# Protocol Implementation Conformance Statement (PICS) for Isode Release 10.2

# for the

# Directory Information Shadowing Protocol (DISP) 1993 Edition

Based on draft ISP Proforma Version 0.51

ANNEX A

**Directory Information Shadowing Protocol -**
**Protocol Implementation Conformance Statement (PICS) Proforma**

## A.1 *Identification of the implementation*

### A.1.1 *Identification of PICS*

| Item No. | Question | Response |
|---|---|---|
| 1 | Date of Statement (DD/MM/YY) | 08/01/2004 |
| 2 | PICS Serial Number | 0.51 |
| 3 | System Conformance Statement Cross Reference | — |

### A.1.2 *Identification of the implementation and/or system*

| Item No. | Question | Response |
|---|---|---|
| 1 | Implementation Name | Isode X.500(93) Directory Server |
| 2 | Version Number | R10.2v0 |
| 3 | Machine Name | Sun Microsystems SPARCstation series |
| 4 | Machine Version Number | UltraSparc |
| 5 | Operating System Name | Solaris |
| 6 | Operating System Version No. | 8 |
| 7 | Special Configuration | Note 1—Cooperating, Chaining, First-level DSA |
| 8 | Other information | |

Note 1 - Please enter one or more of the following:

- Chaining DSAs;
- Cooperating DSAs;
- First-level DSAs;

**A.1.3** ***Identification of the system supplier and/or test laboratory client***

| Item No. | Question | Response |
|---|---|---|
| 1 | Organization Name | Isode Limited |
| 2 | Contact Name(s) | Steve Kille |
| 3 | Address | 5 Castle Business Village, 36 Station Road,<br>Hampton, England TW12 2BX, United Kingdom |
| 4 | Telephone Number | +44 20 8783 0203 |
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| 6 | Fax Number | +44 20 8783 9292 |
| 7 | E-Mail Address | steve.kille@isode.com |
| 8 | Other information | http://www.isode.com/ |

**A.2** ***Identification of the protocol***

| Item No. | Question | Response |
|---|---|---|
| 1 | Title, Reference, No., publication date of the protocol standard | X.525 (1993E) \| ISO/IEC 9594-9 |
| 2 | Protocol Version Number | 1 |
| 3 | Implemented Addenda | none |
| 4 | Implementor's Guide Version Number | 8.0 |
| 5 | Implemented Defect Reports (Reference No.) | none |

**A.3** ***Global statement of conformance***

If the supplied implementation is a DSA implementation, A.3.1 is required to be answered by the supplier.

Answering "No" to A.3.1 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 section A.6 "Other Information".

**A.3.1** ***DSA Implementation and/or system***

| Item No. | Question | | Status | Support | Predicate Name |
|---|---|---|---|---|---|
| 1 | Are all mandatory general capabilities for the DSA implemented? | | m | N | |
| 2 | Are minimum knowledge requirements (ISO/IEC 9594-2) implemented? | | m | Y | |
| 3 | Supported Security Level(s) | none | o.1 | N | |
| | | simple | o.1 | Y | Simple-DSA |
| | | strong | o.1 | N | Strong-DSA |
| | | external | i | N | |
| 4 | Supported application-context(s) | shadowSupplierInitiatedAC | o.2 | Y | Supplier |
| | | shadowConsumerInitiatedAAC | o.2 | Y | Consumer |
| | | reliableShadowSupplierInitiatedAC | c1 | N | |
| | | reliableShadowConsumerInitiatedAC | c2 | N | |
| 5 | Is the RTSE supported? | | c3 | N | |
| 6 | Can the DSA act as a secondary shadow supplier? | | o | Y | |
| 7 | Does the DSA support shadowing of overlapping units of replication? | | o | N | |
| 8 | Is filtering on ObjectClass supported for UnitOfReplication? | | o | Y | |
| 9 | Does the DSA provide support for modifyTimeStamp operational attribute? | | m | Y | |
| 10 | Does the DSA provide support for the createTimeStamp operational attribute? | | m | Y | |
| 11 | Does the DSA provide services of the copyShallDo service control? | | m | Y | |

o.1: At least one security level shall be supported.
o.2: Either the shadowSupplierInitiatedAC or the shadowConsumerInitiatedAC must be supported as specified in ISO/IEC 9594-5, Section 9.3.1a

c1: If [ Supplier ], it may optionally support the reliableShadowSupplierInitiatedAC.
c2: If [ Consumer ], it may optionally support the reliableShadowConsumerInitiatedAC.
c3: If the DSA supports the reliableShadowSupplierInitiatedAC or the reliableShadowConsumerInitiatedAC then support is m else support is o.

