            A Revised Catalog of Available X.500 Implementations

Status of this Memo

   This memo provides information for the Internet community. This memo
   does not specify an Internet standard of any kind. Distribution of
   this memo is unlimited.

Abstract

   This document is the result of a survey that gathered new or updated
   descriptions of currently available implementations of X.500,
   including commercial products and openly available offerings. This
   document is a revision of RFC 1292. We contacted each contributor in
   RFC 1292 and requested an update and published the survey template in
   several mailing lists and obtained new product descriptions.

   This document contains detailed description of twenty six (26) X.500
   implementations - DSAs, DUAs, and DUA interfaces.

1. Introduction

   This document catalogs currently available implementations of X.500,
   including commercial products and openly available offerings. For
   the purposes of this survey, we classify X.500 products as,

   DSA
        A DSA is an OSI application process that provides the Directory
        functionality,

   DUA
        A DUA is an OSI application process that represents a user in
        accessing the Directory and uses the DAP to communicate with a
        DSA, and

   DUA Interface
        A DUA Interface is an application process that represents a user
        in accessing the Directory using either DAP but supporting only
        a subset of the DAP functionality or a protocol different from
        DAP to communicate with a DSA or DUA.

Section 2 of this document contains a listing of implementations
cross referenced by keyword. This list should aid in identifying
implementations that meet your criteria.

To compile this catalog, the IDS Working Group solicited input from
the X.500 community by surveying several Internet mailing lists,
including: iso@nic.ddn.mil, isode@nic.ddn.mil, osi-ds@cs.ucl.ac.uk,
and ietf-ids@umich.edu. We also contacted many people by telephone
and sent the template to several individuals and mailed a floppy disk
containing the survey template to a person who did not have Internet
access.

Readers are encouraged to submit comments regarding both the form and
content of this memo. New submissions are welcome. Please direct
input to the Integrated Directory Services (IDS) Working Group
(ietf-ids@umich.edu) or to the editors. IDS will produce new ver-
sions of this document when a sufficient number of changes have been
received. This will be determined by the IDS chairpersons.

1.1 Purpose

   The Internet has experienced a steady growth in X.500 piloting
   activities. This document hopes to provide an easily accessible
   source of information on X.500 implementations for those who wish to
   consider X.500 technology for deploying a Directory service.

1.2 Scope

   This document contains descriptions of both free and commercial X.500
   implementations. It does not provide instructions on how to install,
   run, or manage these implementations. The descriptions and indices
   are provided to make the readers aware of available options and thus
   enable more informed choices.

1.3 Disclaimer

   Implementation descriptions were written by implementors and vendors,
   and not by the editors. We worked with the description authors to
   ensure uniformity and readability, but can not guarantee the accuracy
   or completeness of the descriptions, or the stability of the
   implementations.

1.4 Overview

   Section 1 contains introductory information.

   Section 2 contains a list of keywords, their definitions, and a cross
   reference of the X.500 implementations by these keywords.

Section 3 contains the X.500 implementation descriptions.

Section 4 has a list of references.

Section 6 lists the editors' addresses.

1.5 Acknowledgments

The creation of this catalog would not have been possible without the
efforts of the description authors and the members of the IDS Working
Group. Our special thanks to the editors of RFC 1292, Ruth Lang and
Russ Wright who helped us get started and made key suggestions that
enabled us to learn from their experience. We also acknowledge and
appreciate the efforts of Ken Rossen in obtaining six descriptions.

2. Keywords

Keywords are abbreviated attributes of the X.500 implementations.
The list of keywords defined below was derived from the
implementation descriptions themselves. Implementations were indexed
by a keyword either as a result of: (1) explicit, not implied,
reference to a particular capability in the implementation
description text, or (2) input from the implementation description
author(s).

2.1 Keyword Definitions

This section contains keyword definitions. They have been organized
and grouped by functional category. The definitions are ordered
first alphabetically by keyword category, and second alphabetically
by implementation name within keyword category.

2.1.1 Availability

Available via FTP
     Implementation is available using FTP.

Commercially Available
     This implementation can be purchased.

Free
     Available at no charge, although other restrictions may apply.

Limited Availability
     Need to contact provider for terms and conditions of
     distribution.

   Source
        Source code is available, potentially at an additional cost.

2.1.2 Conformance with Proposed Internet Standards

   These RFCs specify standards track protocols for the Internet
   community. Implementations which conform to these evolving proposed
   standards have a higher probability of interoperating with other
   implementations deployed on the Internet.

   RFC-1274
        Implementation supports RFC 1274: Barker, P., and S. Kille, The
        COSINE and Internet X.500 Schema, University College, London,
        England, November 1991.

   RFC-1276
        Implementation supports RFC 1276: Kille, S., Replication and
        Distributed Operations extensions to provide an Internet
        Directory using X.500, University College, London, England,
        November 1991.

   RFC-1277
        Implementation supports RFC 1277: Kille, S., Encoding Network
        Addresses to support operation over non-OSI lower layers,
        University College, London, England, November 1991.

   RFC-1485
        Implementation supports RFC 1485: Kille, S., A String
        Representation of Distinguished Names, ISODE Consortium, July
        1993.

   RFC-1487
        Implementation supports RFC 1487: Yeong, W., T. Howes, and S.
        Kille, X.500 Lightweight Directory Access Protocol, July 1993.

2.1.3 Consistence with Informational and Experimental Internet RFCs

   These RFCs provide information to the Internet community and are not
   Internet standards. Compliance with these RFCs is not necessary for
   interoperability but may enhance functionality.

   RFC-1202
        Implementation supports RFC 1202: Rose, M. T., Directory

          Assistance Service. February 1991.

     RFC-1249
          Implementation supports RFC 1249: Howes, T., M. Smith, and B.
          Beecher, DIXIE Protocol Specification, University of Michigan,
          August 1991.

     RFC-1275
          Implementation supports RFC 1275: Kille, S., Replication
          Requirements to provide an Internet Directory using X.500,
          University College, London, England, November 1991.

     RFC-1278
          Implementation supports RFC 1278: Kille, S., A string encoding
          of Presentation Address, University College, London, England,
          November 1991.

     RFC-1279
          Implementation supports RFC 1279: Kille, S., X.500 and Domains,
          University College, London, England, November 1991.

     RFC-1484
          Implementation supports RFC 1484: Kille, S., Using the OSI
          Directory to achieve User Friendly Naming, ISODE Consortium,
          July 1993.

2.1.4 Implementation Type

     API
          Implementation comes with an application programmer's interface
          (i.e., a set of libraries and include files).

     DSA Only
          Implementation consists of a DSA only. No DUA is included.

     DSA/DUA
          Both a DSA and DUA are included in this implementation.

     DUA Interface
          Implementation is a DUA-like program that uses either DAP, but
          supporting only a subset of the DAP functionality, or uses a
          protocol different from DAP to communicate with a DSA or DUA.

     DUA Only
          Implementation consists of a DUA only. No DSA is included.

LDAP
     DUA interface program uses the Lightweight Directory Access
     Protocol (LDAP).

2.1.5 Internetworking Environment

   CLNS
        Implementation operates over the OSI ConnectionLess Network
        Service (CLNS).

   OSI Transport
        Implementation operates over one or more OSI transport
        protocols.

   RFC-1006
        Implementation operates over RFC-1006 with TCP/IP transport
        service. RFC-1006 is an Internet Standard.

   X.25
        Implementation operates over OSI X.25.

2.1.6 Pilot Connectivity

   DUA Connectivity
        The DUA can be connected to the pilot, and information on any
        pilot entry looked up. The DUA is able to display standard
        attributes and object classes and those defined in the COSINE
        and Internet Schema.

   DSA Connectivity
        The DSA is connected to the DIT, and information in this DSA is
        accessible from any pilot DUA.

2.1.7 Miscellaneous

   Included in ISODE
        DUAs that are part of ISODE.

   Limited Functionality
        Survey states that the implementation has some shortcomings or
        intended lack of functionality, e.g., omissions were part of the
        design to provide an easy-to-use user interface.

   Motif
        Implementation provides a Motif-style X Window user interface.

   Needs ISODE
        ISODE is required to compile and/or use this implementation.

   OpenLook
        Implementation provides an OpenLook-style X Window user
        interface.

   X Window System
        Implementation uses the X Window System to provide its user
        interface.

2.1.8 Operating Environment

   386
        Implementation runs on a 386-based platform.

   Bull
        Implementation runs on a Bull platform.

   CDC
        Implementation runs on a CDC MIPS platform.

   DEC ULTRIX
        Implementation runs under DEC ULTRIX.

   DEC Vax OpenVMS
        Implementation runs on a DEC VAX platform running OpenVMS.

   HP
        Implementation runs on an HP platform.

   IBM PC
        Implementation runs on a PC.

   IBM RISC
        Implementation runs on IBM's RISC UNIX workstation.

   ICL
        Implementation runs on an ICL platform.

   Macintosh
        Implementation runs on a Macintosh.

   Multiple Vendor Platforms
        Implementation runs on more than one hardware platform.

   Sequent
        Implementation runs on a Sequent platform.

   SNI
        Implementation runs on a Siemens Nixdorf platform.

   Solbourne
        Implementation runs on a Solbourne platform.

   Sun
        Implementation runs on a Sun platform.

   Tandem
        Implementation runs on a Tandem platform.

   UNIX
        Implementation runs on a generic UNIX platform.

   Wang
        Implementation runs on a Wang RISC platform.

2.2 Implementations Indexed by Keyword

   This section contains an index of implementations by keyword. You
   can use this list to identify particular implementations that meet
   your chosen criteria.

   The index is organized as follows: keywords appear in alphabetical
   order; implementations characterized by that keyword are listed
   alphabetically as well. Note that a "*" is used to indicate that the
   particular implementation, or feature of the implementation, may not
   be available at this time.

   For formatting purposes, we have used the following abbreviations for
   implementation names: BULL S.A. (Bull X500-DS and X500-DUA), DEC
   X.500 DSA (DEC X.500 Directory Server), DEC X.500 Admin (DEC X.500
   Administration Facility), HP X.500 DD (HP X.500 Distributed
   Directory), LDAP (University of Michigan LDAP Implementation), OSI
   Access & Dir (OSI Access and Directory), and Traxis (Traxis
   Enterprise Directory).

