringFirstComponentMatch	o		o		
31	wordMatch	o		o		
32	keywordMatch	o		o		

A.6.4.5 Name Forms (Ref. X.521 | 9594-7)

The supplier of the implementation shall indicate, in the following table, the Name Forms defined in ITU-T Rec. X.521 | ISO/IEC 9594-7 for which support is claimed:

Item No.	Name Forms	DUA		DSA		Note
		Status	Support	Status	Support	
1	countryNameForm	o		o		
2	locNameForm	o		o		
3	sOPNameForm	o		o		
4	orgNameForm	o		o		
5	orgUnitNameForm	o		o		
6	personNameForm	o		o		
7	orgPersonNameForm	o		o		
8	orgRoleNameForm	o		o		
9	gONNameForm	o		o		
10	resPersonNameForm	o		o		
11	applProcessNameForm	o		o		
12	applEntityNameForm	o		o		
13	dSANNameForm	o		o		
14	deviceNameForm	o		o		

A.6.4.6 Information Framework (Ref. X.501 | 9594-2, 13)

The supplier of the implementation shall indicate, in the following table, the object class, attributes, and matching rules defined in ITU-T Rec. X.501 | ISO/IEC 9594-2, Information Framework for which support is claimed.

A.6.4.6.1 Information Framework Object Classes

Prerequisite: [Subentries]

Item No.	Object class	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	subentry	m		m			
2	accessControlSubentry	c27		c28			
3	collectiveAttributeSubentry	c29		c29			
c27: If [SAC-DUA or BAC-DUA] then support of this feature is m else o. c28: If [SAC-DSA or BAC-DSA] then support of this feature is m else o. c29: If [Coll-Attr] then support of this feature is m else o.							

A.6.4.6.2 Information Framework Attributes

Item No.	Attribute Type	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	createTimestamp	o		o			
2	modifyTimestamp	o		o			
3	creatorsName	o		o			
4	modifiersName	o		o			
5	administrativeRole	m		m			
6	subtreeSpecification	c30		c30			
7	collectiveExclusions	o		o			
c30: If [Subentries] then support of this feature is m else o.							

A.6.4.6.3 Information Framework Matching Rules

Item No.	Matching rule	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	objectIdentifierMatch	o		o			
2	distinguishedNameMatch	o		o			

A.6.4.6.4 Information Framework Name Forms

Item No.	Name Form	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	subentryNameForm	m		m			

A.6.4.7 Subschema Administration (Ref. X.501 | 9594-2, 14)

If the supplied implementation supports the subschema administration for its portion of the DSA claimed in A.6.2.1.1/11, then A.6.4.6.1, A.6.4.6.2, A.6.4.6.3 and A.6.4.6.4 are required to be answered by the supplier.

A.6.4.7.1 Subschema Administration Object Classes

Item No.	Object class	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	subschema	c31		c31			
c31: If [SubSchema] then support of this feature is m else o.							

A.6.4.7.2 Subschema Administration Attributes

Item No.	Attribute Type	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	dITStructureRules	c31		c31			
2	dITContentRules	c31		c31			
3	matchingRules	c31		c31			
4	attributeTypes	c31		c31			
5	objectClasses	c31		c31			
6	nameForms	c31		c31			
7	matchingRuleUse	o		o			
8	structuralObjectClass	c31		c31			
9	governingStructureRule	c31		c31			
c31: If [SubSchema] then support of this feature is m else o.							

A.6.4.7.3 Subschema Administration Matching Rules

None.

A.6.4.8 Access Control (Ref. X.501 | 9594-2, 16)**A.6.4.8.1 Access Control Object Classes**

None.

A.6.4.8.2 Access Control Attributes

Prerequisite: [SAC-DUA or BAC-DUA or SAC-DSA or BAC-DSA]

Item No.	Attribute Type	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	accessControlScheme	m		m			
2	prescriptiveACI	m		m			
3	entryACI	c32		c33			
4	subentryACI	m		m			
c32: If [BAC-DUA] then support of this feature is m else o.							
c33: If [BAC-DSA] then support of this feature is m else o.							

A.6.4.8.3 Access Control Matching

None.

A.6.4.9 DSA Operational Attributes (Ref. X.501 | 9594-2, 20.2)**A.6.4.9.1 DSA Operational Attribute Object Classes**

None.