## A.4 *Instruction for completing the PICS Proforma*

### A.4.1 *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 requires that capability explicitly);
- 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 also, when appropriate, made available to the end user.

### A.4.2 *Status column*

This column indicates the level of support required for conformance to the ISO/IEC standard.
The values are as follows:

| | |
|---|---|
| m | mandatory support is required; |
| o | optional support is permitted for conformance to the standard. If implemented it must conform to the specifications and restrictions contained in the standard. These restrictions may affect the optionality of other items; |
| c | the item is conditional (support of the capability is subject to a predicate); |
| c: m | the item is mandatory if the predicate is true, optional otherwise; |
| - | the item is not applicable; |
| i | the item is outside the scope of this PICS. |

In the PICS proforma tables, every leading item marked 'm' shall be supported by the IUT. Sub-items marked 'm' shall be supported if the corresponding leading item is supported by the IUT.

### A.4.3 *Support column*

This column shall be completed by the supplier or implementor, when either a [ ] or a ( ), to indicate the level of implementation of each item. The proforma has designed such that values required in [ ] are:

| | |
|---|---|
| Y | yes, the item has been implemented; |
| N | no, the item has not been implemented; |
| - | the item is not applicable; |

All entries within the PICS proforma shall be made in ink. Alterations to such entries shall be made by crossing out, not erasing nor making the original entry illegible, and writing the new entry alongside. All such alterations to records shall be initialized by the staff making them.

### A.4.4 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.

### A.4.5 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.4.6 Item reference numbers

Each line within the PICS proforma which requires implementation details to be entered is number at the left hand edge of the line. This numbering is included as a mean 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.5.3.1.1/2, which refers to the support for credentials in a DirectoryBind protocol data unit.

## A.5 *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.

### A.5.1 *Supported application context*

The only application contexts supported by this PICS proforma are the Shadow Supplier Initiated and theShadow Consumer Initiated application contexts. This PICS also supports the Reliable Shadow Supplier Initiated and the Reliable Shadow Consumer Initiated application contexts.

**A.5.2** ***Operations*** Ref. X.525, clause 7.3

| Item No. | Protocol Element | Status | Predicate | Predicate Name | Note | Support |
|---|---|---|---|---|---|---|
| 1 | dSAShadowBind | m | | Bind | | Y |
| 2 | dSAShadowUnbind | m | | Unbind | | Y |
| 3 | coordinateShadowUpdate | c: m | Supplier | Coordinate | | Y |
| 4 | requestShadowUpdate | c: m | Consumer | Request | | Y |
| 5 | updateshadow | m | | Update | | Y |

### A.5.3 *Protocol Elements*

#### A.5.3.1 *DirectoryShadowBind Elements* Ref. X.525, clause 7.4

**A.5.3.1.1** ***Directory Shadow Bind Arguments*** Ref. X.511, clause 8.1.2

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | DirectoryBindArg | m | | | Y |
| 2 | credentials | c4 | | | Y |
| 3 | simple | c: m | Simple-DSA | | Y |
| 4 | name | m | | | Y |
| 5 | validity | c: m | A.5.3.1.1/8 | | N |
| 6 | password | o | | | Y |
| 7 | unprotected | o.3 | | | Y |
| 8 | protected | o.3 | | | N |
| 9 | strong | c: m | Strong-DSA | | N |
| 10 | certification-path | o | | Note 2 | N |
| 11 | bind-token SIGNED | m | | | N |
| 12 | algorithm | m | | | N |
| 13 | name | m | | | N |
| 14 | time | m | | | N |
| 15 | random | m | | | N |
| 16 | name | o | | | N |
| 17 | externalProcedure | i | | | N |
| 18 | versions | m | | d(v1) | Y |

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

o.2: The password, for the DSA, may be unprotected and/or protected as described in clause 5 of ISO/IEC 9594-8.

Note 2: Reference Table A.5.3.13.