        386   CLNS

            PathWay Messaging   Bull S.A.
            PC-DUA   DEC X.500 DSA
            UCOM X.500   DEC X.500 Admin
                                               DIR.X
        API   HP X.500 DD
                                               HP X.500 DUA
            Bull S.A.   OSI Access & Dir
            Custos   PathWay Messaging
            DEC X.500 DSA   Traxis
            DEC X.500 Admin   UCOM X.500
            DIR.X   Wang OPEN/services
            HP X.500 DD   XT-DUA
            HP X.500 DUA   XT-QUIPU
            LDAP
            OSI Access & Dir   Commercially Available
            QUIPU
            Traxis   Bull S.A.
            UCOM X.500   DEC X.500 DSA
                                               DEC X.500 Admin
        Available via FTP   DIR.X
                                               Directory 500
            Custos   HP X.500 DD
            DE   HP X.500 DUA
            DOS-DE   OSI Access & Dir
            LDAP   PathWay Messaging
            ldap-whois++   PC-DUA
            maX.500   Traxis
            Xdi   UCOM X.500
                                               Wang OPEN/services
        Bull   XT-DUA
                                               XT-QUIPU
            Bull S.A.
            UCOM X.500   DEC ULTRIX
            XT-DUA
            XT-QUIPU   DEC X.500 DSA
                                               DEC X.500 Admin
        CDC   LDAP
                                               ldap-whois++
            OSI Access & Dir   UCOM X.500

                                        DEC VAX OpenVMS

                                               DEC X.500 DSA
                                               DEC X.500 Admin

DSA Connectivity   DUA Interface

    DIR.X   DE
    OSI Access & Dir   DOS-DE
    PathWay Messaging   LDAP
    QUIPU   ldap-whois++
    UCOM X.500   maX.500
    XT-QUIPU   OSI Access & Dir
                               Pathway Messaging
DSA Only   PC-DUA
                               QuickMailDUA
    DEC X.500 DSA   Wang OPEN/services
    XT-QUIPU
                               DUA Only

DSA/DUA   DEC X.500 Admin
                               HP X.500 DUA
    Bull S.A.   MXLU
    Custos   PC-Pages
    DIR.X   Xdi
    Directory 500   XLU
    HP X.500 DD   XT-DUA
    OSI Access & Dir
    PathWay Messaging   Free
    QUIPU
    Traxis   Custos
    UCOM X.500   DE
    Wang OPEN/services   DOS-DE
                               LDAP
DUA Connectivity   ldap-whois++
                               maX.500
    DIR.X   MXLU
    LDAP   QUIPU
    maX.500   Xdi
    MXLU   XLU
    OSI Access & Dir
    PathWay Messaging   HP
    PC-DUA
    PC-Pages
    QUIPU   DIR.X
    UCOM X.500   HP X.500 DD
    Xdi   HP X.500 DUA
    XLU   LDAP
    XT-DUA   *Traxis
                               Wang OPEN/services
                               XT-DUA
                               XT-QUIPU

IBM PC

    DOS-DE
    LDAP
    OSI Access & Dir
    PathWay Messaging
    PC-DUA
    PC-Pages
    Traxis
    Wang OPEN/services

IBM RISC

    DIR.X
    LDAP
    *Traxis
    UCOM X.500
    Wang OPEN/services
    XT-DUA
    XT-QUIPU

ICL

    *XT-DUA
    XT-QUIPU

Included In ISODE

    DE

LDAP

    DE
    DOS-DE
    LDAP
    ldap-whois++
    maX.500
    OSI Access & Dir
    *Pathway Messaging
    PC-DUA
    *PC-Pages

Limited Availability

    PC-Pages
    QuickMailDUA

Limited Functionality

    Custos
    Wang OPEN/services
    Xdi

Macintosh

    LDAP
    maX.500
    PathWay Messaging
    *Traxis

Motif

    DEC X.500 Admin
    MXLU
    UCOM X.500
    XT-DUA

Multiple Vendor Platforms

    Custos
    DE
    DOS-DE
    LDAP
    MXLU
    PathWay Messaging
    PC-Pages
    QUIPU
    UCOM X.500
    Xdi
    XLU
    XT-DUA
    XT-QUIPU

Needs ISODE

    Custos
    DE
    MXLU
    QuickMailDUA
    Xdi
    XLU

OpenLook

    UCOM X.500
    XT-DUA

OSI Transport

    Bull S.A.
    Custos
    DEC X.500 DSA
    DEC X.500 Admin
    DIR.X
    HP X.500 DD
    HP X.500 DUA
    PathWay Messaging
    PC-Pages
    QUIPU
    Traxis
    Wang OPEN/services
    XT-DUA
    XT-QUIPU

RFC-1006

    Bull S.A.
    Custos
    DEC X.500 DSA
    DEC X.500 Admin
    DIR.X
    Directory 500
    LDAP
    OSI Access & Dir
    PathWay Messaging
    PC-Pages
    QUIPU
    Traxis
    UCOM X.500
    Wang OPEN/services
    XT-DUA
    XT-QUIPU

RFC-1202

    OSI Access & Dir
    PathWay Messaging

RFC-1249

    OSI Access & Dir

RFC-1274

    DE
    DEC X.500 DSA
    DEC X.500 Admin
    DOS-DE
    LDAP
    maX.500
    OSI Access & Dir
    QuickMailDUA
    QUIPU
    Traxis
    UCOM X.500
    Xdi
    XT-DUA
    XT-QUIPU

RFC-1275

    OSI Access & Dir
    QUIPU

RFC-1276

    OSI Access & Dir
    QUIPU
    XT-QUIPU

RFC-1277

    DEC X.500 DSA
    DEC X.500 Admin
    DIR.X
    OSI Access & Dir
    PathWay Messaging
    QUIPU
    UCOM X.500
    XT-DUA
    XT-QUIPU

RFC-1278   Sequent

    DEC X.500 DSA
    DEC X.500 Admin   UCOM X.500
    OSI Access & Dir
    PathWay Messaging   SNI
    QUIPU
    UCOM X.500   DIR.X
    XT-DUA
    XT-QUIPU   Solbourne

RFC-1279   XT-DUA
                                        XT-QUIPU
    OSI Access & Dir
    QUIPU   Source
    UCOM X.500
    XT-QUIPU   DE
                                       LDAP
RFC-1484   MXLU
                                       QUIPU
    DE   Xdi
    DOS-DE   XLU
    *LDAP
    *maX.500   Sun
    QUIPU
    Xdi   Custos
    XT-DUA   Directory 500
    XT-QUIPU   LDAP
                                       ldap-whois++
RFC-1485   OSI Access & Dir
                                       PathWay Messaging
    LDAP   QuickMailDUA
    maX.500   QUIPU
    QUIPU   Traxis
    XT-QUIPU   UCOM X.500
                                       Xdi
RFC-1487   XT-DUA
                                       XT-QUIPU
    DE
    DOS-DE   Tandem
    LDAP
    ldap-whois++   UCOM X.500
    maX.500
    PC-DUA
    QUIPU

     UNIX

          Custos
          DE
          ldap-whois++
          MXLU
          QUIPU
          UCOM X.500
          Xdi
          XLU

     Wang

          Wang OPEN/services

     X Window System

          MXLU
          OSI Access & Dir
          Xdi
          XLU
          XT-DUA

     X.25

          Bull S.A.
          DEC X.500 DSA
          DEC X.500 Admin
          DIR.X
          Directory 500
          HP X.500 DD
          HP X.500 DUA
          OSI Access & Dir
          PathWay Messaging
          QUIPU
          Traxis
          UCOM X.500
          Wang OPEN/services
          XT-DUA
          XT-QUIPU

3. Implementation Descriptions

   In the following pages you will find descriptions of X.500
   implementations listed in alphabetical order. In the case of name
   collisions, the name of the responsible organization, in square
   brackets, has been used to distinguish the implementations. Note
   that throughout this section, the page header reflects the name of
   the implementation, not the date of the document. The descriptions
   follow a common format, as described below:

   NAME
        The name of the X.500 implementation and the name of the
        responsible organization. Implementations with a registered
        trademark indicate this by appending "(tm)", e.g., GeeWhiz(tm).

   KEYWORDS
        A list of the keywords defined in Section 2 that have been used
        to cross reference this implementation.

   ABSTRACT
        A brief description of the application. This section may
        optionally contain a list of the pilot projects in which the
        application is being used.

   COMPLIANCE (applicable only for DSAs and DUAs)
        A statement of compliance with respect to the 1988 CCITT
        Recommendations X.500-X.521 [CCITT-88], specifically Section 9
        of X.519, or the 1988 NIST OIW Stable Implementation Agreements
        [NIST-88].

   CONFORMANCE WITH PROPOSED INTERNET STANDARDS
        A statement of compliance with respect to the several proposed
        Internet Standards.

   CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs
        A statement of compliance with respect to the several
        informational and experimental Internet RFCs.

   INTEROPERABILITY
        A list of other DUAs and DSAs with which this implementation can
        interoperate.

   PILOT CONNECTIVITY
        Describes the level of connectivity it can offer to the pilot
        directory service operational on the Internet in North America,
        and to pilots co-ordinated by the PARADISE project in Europe.
        Levels of connectivity are: Not Tested, None, DUA Connectivity,
        and DSA Connectivity.

BUGS
     A warning on known problems and/or instructions on how to report
     bugs.

CAVEATS AND GENERAL LIMITATIONS
     A warning about possible side effects or shortcomings, e.g., a
     feature that works on one platform but not another.

INTERNETWORKING ENVIRONMENT
     A list of environments in which this implementation can be used,
     e.g., RFC-1006 with TCP/IP, TP0 or TP4 with X.25.

HARDWARE PLATFORMS
     A list of hardware platforms on which this application runs, any
     additional boards or processors required, and any special
     suggested or required configuration options.

SOFTWARE PLATFORMS
     A list of operating systems, window systems, databases, or
     unbundled software packages required to run this application.

AVAILABILITY
     A statement regarding the availability of the software (free or
     commercially available), a description of how to obtain the
     software, and (optionally) a statement regarding distribution
     conditions and restrictions.

DATE LAST UPDATED or CHECKED
     The month and year within which this implementation description
     was last modified.