A.6.4.9.2 DSA Operational Attribute Types

Item No.	Attribute Type	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	dseType	o		o			
2	myAccessPoint	o		o			
3	superiorKnowledge	o		o			
4	specificKnowledge	o		o			
5	nonSpecificKnowledge	o		o			
6	supplierKnowledge	-		-			
7	consumerKnowledge	-		-			
8	secondaryShadows	o		o			

A.6.4.9.3 DSA Operational Matching

Item No.	Matching Rule	DUA		DSA		Predicate	Note
		Status	Support	Status	Support		
1	accessPointMatch	m		m			
2	masterAndShadowAccessPointsMatch	-		-			
3	supplierOrConsumerInformationMatch	-		-			
4	supplierAndConsumersMatch	-		-			

A.6.5 Supported ISO/IEC 10646-1 Character Sets (Ref. ISO/IEC 10646-1)

Prerequisite: [BMP or UCS]

A.6.5.1 Basic Multilingual Plane (BMP)

Prerequisite: [BMP]

The supplier of the implementation shall indicate, in the table below, support for the Basic Multilingual Plane Character Sets, defined in ISO/IEC 10646-1 as amended, for which conformance is claimed.

A.6.5.1.1 Required BMP Support

Item No.	Block Name	DUA		DSA		Note
		Status	Support	Status	Support	
1	Basic Latin	m		m		

A.6.5.1.2 Other Supported BMP Character Sets

Prerequisite: [BMP]

The supplier of the implementation is required to list, in the following table, any other BMP Character Sets, as defined in clause 19 of ISO/IEC 10646-1, for which conformance is claimed:

Index	Block Names	
	DUA	DSA

A.6.5.1.3 BMP Level Support

Prerequisite: [BMP]

The supplier of the implementation shall indicate, in the table below, support for the Implementation Level, defined in clause 15 of ISO/IEC 10646-1, of the BMP Character Sets listed in Tables A.6.5.1.1 and A.6.5.1.2.

Item No.	Level	DUA		DSA		Note
		Status	Support	Status	Support	
1	Level 1	m		m		
2	Level 2	o		o		
3	Level 3	o		o		

A.6.5.2 Universal Character Set (UCS)

Prerequisite: [UCS]

The supplier of the implementation shall indicate, in the table below, support for the Universal Character Set character sets, defined in ISO/IEC 10646-1 as amended, for which conformance is claimed.

A.6.5.2.1 Required UCS Support

Prerequisite: [UCS]

Item No.	Plane	Group	Block Name	DUA		DSA		Note
				Status	Support	Status	Support	
1	00	00	Basic Latin	m		m		

A.6.5.2.2 Other Supported UCS Character Sets

Prerequisite: [UCS]

The supplier of the implementation is required to list, in the following table, any other UCS Character Sets, for which conformance is claimed:

Index	DUA			DSA		
	Plane	Group	Block Name	Plane	Group	Block Name

A.6.5.2.3 UCS Level Support

Prerequisite: [UCS]

The supplier of the implementation shall indicate, in the table below, support for the Implementation Level, defined in clause 15 of ISO/IEC 10646-1, of the UCS Character Sets listed in Tables A.6.5.2.1 and A.6.5.2.2.

Item No.	Level	DUA		DSA		Note
		Status	Support	Status	Support	
1	Level 1	m		m		
2	Level 2	o		o		
3	Level 3	o		o		

A.6.6 Other information

The following table can be used to provide any other relevant information.

Index	Other information

SÉRIES DES RECOMMANDATIONS UIT-T

Série A	Organisation du travail de l'UIT-T
Série B	Moyens d'expression: définitions, symboles, classification
Série C	Statistiques générales des télécommunications
Série D	Principes généraux de tarification
Série E	Exploitation générale du réseau, service téléphonique, exploitation des services et facteurs humains
Série F	Services de télécommunication non téléphoniques
Série G	Systèmes et supports de transmission, systèmes et réseaux numériques
Série H	Systèmes audiovisuels et multimédias
Série I	Réseau numérique à intégration de services
Série J	Transmission des signaux radiophoniques, télévisuels et autres signaux multimédias
Série K	Protection contre les perturbations
Série L	Construction, installation et protection des câbles et autres éléments des installations extérieures
Série M	RGT et maintenance des réseaux: systèmes de transmission, de télégraphie, de télécopie, circuits téléphoniques et circuits loués internationaux
Série N	Maintenance: circuits internationaux de transmission radiophonique et télévisuelle
Série O	Spécifications des appareils de mesure
Série P	Qualité de transmission téléphonique, installations téléphoniques et réseaux locaux
Série Q	Commutation et signalisation
Série R	Transmission télégraphique
Série S	Equipements terminaux de télégraphie
Série T	Terminaux des services télématiques
Série U	Commutation télégraphique
Série V	Communications de données sur le réseau téléphonique
Série X	Réseaux pour données et communication entre systèmes ouverts
Série Y	Infrastructure mondiale de l'information
Série Z	Langages de programmation