**A.5.3.1.2** ***Directory Shadow Bind Result*** Ref. X.511, clause 8.1.3

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | DirectoryBindResult | m | | | Y |
| 2 | credentials | c4 | | | Y |
| 3 | simple | c: m | Simple-DSA | | Y |
| 4 | name | m | | | Y |
| 5 | validity | c: m | A.5.3.1.2/8 | | N |
| 6 | password | o | | | Y |
| 7 | unprotected | o.3 | | | Y |
| 8 | protected | o.3 | | | N |
| 9 | strong | c: m | Strong-DSA | | N |
| 10 | certification-path | o | | Note 3 | N |
| 11 | bind-token SIGNED | m | | | N |
| 12 | algorithm | m | | | N |
| 13 | name | m | | | N |
| 14 | time | m | | | N |
| 15 | random | m | | | N |
| 16 | name | o | | | N |
| 17 | externalProcedure | i | | | N |
| 18 | versions | m | | d(v1) | Y |

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

o.3: The password, for the DUA and DSA, may be unprotected and/or protected as described in clause 5 of ISO/IEC 9594-8.

Note 3: Reference Table A.5.3.13.

**A.5.3.1.3** ***Directory Shadow Bind Error*** Ref. X.511, clause 8.1.4

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | DirectoryBindError | m | | | Y |
| 2 | versions | m | | d(v1) | Y |
| 3 | ServiceError | m | | | Y |
| 4 | SecurityError | m | | | Y |

**A.5.3.2** ***Directory Shadow Unbind Elements*** Ref. X.511, clause 8.2

DirectoryShadowUnbind has no arguments (see Section 8.2 of ISO/IEC 9594-3)

**A.5.3.3** ***Coordinate Shadow Update Elements*** Ref. X.525, clause 11.1

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | coordinateShadowUpdate | c: m | Coordinate | | Y |
| 2 | coordinateShadowUpdateArgument | m | | | Y |
| 3 | SIGNED coordinateShadowUpdateArgument | o | | | N |
| 4 | agreementID | m | | | Y |
| 5 | lastUpdate | m | | | Y |
| 6 | updateStrategy | m | | | Y |
| 7 | standard | m | | | Y |
| 8 | other | i | | | N |
| 9 | securityParameters | c: m | Strong-DSA | | N |
| 10 | coordinateShadowUpdateResults | m | | = NULL | Y |

**A.5.3.4** ***Request Shadow Update Elements*** Ref. X.525, clause 11.2

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | requestShadowUpdate | c: m | Request | | Y |
| 2 | requestShadowUpdateArgument | m | | | Y |
| 3 | SIGNED requestShadowUpdateArgument | o | | | N |
| 4 | agreementID | m | | | Y |
| 5 | lastUpdate | m | | | Y |
| 6 | requestedStrategy | m | | | Y |
| 7 | standard | m | | | Y |
| 8 | other | i | | | N |
| 9 | securityParameters | c: m | Strong-DSA | | N |
| 10 | requestShadowUpdateResults | m | | = NULL | Y |

**A.5.3.5** ***Update Shadow Elements*** Ref. X.525, clause 11.3

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | updateShadow | c: m | Update | | Y |
| 2 | updateShadowArgument | m | | | Y |
| 3 | SIGNED updateShadowArgument | o | | | N |
| 4 | agreementID | m | | | Y |
| 5 | updateTime | m | | | Y |
| 6 | updateWindow | m | | | Y |
| 7 | updatedInfo | m | | | Y |
| 8 | noRefresh | m | | | Y |
| 9 | total | o | | | Y |
| 10 | incremental | o | | | Y |
| 11 | otherStrategy | i | | | N |
| 12 | securityParameters | c: m | Strong-DSA | | N |
| 13 | coordinateShadowUpdateResults | m | | = NULL | Y |

**A.5.3.6** ***Total Refresh Protocol Elements*** Ref. X.525, clause 11.3.1.1

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | TotalRefresh | c: m | A.6.3.5/9 | | Y |
| 2 | sDSE | m | | | Y |
| 3 | sDSEType | m | | | Y |
| 4 | subComplete | m | | | Y |
| 5 | attComplete | m | | | Y |
| 6 | attributes | o | | | Y |
| 7 | subtree | m | | | Y |
| 8 | rdn | m | | | Y |
| 9 | totalRefresh | m | | | Y |

**A.5.3.7** ***Incremental Refresh Protocol Elements*** Ref. X.525, clause 11.3.1.2

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | IncrementalRefresh | o | | | Y |
| 2 | sDSEChanges | m | | | Y |
| 3 | add | m | | | Y |
| 4 | remove | m | | | Y |
| 5 | modify | m | | | Y |
| 6 | rename | m | | | N |
| 7 | newRDN | m | | | N |
| 8 | newDN | m | | | N |
| 9 | attributeChanges | m | | | Y |
| 10 | replace | m | | | Y |
| 11 | changes | m | | | Y |
| 12 | sDSEType | m | | | Y |
| 13 | subComplete | m | | d(false) | Y |
| 14 | attComplete | m | | | Y |
| 15 | subordinateUpdates | m | | | Y |
| 16 | subordinates | m | | | Y |
| 17 | changes | m | | | Y |