NAME

    X500-DS
    X500-DUA
    Bull S.A.

KEYWORDS

    API, Bull, CLNS, Commercially Available, DSA/DUA, OSI Transport,
    RFC-1006, X.25

ABSTRACT

    X500-DS and X500-DUA are integral part of the large Bull OSI offer.
    Although based on the DCE/GDS (Distributed Computing
    Environment/Global Directory Service) of OSF, these two products may
    be installed and used without DCE environment. X500-DS is designed
    to implement both the DUA and the DSA functions, whilst X500-DUA only
    provides the DUA functions.

    The X500-DUA package contains:

    - The standards APIs XOM (X/Open OSI-Abstract-Data Manipulation API)
      and XDS (X/Open Directory Service API) for the development of
      portable applications,
    - A core DUA to translate all user's requests (bind, read, list,
      compare, modify, modifyRDN, search, add, remove, unbind ...) into
      the DAP protocol used for communication with distant DSAs,
    - The OSI standard protocols (ASN.1, ROSE, ACSE, Presentation and
      Session) for communication with the distant DSAs. The interface
      with the low layers of the stack being XTI. RFC-1006 is supported
      under XTI or the Session,
    - A DUA Cache to improve performances when accessing remote DSAs,
    - A management application for configuration of the product,
      controlling the operations and managing logs and traces,
    - A user application for the manipulations of the database entries.

    The X500-DS package contains:

    - All components of the X500-DUA,
    - A core DSA to process all requests received from distant DUAs
      through DAP protocol or from distant DSAs through DSP protocol.
      It supports the referral, chained and multi-casting modes of
      operation, access control lists, simple authentication,
      management of knowledge information (for distribution, shadows and
      copies of sub-trees),

      - A management application for managing the schema information
        (creation, deletion and modification of object classes and of
        attribute types, management of the rules of the DIT),
      - A C-ISAM database.

COMPLIANCE (applicable only for DSAs and DUAs)

    Compliant with EWOS and OIW Agreements

    Strong authentication in X.509 is not yet implemented. (Password
    scheme is currently used.)

    Consists of both DUA and DSA implementation according to the 88 CCITT
    X.500 and ISO 9594 standard. The X/Open standard XDS and XOM
    interface libraries are also provided. When the product is installed
    with the DCE environment, XDS and XOM interfaces are also used to
    access DCE/CDS (Local Cell Directory Service) transparently. A GDA
    (Global Directory Agent) serves then as the gateway between the DCE
    CDS and GDS.

    It is planned to support full 1992 extensions in the products for
    1995.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    [No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    [No information provided--Ed.]

INTEROPERABILITY

    This implementation of DAP and DSP can interoperate with other X.500
    implementations from other Cebit demo participants including IBM, HP,
    ICL, Siemens-Nixdorf, etc. It also interoperates with ISODE QUIPU.

PILOT CONNECTIVITY

    [No information provided--Ed.]

BUGS

    [No information provided--Ed.]

CAVEATS AND GENERAL LIMITATIONS

    [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

    OSI TP4 with CLNP (WAN - LAN) OSI TP0, 2 & 4 with X.25 (WAN) RFC-1006
    with TCP/IP Either BSD sockets or XTI can be used to access the
    transports Through XTI, both OSI and TCP/IP protocols are possible on
    the same machine, thus permitting to build a Directory Service
    distributed on OSI and TCP/IP networks.

HARDWARE PLATFORMS

    DPX/2, DPX/20

SOFTWARE PLATFORMS

    Unix BOS2, Unix BOSX, AIX

AVAILABILITY

    4 Q 93

    Please contact:

        Daniel Monges
        Tel: + (33) 76 39 75 00 ext. 7449
        Fax: + (33) 76 39 78 56
        e-mail: D.Monges@frec.bull.fr

DATE LAST UPDATE or CHECKED

    November 25th, 1993

NAME

    OSI Access and Directory
    Control Data Systems Incorporated.

KEYWORDS

    API, CLNS, CDC, Commercially Available, DSA Connectivity, DSA/DUA,
    DUA Connectivity, DUA Interface, IBM PC, LDAP, RFC-1006, RFC-1202,
    RFC-1249, RFC-1274, RFC-1275, RFC-1276, RFC-1277, RFC-1278, RFC-1279,
    Sun, X Window System, X.25

ABSTRACT

    OSI Access and Directory includes several DUAs and a QUIPU based DSA
    (originally based on version 6.6) with enhancements. The DUA/DSA
    enhancements include:

    - Directory API based on the X.400 API.
    - Support for X.400 objects including those to support
      MHS use of Directory to support MHS Routing.
    - Integration with Control Data's MailHub (X.400 MHS) products.
    - X Windows, curses and command line based DUA interfaces on UNIX.
      These interfaces support the full set of Directory operations.
    - Windows 3.x interface on PCs.
    - A DUA daemon that provides Directory access for applications.
    - LDAP 2.0 and 3.0 support.
    - Directory synchronization tools for synchronizing most PC/Mac/Dec
      mail directories with X.500.
    - Enhanced photo attribute support.
    - ACL enhancements.
    - Hash indexing for fast string search.
    - DIXIE, DAD and PH.X500 support.
    - SNMP based monitoring and management of DSAs.

    Control Data Systems offers complete integration services to design,
    plan, install, configure, tailor and maintain X.500 services. These
    services may include the preparation of customer unique DUAs and
    tools for X.500 integration, synchronization, operational control and
    management. OSI Access and Directory is in production use at several
    government, commercial and academic sites. Some sites are supporting
    Directories in excess of 120,000 entries.

COMPLIANCE (applicable only for DSAs and DUAs)

   OSI Access and Directory complies with the 1988 CCITT Recommendations
   X.500-X.521 [CCITT-88] and the 1988 NIST OIW Stable Implementation
   Agreements [NIST-88]. OSI Access and Directory only supports simple
   authentication or no authentication. OSI Access and Directory
   complies with all static and dynamic requirements of X.519. OSI
   Access and Directory can act as a first-level DSA.

   OSI Access and Directory will support some 1993 X.500 extensions in
   1994 with full support in 1995/1996.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   OSI Access and Directory is compliant with the following RFCs: [RFC
   1274], [RFC 1276], and [RFC 1277].

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   OSI Access and Directory is compliant with the following RFCs: [RFC
   1202], [RFC 1249], [RFC 1275], [RFC 1278], and [RFC 1279].

   OSI Access and Directory also supports the required objects,
   attributes and attribute syntaxes for MHS use of Directory to support
   MHS Routing.

INTEROPERABILITY

   OSI Access and Directory was tested against HP, DEC, ISODE Consortium
   and Wollongong implementations at the COS Interoperability Test Lab
   in May 1993. The OSINET Interoperability Tests were used. Please
   refer OSINET for test results. OSI Access and Directory has also been
   informally tested at trade shows with implementations from UNISYS and
   Retix.

PILOT CONNECTIVITY

   OSI Access and Directory is connected via DSAs and DUAs to the PSI
   White Pages Project. OSI Access and Directory provides the base
   routing tree for the MHS Use of Directory pilot (Longbud) on the
   Internet.

BUGS

   Control Data Systems provides complete software maintenance services
   with products.

CAVEATS and GENERAL LIMITATIONS

    [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

    RFC1006 with TCP/IP, TP4 with CNLS, TP0 with X.25.

HARDWARE PLATFORMS

    OSI Access and Directory runs on all MIPS and SUN SPARC platforms.
    Windows based DUAs available with OSI Access and Directory run on
    Windows 3.x compatible IBM PCs.

SOFTWARE PLATFORMS

    Distributed and supported for Sun OS version 4.1.x, Sun Solaris 2.x
    and Control Data EP/IX (Control Data's MIPS based OS). Other
    platforms are pending. TP4 connectivity on SUN OS requires SUN OSI.

AVAILABILITY

    Commercially available from:

            Control Data Systems Inc.
            Network Solutions, ARH290
            4201 Lexington Avenue North
            Arden Hills, MH 55126-6198 U.S.A.

            1-800-257-OPEN (U.S. and Canada)
            1-612-482-6736 (worldwide)
            FAX: 1-612-482-2000 (worldwide)
            EMAIL: info@cdc.com
                     or
            s=info;p=cdc;a=attmail;c=us

DATE LAST UPDATED or CHECKED

    November 22nd, 1993

NAME

    Custos
    National Institute of Standards and Technology

KEYWORDS

    API, Available via FTP, DSA/DUA, Free, Limited Functionality,
    Multiple Vendor Platforms, Needs ISODE, OSI Transport, RFC-1006, Sun,
    UNIX

ABSTRACT

    The implementation consists of a set DUA library routines, a terminal
    interface, and a DSA. The implementation was developed in C on Sun
    SPARCstations under SunOS 4.1.1. All underlying services are provided
    by the ISODE development package. The development package is also
    used for encoding and decoding ASN.1 data as well as for other data
    manipulation services. Using the ISODE package the implementation can
    be run over both TCP/IP and OSI protocols.

    The DSA provides full support for both DAP and DSP protocols,
    conformant with ISO 9594 / CCITT X.500 standards. The DIB is
    maintained using a locally developed relational database system. The
    interface to the database system consists of a set of sql-like C
    functions. These are designed to allow straightforward replacement
    of the local database system with a more powerful commercial system.
    To achieve better performance several options are supported that
    permit loading of selected portions of the database in core. When
    these options are selected data can be retrieved more quickly from in
    core tables; all modifications to the DIB are directly reflected in
    the in core tables and the database.

COMPLIANCE (applicable only for DSAs and DUAs)

    Custos is fully compliant with the 1988 Standard with the following
    omissions:

    - Search request decomposition
    - Modify Entry operation
    - Modify RDN operation
    - Abandon operation
    - Strong Authentication
    - Schema checking

There are no present plans to extend Custos to include the 1992 X.500
extensions.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   [No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   [No information provided--Ed.]

INTEROPERABILITY

   Have successfully interoperated with QUIPU and OSIWARE over the DAP.
   No DSP interoperability testing has been done.

PILOT CONNECTIVITY

   Limited DUA and DSA connectivity to PSI White Pages Project.

BUGS

   Bugs may be reported to the general discussion list,
   x500@osi.ncsl.nist.gov.

CAVEATS and GENERAL LIMITATIONS

   No limitations on file sizes, etc. The only side effects to creating
   large files should be in the area of performance. Specifically,
   optimization requires loading parts of the DIB in core so greater
   memory requirements will be necessary for achieving better
   performance with a large database. Any platform the implementation
   can be ported to (generally any platform ISODE can be ported to)
   should support all features.

INTERNETWORKING ENVIRONMENT

   RFC-1006; TP4/CLNP (SunLinkOSI) over 802 and X.25 (SunLink X.25).

HARDWARE PLATFORMS

   It's only been run on Sun 3 and SPARC, but there are no known reasons
   why it shouldn't run on any hardware running the ISODE software.

SOFTWARE PLATFORMS

   It requires UNIX and the ISODE software package. It's been developed
   and tested with ISODE version 7.0 and Sun OS version 4.1.1. Uses a
   locally developed relational DBMS that should be easily replaceable
   with commercially available relational systems.

AVAILABILITY

   Custos, the NIST implementation of X.500, the OSI Directory, is
   available for anonymous ftp from osi.ncsl.nist.gov (129.6.48.100)
   using the convention (user name = anonymous, password = ident). The
   software is available in two forms: a tar file and a compressed tar
   file.

      ./pub/directory/CustosRel_0.2.tar
      ./pub/directory/CustosRel_0.2.tar.Z

   Note: permissions on the directory ./pub/directory are set so that
   you will be able to "get" files whose names you can provide. However,
   you will not be able to "ls" the contents of the directory.

DATE LAST UPDATED or CHECKED

   March 5th, 1993

NAME

    DE

KEYWORDS

    Available via FTP, DUA Interface, Free, Included in ISODE, LDAP,
    Multiple Vendor Platforms, Needs ISODE, RFC-1274, RFC-1484, RFC-1487,
    Source, UNIX

ABSTRACT

    DE (Directory Enquiries) is intended to be a simple-to-use DUA
    interface, suitable for the naive user, and suitable for running as a
    public access dua. it will work on any terminal. The user is
    presented with a series of (verbose) prompts asking for person's
    name; department; organization; country. There is extensive on-line
    help. The matching algorithms are such that near matches are
    presented to the user before less good matches.

    A lot of development has been done on the interface since it was
    first described in RFC1292. The most significant enhancement has
    been to add power searching - this allows a user to search for an
    entry even when they do not know the name of the organisation in
    which the person works - you still have to specify the country. DE
    now provides UFN style searching. It is now possible to search
    locality entries. DE now uses slightly different search algorithms
    depending on whether it is accessing part of the Directory mastered
    by a Quipu DSA - Quipu DSAs tend to use lots of replication and so
    encourage searching. An experimental feature is intended to give the
    user more feedback on the likely response time to a query - DE
    maintains a database of past information availability and DSA
    responsiveness. Translations exist into at least 4 different
    languages.

    DE runs over ISODE DAP and University of Michigan LDAP. There is a
    version of DE, called DOS-DE, which has been ported to DOS, and this
    uses LDAP.

    DE was funded by the COSINE PARADISE project, and DE is used as the
    PARADISE public access dua. You can test the software by telnet to
    128.86.8.56 and logging in as dua -- no password required.

COMPLIANCE (applicable only for DSAs and DUAs)

    N/A

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   [RFC 1274] and [RFC 1487]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   [RFC 1484].

INTEROPERABILITY

   N/A

PILOT CONNECTIVITY

   N/A (This is more a DUA rather than an interface question). The
   interface is widely used in the global pilot.

BUGS

   Doesn't handle aliases well when power searching.

   Send bug reports to:

        p.barker@cs.ucl.ac.uk
        helpdesk@paradise.ulcc.ac.uk

CAVEATS and GENERAL LIMITATIONS

   DE tries to cater well for the general case, at the expense of not
   dealing with the less typical. The main manifestation of this is
   that the current version does not handle searching under localities
   very well.

   It is not possible to display photographs or reproduce sound
   attributes.

INTERNETWORKING ENVIRONMENT

   As for ISODE.

HARDWARE PLATFORMS

   As for ISODE.

SOFTWARE PLATFORMS

   As for ISODE.

AVAILABILITY

    The software is openly available as part of ISODE-8.0. An enhanced
    version is available as part of the PARADISE project upgrade.

    Both these versions are available by FTP from
    <ftp.paradise.ulcc.ac.uk>, as src/isode-8.tar.Z and src/isode-
    paradise.tar.Z.

    The very latest code will be made available with the ISODE Consortium
    release of ISODE. It is hoped it will be freely available to all.

    Contact:
        helpdesk@paradise.ulcc.ac.uk
        p.barker@cs.ucl.ac.uk

DATE LAST UPDATED or CHECKED

    March 12th, 1993

NAME

    DEC X.500 Directory Server
    Digital Equipment Corporation

KEYWORDS

    API, CLNS, Commercially Available, DEC ULTRIX, DEC VAX OpenVMS, DSA
    Only, OSI Transport, RFC-1006, RFC-1274, RFC-1277, RFC-1278, X.25

ABSTRACT

    The DEC X.500 Directory Server product provides a high performance
    Directory System Agent implemented according to the 1993 edition of
    ISO/IEC 9594 and the CCITT X.500 series of Recommendations.

    Specific features provided include:

    (1) Integrated multi-protocol support allowing concurrent DAP and DSP
        access over OSI and TCP/IP (using RFC1006) protocols.
    (2) Indexed database supports high-performance searching and
        sophisticated matching including approximate match.
    (3) Based on the 1993 edition Extended Information Models.
    (4) Support for chaining and referrals in support of a distributed
        Directory Information Base.
    (5) Support for the 1993 edition Simplified Access Control scheme.
    (6) Configurable schema based on the 1993 edition (including
        attributes, object classes, structure rules, name forms).
    (7) Support for a simple Shadowing protocol to enhance read
        availability.
    (8) Remote management facilities to configure and control DSAs and log
        significant events.
    (9) Provides the X/OPEN XDS/XOM Application Program Interface so that
        customers can construct their own DUA applications.

    For Directory User Agent facilities see the associated entry for the
    DEC X.500 Administration Facility

COMPLIANCE (applicable only for DSAs and DUAs)

    Conformance with respect to clause 9.2 of ISO/IEC 9594-5:1993:

    (1) Supports the directoryAccessAC (DAP) and directorySystemAC (DSP)
         application contexts.
    (2) The DSA is capable of acting as a first-level DSA.
    (3) Chaining is supported.

   (4) Bind security levels of simple (unprotected password) and none
       are supported.

   (5) All attribute types defined in ISO/IEC 9594-6:1993 are supported
       except for 1993 edition supertypes and collective attributes and
       EnhancedSearchGuide. Customers can define new attribute types.
       UNIVERSAL STRING is not supported for attributed based on
       DirectoryString.

   (6) All object classes defined in ISO/IEC 9594-7:1993 are supported.
       Customers can define new object classes.

   (7) The following operational attributes are supported:

                  governingStructureRule
                  createTimestamp
                  modifyTimestamp
                  myAccessPoint
                  superiorKnowledge
                  supplierKnowledge
                  consumerKnowledge
                  specificKnowledge
                  dseType
                  PrescriptiveACI

   (8) Dynamic modification of object class is permitted

   (9) A subset of Simplified Access Control is supported.

   (10) All name forms defined in ISO/IEC 9594-7:1993 are supported.
       Customers can defined new name forms and structure rules.

   The X.500 Directory Server is compatible with and interworks with
   1988 edition DUAs and DSAs. It is implemented to conform to relevant
   NIST OIW and EWOS agreements and the X.500 Implementors Guide.

   For details contact Digital.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   Supports RFC 1006, RFC 1274, and RFC 1277.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   RFC 1278.

INTEROPERABILITY

   All interoperability test results will be available on request from
   Digital. Interoperability testing is being undertaken using the
   harmonized OSIone X.500 test suite to which both OSInet and EurOSInet
   have been key contributors.

PILOT CONNECTIVITY

   Digital is actively involved in both public and private pilots of
   X.500.

BUGS

   [No information provided--Ed.]

CAVEATS and GENERAL LIMITATIONS

   [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

   The DEC X.500 Directory Service V1.0 operates over:

   * RFC 1006 over TCP/IP on ULTRIX platforms.
   * OSI TP0, TP2 and TP4 over CLNS and CONS as appropriate on ULTRIX
     and OpenVMS platforms

HARDWARE PLATFORMS

   The DEC X.500 Directory Service V1.0 runs on:

   * VAX processors supported by OpenVMS
   * RISC processors supported by ULTRIX

SOFTWARE PLATFORMS

   The DEC X.500 Directory Service V1.0 runs on:

   * OpenVMS/VAX V5.5-2 or later running DECnet-VAX Extensions V5.4
   * ULTRIX/RISC V4.2 or later running DECnet/OSI for ULTRIX, V5.1 or
     later.

   For availability on other hardware and software platforms please
   contact Digital.

AVAILABILITY

   The DEC X.500 Directory Service is commercially available from
   Digital Equipment Corporation. For further information please
   contact your local Digital office, or:

        Gail Shlansky, Product Manager:
            Tel: +1 508 486 5138
            email: gail.shlansky@lkg.mts.dec.com

        Digital Equipment Corporation
        Networks and Communications Engineering
        550 King Street
        Littleton, MA. 01460-1289
        USA

DATE LAST UPDATED

    August 2nd, 1993

NAME

    DEC X.500 Administration Facility
    Digital Equipment Corporation

KEYWORDS

    API, CLNS, Commercially Available, DEC ULTRIX, DEC VAX OpenVMS, DUA
    Only, Motif, OSI Transport, RFC-1006, RFC-1274, RFC-1277, RFC-1278,
    X.25

ABSTRACT

    The DEC X.500 Administration Facility product provides both command
    line and Motif interfaces to manage the information stored in the
    X.500 directory.

    Specific features provided include:

    (1) Multi-protocol support allowing DAP access over OSI and
        TCP/IP (using RFC1006) protocols.
    (2) Driven off the same configurable schema information as the DEC
        X.500 Directory Service.
    (3) Supports command line and OSF Motif interface styles.
    (4) Provides access to all X.500 services.