**A.5.3.8** ***Shadowing Agreement Elements*** Ref. X.525, clause 9.1

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | ShadowingAgreementInfo | m | | | Y |
| 2 | shadowSubject | m | | | Y |
| 3 | updateMode | m | | d(supplierInitiated) | Y |
| 4 | supplierInitiated | m | | | Y |
| 5 | onChange | o | | | Y |
| 6 | scheduled | m | | | Y |
| 7 | consumerInitiated | m | | | Y |
| 8 | schedulingParameters | m | | | Y |
| 9 | master | o | | | N |
| 10 | secondaryShadows | m | | d(false) | Y |

**A.5.3.9** ***Unit Of Replication Elements*** Ref. X.525, clause 9.2

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | UnitOfReplication | m | | | Y |
| 2 | area | m | | | Y |
| 3 | contextPrefix | m | | | Y |
| 4 | replicationArea | m | | | Y |
| 5 | attributes | m | | | Y |
| 6 | attributeSelection | o | | | Y |
| 7 | class | o | | | Y |
| 8 | classAttributes | m | | d(allAttributes) | Y |
| 9 | allAttributes | m | | = NULL | Y |
| 10 | include | o | | | Y |
| 11 | exclude | o | | | Y |
| 12 | knowledge | o | | | Y |
| 13 | knowledgeType | m | | | Y |
| 14 | extendedKnowledge | m | | d(false) | Y |

**A.5.3.10** ***Scheduling Parameters*** Ref. X.525, clause 9.3.3

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | periodic | m | | | Y |
| 2 | beginTime | m | | | Y |
| 3 | windowSize | m | | | Y |
| 4 | updateInterval | m | | | Y |
| 5 | othertimes | m | | d(false) | Y |

**A.5.3.11** ***Errors and Parameters*** Ref. X.525, clause 12

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | shadowError | m | | | Y |
| 2 | problem | m | | | Y |
| 3 | lastUpdate | m | | | Y |
| 4 | updateWindow | m | | | Y |

**A.5.3.12** ***Security Parameters*** Ref. X.511, clause 7.10

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | certification-path | c5 | | | N |
| 2 | name | o | | | N |
| 3 | time | m | | | N |
| 4 | random | m | | | N |
| 5 | target | m | | = none | N |

c5: If the argument or result is to be signed then support of this parameter is m else support is o.

**A.5.3.13** ***CertificationPath*** Ref. X.509, clause 8

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | CertificationPath | c6 | | | N |
| 2 | Certificate | m | | | N |
| 3 | version | m | | d(v1) | N |
| 4 | serialNumber | m | | | N |
| 5 | signature | m | | | N |
| 6 | issuer | m | | | N |
| 7 | validity | m | | | N |
| 8 | subject | m | | | N |
| 9 | subjectPublicKeyInfo | m | | | N |
| 10 | issuerUniqueIdentifier | o | | Note 3 | N |
| 11 | subjectUniqueIdentifier | o | | Note 3 | N |
| 12 | CertificatePair | o | | | N |
| 13 | forward | o | | | N |
| 14 | reverse | o | | | N |

c6 : If [ A.5.3.1.1/10 or A.5.3.1.2/10 or A.5.3.12/1 ] then support is m else support is o.

Note 3: If present, version must be v2.

**A.5.3.14** ***Subtrees*** Ref. X.501, clause 11.3

| Item No. | Protocol Element | Status | Predicate | Note | Support |
|---|---|---|---|---|---|
| 1 | SubtreeSpecification | c: m | A.5.3.10/3 | | Y |
| 2 | base | m | | d({}) | Y |
| 3 | ChopSpecification | o | | | Y |
| 4 | specificExclusions | m | | | Y |
| 5 | chopBefore | m | | | Y |
| 6 | chopAfter | o | | | Y |
| 7 | minimum | m | | d(0) | Y |
| 8 | maximum | o | | | Y |
| 9 | specificationFilter | o | | | N |
| 10 | item | m | | | N |
| 11 | and | m | | | N |
| 12 | or | m | | | N |
| 13 | not | m | | | N |

### A.6 *Other Information*

The following table can be used to provide any other relavent information:

| Index | Other Information |
|---|---|
| | |