    Specific features of the OSF Motif interface include:

    (1) Supports two ways of accessing directory information, either by
        browsing the directory tree or by searching.
    (2) Easy-to-use search based on customer-extensible set of predefined
        filters.
    (3) Window layouts and text fully extensible, based on the schema, to
        support customer-defined object classes and attributes.
    (4) Easy-to-use forms based method for creating and modifying entries
        that simplifies use of the X.500 services.

    See also the entry for the DEC X.500 Directory Service.

COMPLIANCE (applicable only for DSAs and DUAs)

    Conformance with respect to clause 9.1 of ISO/IEC 9594-5:1993:

    (1) Supports the all operations of the directoryAccessAC application
        context.

(2) Bind security levels of none and simple (unprotected passwords).

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   Supports RFC 1006, RFC 1274, and RFC 1277.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   RFC 1278.

INTEROPERABILITY

   Interoperability test results will be available on request from
   Digital. Interoperability testing is being undertaken using the
   harmonized OSIone X.500 test suite to which both OSInet and EurOSInet
   have been key contributors.

PILOT CONNECTIVITY

   Digital is actively involved in both public and private pilots of
   X.500.

BUGS

   [No information provided--Ed.]

CAVEATS and GENERAL LIMITATIONS

   [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

   The DEC X.500 Administration Facility operates over:

   * RFC 1006 over TCP/IP on ULTRIX platforms.
   * OSI TP0, TP2 and TP4 over CLNS and CONS as appropriate on
     ULTRIX and OpenVMS platforms

HARDWARE PLATFORMS

   The DEC X.500 Administration Facility V1.0 runs on:

   * VAX processors supported by OpenVMS
   * RISC processors supported by ULTRIX

SOFTWARE PLATFORMS

   The DEC X.500 Administration Facility V1.0 runs on:

   * OpenVMS/VAX V5.5-2 or later running DECnet-VAX Extensions V5.4
   * ULTRIX/RISC V4.2 or later running DECnet/OSI for ULTRIX, V5.1 or
     later.

   For availability on other hardware and software platforms please
   contact Digital.

AVAILABILITY

   The DEC X.500 Administration Facility is commercially available from
   Digital Equipment Corporation. For further information please
   contact your local Digital office, or:

        Gail Shlansky, Product Manager:
           Tel: +1 508 486 5138
           email: gail.shlansky@lkg.mts.dec.com

        Digital Equipment Corporation
        Networks and Communications Engineering
        550 King Street
        Littleton, MA. 01460-1289
        USA

DATE LAST UPDATED

   August 2nd, 1993

NAME

    DIR.X (tm) V3.0
    Siemens Nixdorf Informationssyteme AG

KEYWORDS

    API, CLNS, Commercially Available, DSA Connectivity, DSA/DUA, DUA
    Connectivity, HP, IBM RISC, OSI Transport, RFC-1006, RFC-1277, SNI,
    X.25

ABSTRACT

    DIR.X is the Siemens Nixdorf X.500 product on which the OSF DCE/GDS
    (Distributed Computing Environment/Global Directory Service) is
    based. It supports full DUA and DSA functionality for globally
    unique identification and location of objects in a network. It also
    provides functions to answer queries (both yellow-page and white-
    page) about objects and attribute information. The software
    implements full DAP and DSP protocols specified in X.519. The
    required ACSE, ROSE, Presentation, Session and RFC-1006 protocol
    implementations are also included. It also supports RFC-1277.

    Additional features include proprietary Replication and Access
    Control, Caching, Tree-handling utilities and (Remote)
    Administration.

COMPLIANCE (applicable only for DSAs and DUAs)

    Consists of both DUA and DSA implementations according to the CCITT
    X.500 (1988) and ISO 9594 standard. The X/Open standard APIs for XDS
    and XOM are provided. The XDS interface can also be used to access
    the OSF DCE/CDS (DCE local Cell Directory Service) transparently.

    DIR.X has been successfully conformance tested. PICS and PCTRs are
    available for all tested protocols: DSA/DAP, DUA/DAP, Presentation,
    ACSE and Session embedded in X.500.

    Compliant with EWOS Agreements (which are being harmonized with OIW
    Agreements).

    Strong authentication according to X.509 and an XDS/XOM convenience
    library will be included in the next version (Q2 1994). Support for
    X.500 (1993) is planned for Q4 1994.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   [No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   [No information provided--Ed.]

INTEROPERABILITY

   This implementation of DAP and DSP has successfully interoperated
   with the X.500 implementations from ICL, UNISYS, E3X and ISODE.

PILOT CONNECTIVITY

   Several DIR.X DSAs are connected to the European X.500 pilot network
   PARADISE. (DUA and DSA connectivity.)

BUGS

   Problems and bug-report e-mail address: dirx-info@mch.sni.de

CAVEATS AND GENERAL LIMITATIONS

   The software is highly portable and without any general limitations.

INTERNETWORKING ENVIRONMENT

   OSI TP4 with CLNP OSI TP0, 2 & 4 with X.25 RFC-1006 with TCP/IP

   DIR.X can use either BSD sockets or XTI/TLI to access the Transport
   Service.

HARDWARE PLATFORMS

   SNI's hardware platforms, IBM's RS/6000 and Hewlett Packard's HP9000
   among others.

SOFTWARE PLATFORMS

   SINIX (UNIX System V Release 4), OSF/1.1, AIX 3.1, HP-UX. A port to
   Windows-NT is planned for Q2 1994.

AVAILABILITY

   DIR.X can be delivered as a binary product or as source to OEM
   customers. The DIR.X product is commercially available from:

          Siemens Nixdorf Informationssysteme
          SNI BU BA NM 12
          D-81739 Munich
          Germany

     Please contact:

          Gianni Rabaioli
          Tel: +49 89 636 41095
          Fax: +49 89 636 45860
          e-mail: Giovanni.Rabaioli@mch.sni.de

DATE LAST UPDATED or CHECKED

     November 26th, 1993

NAME

    Directory 500 (tm)
    OSIware / Infonet Software Solutions

KEYWORDS

    Commercially Available, DS/DUA, RFC-1006, Source, Sun, X.25

ABSTRACT

    Directory 500 (D500) is a comprehensive implementation of the CCITT
    X.500 recommendations. D500 is comprised of two major components
    which are responsible for manipulating the data in the OSI Directory.
    They are the Directory User Agent (DUA) and the Directory System
    Agent (DSA).

    The DUA is the interface between the OSI Directory and those users
    wishing access to the Directory's information. Users make their
    requests through the DUA. When forwarding user's requests to the OSI
    Directory, the protocol used is known as the Directory Access
    Protocol (DAP).

    The DSA will negotiate with other, remote DSAs to obtain requested
    information or to update remote DIBs. DSAs use the Directory System
    Protocol (DSP) to forward and answer these requests. The DSA supports
    chaining and referrals.

COMPLIANCE (applicable only for DSAs and DUAs)

    All X.500 1988 operations are supported along with all Object Classes
    specified in X.521 and all Attribute Types specified in X.520.

    Implementation plans include upgrades to support the 1992 extensions
    to X.500 in 1994. Please check with OSIware / Infonet Software
    Solutions for availability dates.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    [No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    [No information provided--Ed.]

INTEROPERABILITY

   Tested with QUIPU. Other interoperability information not available
   at this time.

PILOT CONNECTIVITY

   [No information provided--Ed.]

BUGS

   None known at this time.

CAVEATS and GENERAL LIMITATIONS

   None known at this time.

INTERNETWORKING ENVIRONMENT

   RFC1006 with TCP/IP

HARDWARE PLATFORMS

   Any Sun SPARC with 16 MB memory, 40 MB free disk Please enquire if
   interested in other platforms such as: SCO Unix, AIX

SOFTWARE PLATFORMS

   Sun OS 4.1.x. Runs over TCP/IP, or X.25 (SunNet X.25 Version 7
   required)

AVAILABILITY

   Directory 500 is commercially as executable object code or as source
   code form from:
        OSIware / Infonet Software Solutions
        4400 Dominion Street, Suite 210
        Burnaby, BC V5G 4G3
        CANADA

        Sales & Information: 604436-2922
        Fax: 604/436-3192

DATE LAST UPDATED or CHECKED

   November 21st, 1993

NAME

    DOS-DE
    University of Bath

KEYWORDS

    Available via FTP, DUA Interface, Free, IBM PC, LDAP, Multiple Vendor
    Platforms, RFC-1274, RFC-1484, RFC-1487

ABSTRACT

    DOS-DE (DOS Directory Enquiries) is intended to be a simple-to-use
    DUA interface suitable for the naive user. It is an MS-DOS port of
    the standard UNIX DE implementation - see the entry on DE for full
    details. (All of the features DE are supported apart from the
    experimental 'Quality of Service' code).

    The user is presented with a series of (verbose) prompts asking for
    person's name; department; organization; country. There is extensive
    on-line help. The matching algorithms are such that near matches are
    presented to the user before less good matches. 'Power searching' is
    also available - this allows a user to search for an entry even when
    they do not know the name of the organisation in which the person
    works - you still have to specify the country. DOS-DE provides UFN
    style searching. It is also possible to search locality entries.
    DOS-DE uses slightly different search algorithms depending on whether
    it is accessing part of the Directory mastered by a Quipu DSA - Quipu
    DSAs tend to use lots of replication and so encourage searching.

    DOS-DE runs over the University of Michigan LDAP.

    DE was funded by the COSINE PARADISE project. DOS-DE was developed
    by Andy Powell at the University of Bath.

COMPLIANCE (applicable only for DSAs and DUAs)

    N/A

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    [RFC 1274] and [RFC 1487]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    [RFC 1484].

INTEROPERABILITY

   N/A

PILOT CONNECTIVITY

   N/A

BUGS

   Doesn't handle aliases well when power searching.

   Send bug reports to:

              A.Powell@bath.ac.uk

CAVEATS and GENERAL LIMITATIONS

   DOS-DE tries to cater well for the general case, at the expense of
   not dealing with the less typical. The main manifestation of this is
   that the current version does not handle searching under localities
   very well.

   It is not possible to display photographs or reproduce sound
   attributes.

INTERNETWORKING ENVIRONMENT

   University of Michigan LDAP.

HARDWARE PLATFORMS

   IBM PC/AT/XT and compatibles.

SOFTWARE PLATFORMS

   LDAP for MS-DOS running over the NCSA Telnet stack or SUN's PCNFS
   version 4.1 or Novell's LAN Workplace (LWP).

AVAILABILITY

   The software is openly available by FTP from ftp.bath.ac.uk, as
   pub/x500/dosde.zip.

   The very latest code will be made available with the ISODE Consortium
   release of ISODE. It is hoped it will be freely available to all.

   Contact:

          A.Powell@bath.ac.uk

DATE LAST UPDATED or CHECKED

    March 18th, 1993

NAME

   HP X.500 Distributed Directory Products
   Hewlett Packard

KEYWORDS

   API, CLNS, Commercially Available, DSA/DUA, DUA only, HP, OSI
   Transport, X.25

ABSTRACT

   HP X.500 Distributed Directory. Its main components are:

       DUA, and DUA Interface,
       DSA and DIB support,
       X.500 Address Lookup,
       X/Open Application Tool Kit API (XAT) for XDS/XOM Interface,
       X.500 High Level API (X5HLAPI) for XDS/XOM Interface.

   HP X.500 DUA. Its main components are:

       DUA, and DUA Interface,
       X.500 Address Look-up,
       X/Open Application Tool Kit API (XAT) for XDS/XOM Interface,
       X.500 High Level API (X5HLAPI) for XDS/XOM Interface.

   HP X.500 Distributed Directory is based on the 1988 CCITT X.500
   standard. HP X.500 can be used for accessing names and electronic
   mail addresses for multi-vendor messaging backbone networks. HP X.500
   can also be used for the development of networked applications
   requiring distributed directory functionality.

   HP OpenMail users can access the enterprise wide HP X.500 distributed
   directory directly from the HP OpenMail user interface, and select
   X.500 addresses for mailing. HP-UX Sendmail users can access
   electronic mail addresses from a X.500 server over a TCP/IP network.

   Users of non-HP e-mail systems can access data stored in the X.500
   Directory using X.500 Address Look-up. X.500 Address Look-up has an
   easy to use interface, and phonetic search capability.

   HP X.500 Distributed Directory includes a complete multi-threaded DUA
   and DSA. The X.500 DIB is built on a database which has been
   optimized for X.500 performance. HP X.500 contains full support for
   DAP and DSP protocols.

Data Shadowing and security access control of HP X.500 Distributed
Directory allow higher performance, and easier management of its DIB
database in a global environment.

HP X.500 Distributed Directory has menu driven administration and
user interface tools. The tools simplify directory configuration and
data retrieval. It supports X/Open X.500 APIs (XDS and XOM), and high
level APIs on top of XDS to allow developers to write their own X.500
based applications.

HP X.500 Distributed Directory supports comprehensive tracing and
logging facilities for quick diagnosis and resolution of problems. HP
also provides a rich set of troubleshooting tools to check the
interoperability of the network at various layers of the OSI stack.

COMPLIANCE (applicable only for DSAs and DUAs)

HP X.500 Distributed Directory complies with the following standards:

   CCITT X.501: The Directory - Models
   CCITT X.509: The Directory - Authentications Framework*
   CCITT X.511: The Directory - Abstract Service Definition
   CCITT X.518: The Directory - Procedures for Distributed Operations
   CCITT X.519: The Directory - Protocol Specifications
   CCITT X.520: The Directory - Selected Attribute Types
   CCITT X.521: The Directory - Selected Object Classes
   CCITT X.219: Remote Operations - Model, Notation and Service
   Definition
   CCITT X.229: Remote Operations - Protocol Specifications

   *x.509 describes simple and strong authentication. HP X.500
    Distributed Directory supports simple authentication. Strong
    authentication is not supported in the current release due to
    limited market demand.

HP X.500 Distributed Directory will comply with NIST and EWOS
directory functional profiles. Based on factors such as market needs
and NIST recommendations, HP will implement subsets of 1992 CCITT
functionality in a phased approach.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

[No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

[No information provided--Ed.]

INTEROPERABILITY

   HP has done some unofficial interoperability testing. HP would
   welcome suggestions on priorities for vendor interoperability
   testing.

PILOT CONNECTIVITY

   [No information provided--Ed.]

BUGS

   [No information provided--Ed.]

LIMITATIONS

   HP X.500 Distributed Directory supports up to 30 DSA connections at
   one time. This limit could be increased in the future if needed.

INTERNETWORKING ENVIRONMENT

   HP X.500 Distributed Directory resides on an OSI stack, and can be
   used in 802.3 LAN, or X.25 CLNS or CONS environment. HP is
   investigating implementing X.500 for the TCP/IP environment.

HARDWARE PLATFORMS

   HP X.500 Distributed Directory is available on HP 9000 Series 800
   family of high performance servers which are scalable platform.

   The HP X.500 Address Look-up facility is also available for the HP
   9000 Series 300 and Series 700 for customers who have purchased the
   X.500 product.

SOFTWARE PLATFORMS

   HP X.500 Distributed Directory requires the following software
   environment:

   - HP-UX Operating System 8.0 or later
   - OSI Transport Services/9000 for the Series 800
   - HP Lan Link or HP X.25 product
   - Network Tracing and Logging
   - ANSI C compiler (for the HP/XDS API)

AVAILABILITY

    HP X.500 Distributed Directory is commercial available. The product
    can be ordered through HP Sales offices. The ordering numbers are:

        P/N J2152A
        HP X.500 Distributed Directory/9000 for the Series 800.
        Product contains DSA server and DUA client.

        P/N J2153A
        HP X.500 DUA/9000 for the Series 800.
        Product contains only DUA client.

DATE LAST UPDATED or CHECKED

    August 16th, 1993.

NAME

    University of Michigan LDAP Implementation

KEYWORDS

    API, Available via FTP, DEC ULTRIX, DUA Connectivity, DUA Interface,
    Free, HP, IBM PC, IBM RISC, LDAP, Macintosh, Multiple Vendor
    Platforms, RFC-1006, RFC-1274, RFC-1484, RFC-1485, RFC-1487, Source,
    Sun

ABSTRACT

    LDAP is the Lightweight Directory Access Protocol. It gives X.500
    access to platforms that have only TCP/IP access, using simplified
    BER encoding of many X.500 data elements. LDAP is currently a
    proposed Internet Standard. The LDAP server is an intermediate
    protocol server that communicates with Internet clients on one side
    using the simple TCP-based LDAP protocol and an X.500 DSA on the
    other side using the Directory Access Protocol (DAP). A subset of
    the X.500 DAP is exported to the clients through the LDAP protocol.

    The U-M LDAP distribution contains the following components:

    - LDAP server
    - LDAP client library, including both synchronous and asynchronous APIs
    - Lightweight BER library, including an API that supports
      a printf/scanf-like interface
    - Various LDAP client programs, including a finger daemon (xfingerd),
      gopher to X.500 gateway (go500gw), command-line DUA (ud), e-mail
      query server (rcpt500), and an X.500 mailer (mail500)

COMPLIANCE (applicable only for DSAs and DUAs)

    The U-M LDAP distribution is a complete implementation of the LDAP
    protocol. The LDAP protocol does not support access to all X.500
    features and operations. The operations supported are bind, search,
    compare, add, delete, modify, modify RDN, and abandon. Note that
    read and list operations can be emulated using the search operation.
    Size and time limits may be specified, as may alias dereferencing and
    searching, but all X.500 service controls are not supported.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   Compliant with [RFC 1485], [RFC 1487], and [RFC 1274].

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   Preliminary support is included for [RFC 1484].

INTEROPERABILITY

   The current implementation of the LDAP server is known to work with
   the QUIPU DSA and DAP library.

PILOT CONNECTIVITY

   DUA connectivity should be possible to all pilots, though only
   AARNET, PARADISE, and PSI White Pages Project have actually been
   tried.

BUGS

   Bug reports should be sent to bug-ldap@umich.edu.

CAVEATS and GENERAL LIMITATIONS

   None, aside from those mentioned above under completeness.

INTERNETWORKING ENVIRONMENT

   LDAP clients use TCP to communicate with the LDAP server. The LDAP
   server normally uses RFC 1006 with TCP/IP to communicate with the
   DSA, though any other transport mechanism for DSA communication
   supported by ISODE should be possible.

HARDWARE PLATFORMS

   The LDAP server is known to run on Sun 3 and Sun 4 platforms DEC's,
   HP's, and RS 6000's. The LDAP client libraries and some clients have
   been ported to the Macintosh and the PC.

SOFTWARE PLATFORMS

   The LDAP server and clients are known to run under and SunOS 4.1.x,
   ULTRIX, HP-UX, and AIX. The LDAP client libraries also work under
   Macintosh System 6.0 or higher and MS-DOS 5.0.

AVAILABILITY

   This software is openly available. It may be obtained by anonymous
   FTP from terminator.rs.itd.umich.edu in the x500 directory.
   Documentation on the LDAP and lightweight BER libraries is provided
   in the form of man pages distributed with the source code. More
   information can be obtained from ldap-support@umich.edu.

   This software was developed at the University of Michigan by Tim
   Howes with help from Mark Smith and Bryan Beecher, as well as many
   others around the Internet. It is subject to the following
   copyright.

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DATE LAST UPDATED OR CHECKED

   March 13th, 1993

NAME

   ldap-whois++

KEYWORDS

   Available via FTP, DEC ULTRIX, DUA Interface, Free, LDAP, RFC-1487,
   Sun, UNIX

ABSTRACT

   ldap-whois++ is a dua interface that implements the IETF WNILS draft
   whois++ proposal using the LDAP libraries developed by the University
   of Michigan.

COMPLIANCE (applicable only for DSAs and DUAs)

   N/A

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   RFC 1487

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   IETF WNILS WG Whois++ Architecture Draft.

INTEROPERABILITY

   N/A

PILOT CONNECTIVITY

   There are a number of servers running across the Internet.

BUGS

   None reported.

CAVEATS and GENERAL LIMITATIONS

   Based on an early draft of the Whois++ Architecture Document so there
   may be some inconsistencies with the latest draft.

   It is considered a "beta" release due to the volatility of the
   whois++ work. Once there is a whois++ RFC then a real release will
   be made.

INTERNETWORKING ENVIRONMENT

    N/A

HARDWARE PLATFORMS

    DEC RISC, SUN RISC

SOFTWARE PLATFORMS

    ULTRIX 4.3, SunOS 4.1.x

AVAILABILITY

    Available via anonymous ftp from ftp.adelaide.edu.au as
    pub/whois/whois++beta.tar.Z.

DATE LAST UPDATED or CHECKED

    August 3rd, 1993

NAME

   University of Michigan maX.500 Macintosh DUA Interface

KEYWORDS

   Available via FTP, DUA Connectivity, DUA Interface, Free, LDAP,
   Macintosh, RFC-1274,RFC-1484, RFC-1485, RFC-1487

ABSTRACT

   maX.500 is a Directory User Agent for Apple Macintosh. It is
   currently at version 2.0, which uses the Lightweight Directory Access
   Protocol (LDAP) over TCP/IP to access The Directory. maX.500 can be
   used to search for, view, create, delete, and modify entries. It
   supports viewing of textual information, playing of audio, and
   viewing of black and white (fax) and color (JPEG) images.

   maX.500 is a native Macintosh application, and as such has a friendly
   interface. It requires System Software version 6.0.5 or later and
   Apple's MacTCP control panel.

COMPLIANCE (applicable only for DSAs and DUAs)

   maX.500 works over LDAP, and is subject to LDAP's limitations. The
   X.500 bind, search, compare, add, delete, abandon, and modify
   operations are used by maX.500. Size and time limits may be
   specified, as may alias dereferencing and searching.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   Compliant with [RFC 1485], [RFC 1487], and [RFC 1274].

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   Preliminary support is included for [RFC 1484] (same as U-M LDAP).

INTEROPERABILITY

   maX.500 2.0 is known to work with the U-M LDAP server. It has been
   used successfully with the QUIPU DSA and others.

PILOT CONNECTIVITY

   DUA connectivity should be possible to all pilots, though only
   AARNET, PARADISE, and PSI White Pages Project have actually been
   tried.

BUGS

   Bug reports should be sent to max500-bugs@umich.edu.

CAVEATS and GENERAL LIMITATIONS

   maX.500 does not support modification of "photo" (fax), "jpegPhoto",
   or "audio" attributes. Modify RDN is also unsupported.

INTERNETWORKING ENVIRONMENT

   maX.500 is an LDAP client, and as such is uses TCP to communicate
   with the LDAP server. Apple's MacTCP control panel is required on
   the Macintosh.

HARDWARE PLATFORMS

   maX.500 runs on Apple Macintosh Plus or later computers. It requires
   1MB of RAM.

SOFTWARE PLATFORMS

   maX.500 requires Apple System Software 6.0.5 or later (System 7
   preferred) and MacTCP 1.1 or later (1.1.1 preferred).

AVAILABILITY

   This software is openly available. It may be obtained by anonymous
   FTP from terminator.rs.itd.umich.edu in the x500 directory. More
   information can be obtained from ldap-support@umich.edu.

   This software was developed at the University of Michigan by Mark
   Smith with help from Tim Howes and many others around the Internet.
   It is subject to the following copyright:
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     implied warranty.

DATE LAST UPDATED OR CHECKED

   July 26th, 1993

NAME

    MXLU
    Brunel University, UK

KEYWORDS

    DUA Connectivity, DUA Only, Free, Motif, Multiple Vendor Platforms,
    Needs ISODE, Source, UNIX, X Window System

ABSTRACT

    MXLU (Motif/X LookUp) is an X.500 DUA interface for the X Window
    System using Motif.

    Ported from the Athena widgets version, MXLU can be configured for
    many different styles of interaction. Example configurations are
    provided for single window and multiple window use.

    MXLU implements the 'User-Friendly Naming' search strategy and also
    has a form-filling search mode. Asynchronous directory operations are
    used.

    Full user friendly add and modify functions are provided, with the
    ability to tailor the modify screen to present simple subsets of the
    available attributes.

    Can also be configured as a bibliographic search tool for use with
    the ABDUX Project bibliographic DSAs.

COMPLIANCE (applicable only for DSAs and DUAs)

    88 Standard compliant: Strong authentication not yet implemented. No
    plans for support of the 1992 Standard.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    No plans at present.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    No plans at present.

INTEROPERABILITY

    Tested with ISODE-8.0

PILOT CONNECTIVITY

   DUA Connectivity: The interface is in use in the UK Academic
   Directory Pilot.

BUGS

   Bugs should be reported to x500@brunel.ac.uk.

CAVEATS and GENERAL LIMITATIONS

   Does not support modification of all known attribute syntaxes. In
   particular, ACLs and O/R addresses are not catered for.

INTERNETWORKING ENVIRONMENT

   As ISODE.

HARDWARE PLATFORMS

   Most UNIX machines.

SOFTWARE PLATFORMS

   UNIX
   Motif 1.1 >
   ISODE/QUIPU (version 8.0 >)

AVAILABILITY

   Sources are freely available for commercial or non-commercial use.
   Binaries for SunOs 4.1.3 are also available from Brunel, to simplify
   installation on sites that do not already use ISODE.

       FTP site: src.brunel.ac.uk
       Directory: /x500
       Source code files: mxlu-1.1.tar.Z query-1.1.tar.Z
       Binary file: mxlubin-1.1.tar.Z

   Contacts.

   Postal Address:
       Andrew Findlay
       Computing and Media Systems
       Brunel University
       Cleveland Road
       Uxbridge, Middlesex
       UB8 3PH

          UK

     E-mail: x500@brunel.ac.uk.

     Fax: +44 895 32806 (Andrew Findlay)

     Telephone: +44 895 203066 (Andrew Findlay)

DATE LAST UPDATED or CHECKED

     March 10th, 1994

NAME

    PathWay Messaging

KEYWORDS

    386, CLNS, Commercially Available, DSA Connectivity, DSA/DUA, DUA
    Connectivity, DUA Interface, IBM PC, LDAP, Macintosh, Multiple Vendor
    Platforms, OSI Transport, RFC-1006, RFC-1202, RFC-1277, RFC-1278,
    Sun, X.25

ABSTRACT

    PathWay Messaging Services is a full X.400 MTA and X.400-Internet
    gateway that includes an integrated X.500 DSA/DUA. It supports full
    DUA and DSA functions as well as full DAP and DSP protocols specified
    in X.519. The DSA may be used exclusively for enterprise-wide
    messaging, or as a general purpose X.500 DSA. The product has
    successfully participated in OSInet X.500 I-Lab interoperability
    tests.

    PathWay Messenger is an email application for desktop class machines
    with a limited functionality DUA Light Weight Client that provides
    access (per RFC 1202, Directory Assistance Service - support for LDAP
    is planned) over TCP/IP to the X.500 DSA/DUA included with PathWay
    Messaging Services.

COMPLIANCE (applicable only for DSAs and DUAs)

    PathWay Messaging Services is a complete implementation of the 1988
    X.500 Recommendations with the exception of strong authentication as
    outlined in X.509. It is conformant to NIST, EWOS, and UK GOSIP
    Directory profiles. It provides network through application layer
    protocol support, with support for all attribute types, syntaxes, and
    object classes defined in X.520 and X.521. Support for 1992
    extensions to X.500 is planned for future release as is support for
    X/Open Object Management (OM) and X/Open Directory Services (XDS)
    standards.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    PathWay Messaging Services' X.500 supports the following Internet
    Proposals: [RFC 1277].

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   PathWay Messaging Services' X.500 supports the following Internet
   Proposals: [RFC 1202] and [RFC 1278].

INTEROPERABILITY

   PathWay Messaging Services has undergone successful interoperability
   testing with Control Data, DEC, HP, and the ISODE Consortium using
   EurOSInet test suites.

PILOT CONNECTIVITY

   Tested DUA and DSA connectivity with PARADISE and PSI White Pages
   Project.

BUGS

   Send bug reports to:
       prod-eng@twg.com

CAVEATS and GENERAL LIMITATIONS

   [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

   RFC1006 with TCP/IP, TP4 with CNLS, TP0/2 or TP4 with X.25.

HARDWARE PLATFORMS

   PathWay Messaging Services runs on all models of Sun SPARC and
   generic 386/486 systems. PathWay Messenger (email with lightweight
   DUA) also runs on Macintosh, and on IBM PC/AT and compatibles.

SOFTWARE PLATFORMS

   PathWay Messaging Services supports SunOS 4.1.2, Solaris 1.0.1, and
   SunSoft INTERACTIVE UNIX. PathWay Messenger also supports SCO, MacOS
   and MS-Windows.

AVAILABILITY

    PathWay Messaging is commercially available from:

        The Wollongong Group, Inc.
        1129 San Antonio Road
        Palo Alto, CA 94303 USA

        Sales and Information: (415) 962 7100
        FAX: (415) 969-5547

DATE LAST UPDATED or CHECKED

    July 27th, 1993

NAME

    PC-DUA
    NEXOR

KEYWORDS

    386, Commercially Available, DUA Connectivity, DUA Interface, IBM PC,
    LDAP, RFC-1487

ABSTRACT

    PC-DUA provides a MS Windows based user interface to the X.500
    Directory.

    Features include:

    - Searching
    - Directory Browser - to enable user to identify directory entry
    - History - allowing quick access to previously referenced parts
      of the DIT.
    - User Friendly Name (UFN) based searching
    - Hypertext-like navigation.
    - Friendly names for attribute labels.
    - Intelligent choice of entries to display when moving to a new
      location in the DIT.
    - O-line hypertext help.

COMPLIANCE (applicable only for DSAs and DUAs)

    Compliant with LDAP.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    The following are supported: RFC 1487

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    [No information provided--Ed.]

INTEROPERABILITY

    PC-DUA has interoperated with LDAP 2.0 and 3.0 beta distributions.

PILOT CONNECTIVITY

   Full DUA connectivity to the PARADISE and PSI White Pages X.500
   Pilots.

BUGS

   No known bugs. Support is given via phone or email to
   "support@nexor.co.uk"

CAVEATS and GENERAL LIMITATIONS

   None.

INTERNETWORKING ENVIRONMENT

   WinSock based TCP/IP stacks

HARDWARE PLATFORMS

   386 PC WITH 4MGBYTES RAM

SOFTWARE PLATFORMS

   MS WINDOWS 3.1

AVAILABILITY

   PC-DUA is commercial software. For more details contact:

        NEXOR
        8 Faraday Building
        Highfields Science Park
        Nottingham
        NG7 2QP
        UK

        DN: c=GB@o=NEXOR Ltd
        Telephone: +44 602 520500
        Fax: +44 602 520519
        E-Mail: sales@nexor.co.uk

DATE LAST UPDATED or CHECKED

   August 6th, 1993

NAME

    PC-Pages
    Brunel University, UK

KEYWORDS

    DUA Connectivity, DUA Only, IBM PC, LDAP, Limited Availability,
    Multiple Vendor Platforms, OSI Transport, RFC-1006

ABSTRACT

    PC-Pages is a MS-DOS based X.500 DUA interface. It is currently only
    available for MS-Windows; a DOS character mode interface is being
    prepared.

    Features include:

    - "Form" based searching.
    - Supports the User Friendly Name (UFN) specification (RFC 1484).
    - Powerful query engine.
    - Tailorable entry display - display only those attributes required.
    - Integrates with the WhiteMail X.400 user agent. Hooks are provided
      to allow integration with other user agents.
    - Directory browsing.
    - Support for JPEG photo attributes.
    - Modify directory entries.
    - Add directory entries.
    - Delete directory entries.
    - Rebind to a configured DSA.
    - Some support for configuration of DAP service parameters.

    Two versions of PC-Pages are currently available. One supports DAP
    over CONS or DAP over RFC-1006, and has data entry and modification
    facilities. The other supports LDAP and has a more advanced user
    interface including a tree-browser, but does not yet have data entry
    and modification.

    A version in the form or a Windows DLL (Dynamic Link Library) is
    being prepared, for incorporation into other products such as mail
    agents.

COMPLIANCE (applicable only for DSAs and DUAs)

    88 Standard compliant: Strong authentication not yet implemented. No
    plans for support of the 1992 Standard.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   [No information provided--Ed.]

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   [No information provided--Ed.]

INTEROPERABILITY

   Tested with Quipu 8.0.

PILOT CONNECTIVITY

   DUA Connectivity: The interface is in use in the UK Academic
   Directory Pilot.

BUGS

   Bugs should be reported to x500@brunel.ac.uk.

CAVEATS and GENERAL LIMITATIONS

   Does not support display or modification of all known attribute
   syntaxes. In particular: ACLs and O/R addresses.

INTERNETWORKING ENVIRONMENT

   RFC1006 with TCP/IP. TP4 with CONS. A NetBIOS gateway to the
   previously listed protocols. LDAP using Winsock.

HARDWARE PLATFORMS

   PC-Pages for Windows requires an IBM PC compatible with 286 or
   higher, 2mb+ memory.

SOFTWARE PLATFORMS

   Windows 3.0 or 3.1 running in Standard or Enhanced mode. WhiteStack
   1.1, provided by the Edinburgh University Computing Service.

AVAILABILITY

   Free to UK Academic Community, and to some other communities subject
   to certain restrictions. Commercial derivatives exist. Please send
   queries to:

Postal:
      Andrew Findlay
      Computing and Media Services
      Brunel University
      Cleveland Road
      Uxbridge, Middlesex
      UB8 3PH
      UK

E-mail: x500@brunel.ac.uk.

Fax: +44 895 32806 (Andrew Findlay)

Telephone: +44 895 203066 (Andrew Findlay)

DATE LAST UPDATED or CHECKED

March 10th, 1994

NAME

   QuickMail/X.500 Interface (DUA Interface)
   NASA

KEYWORDS

   DUA Interface, Limited Availability, Needs ISODE, RFC-1274, Sun

ABSTRACT

   The NASA QuickMail/X.500 Interface program is a program which
   translates QuickMail name service requests into X.500 requests and
   returns the results from the DSA to the QuickMail user. This system
   allows QuickMail users the ability to find non-QuickMail users' or
   non-local QuickMail users' addresses, while retaining the normal
   QuickMail lookup interface. The program speaks QuickMail name
   service protocol on one side, and DAP on the other.

COMPLIANCE (applicable only for DSAs and DUAs)

   [Same as dish] -- does not support strong authentication. No support
   for 1992 extensions needed.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   RFC 1274 supported to the extent that we use provided schema to store
   QuickMail addresses.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   [No information provided--Ed.]

INTEROPERABILITY

   Works with Quipu (ISODE 8.0, ICR1)

PILOT CONNECTIVITY

   Connected to PSI WPPP, PARADISE. Other projects may use data if they
   are connected to either of these DSAs.

BUGS

   No known bugs. Default QuickMail name service lookup time out of 10
   seconds may be too fast for some DSAs to respond to.

CAVEATS and GENERAL LIMITATIONS

    Requires the Columbia AppleTalk Package (CAP 6.0) to work.

INTERNETWORKING ENVIRONMENT

    EtherTalk or IPTalk on the Macintosh side, any ISODE supported
    environment on the X.500 side.

HARDWARE PLATFORMS

    Known to run on Sun 4/470

SOFTWARE PLATFORMS

    SunOS 4.1.1 and 4.1.3 can be used to host the package. Additionally
    may need SunLink OSI 7.0.1, Sunlink X.25 7.0. ISODE 8.0 or ISODE
    Consortium Release 1 needed to provide DAP support.

AVAILABILITY

    Limited availability. For more details contact,
       Peter Yee
       MS 233-18
       NASA Ames Research Center
       Moffett Field, CA 94035-1000
       (415) 604-3812
       (415) 604-6999 (FAX)
       yee@atlas.arc.nasa.gov

DATE LAST UPDATED or CHECKED

    February 18th, 1993

NAME

   QUIPU (ISODE Consortium Release 1.0)
   ISODE Consortium

KEYWORDS

   API, DSA Connectivity, DSA/DUA, DUA Connectivity, Free, Multiple
   Vendor Platforms, OSI Transport, RFC-1006, RFC-1274, RFC-1275, RFC-
   1276, RFC-1277, RFC-1278, RFC-1279, RFC-1484, RFC-1485, RFC-1487,
   Source, Sun, UNIX, X.25

ABSTRACT

   This implementation is a source release derived from the earlier
   openly available version of QUIPU, and will be used as base
   technology for products by a number of vendors. The release comprises
   of a DSA, and a number of sample DUAs which may be used in
   conjunction with the DSA.

COMPLIANCE (applicable only for DSAs and DUAs)

   The DSA is aligned to the 1988 ISO IS and the NIST OIW Directory
   Implementors Guide Version 1, with the following exceptions:

   - Strong authentication is not implemented (but hooks are
     provided for use with two packages).
   - QUIPU does not enforce the bounds constraints on attributes,
     filters or APDU size.
   - T.61 string formatting characters are not rejected.
   - If a DN is supplied with no password in an unprotected simple bind,
     QUIPU does not always check to see if the DN exists. If the DSA
     connected to can say authoritatively the DN does not exist, the
     association is rejected. However, if a chain operation is required
     to check the DN, the bind IS allowed.
   - When comparing attributes of UTCtime syntax, if the seconds field
     is omitted, QUIPU does not perform the match correctly (i.e., the
     seconds field in the attribute values should be ignored, but are
     not).
   - QUIPU always supplies the optional Chaining argument
     "originator" even if the CommonArgument "requestor" is used.
   - QUIPU always supplies the optional Chaining argument "target"
     even if the base object in the DAP arguments is the same.
   - The object class "without an assigned object identifier" is
     not recognised unless the "alias" object class is also present.
   - Non Specific Subordinate References are never followed by a QUIPU
     DSA, but they are passed on correctly to the client if generated.

Compliance with X.500(1993) standards is planned. DAP and replication
(DISP) will be available in March 1994. Other 1993 features, with the
exception of DOB, but including security features will be available.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

[RFC 1485], [RFC 1487], [RFC 1274], [RFC 1276], [RFC 1277].

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

[RFC 1484], [RFC 1275], [RFC 1278], [RFC 1279].

INTEROPERABILITY

Interoperability with several other DSAs has been demonstrated in
pilot operation and at the COS X.500 Interoperability Lab, enhancing
interoperability results from the earler versions of QUIPU.

PILOT CONNECTIVITY

Connectivity to the global research pilot (PARADISE etc.) has been
demonstrated. It is expected that this system will be used
extensively in a wide range of pilot activities. DUA Connectivity,
and DSA Connectivity.

BUGS

Bugs should be reported to <bug-quipu@isode.com>

CAVEATS and GENERAL LIMITATIONS

None

INTERNETWORKING ENVIRONMENT

The IC R1.0 release is application level code, and assumes vendor
provided lower layers. It provides the following modules with support
for a range of APIs to handle associated lower layers:

- RFC 1006 (vendor supplied TCP/IP using sockets or TLI)
- Transport service (vendor supplied transport, which may be any
  class and use any network service. TLI, XTI and various
  vendor-specific APIs).
- TP0 (Vendor supplied X.25 or CONS using NTI and various vendor
  specific APIs).

HARDWARE PLATFORMS

   Reference platform is SUN SPARC.

SOFTWARE PLATFORMS

   Reference OS is SUNOS 4.1.3. It is also known to run on various other
   UNIX platforms.

AVAILABILITY

   Available to members of the ISODE Consortium. Membership is open to
   any organisation. Also available under licence (zero cost) to all
   non-commercial research organisations. Contact:

        ISODE Consortium
        Headquarters
        PO Box 505
        London
        SW11 1DX
        UK

        Phone: +44-71-223-4062
        Fax: +44-71-223-3846

        Email: <ic-info@isode.com>

DATE LAST UPDATED or CHECKED

   August 11th, 1993

NAME

    Traxis Enterprise Directory
    Angeli Systems Corporation

KEYWORDS

    API, CLNS, Commercially Available, DSA/DUA, HP, IBM PC, IBM RISC,
    Macintosh, OSI Transport, RFC-1006, RFC-1274, Sun, X.25

ABSTRACT

    The Traxis Enterprise Directory has multiple components in a three
    layer architecture. The individual components of the Traxis family
    are building blocks which can be assembled in a flexible, modular way
    to build complex systems.

    At the enterprise level, is a distributed directory stored and
    managed by Traxis Directory Engines (TDEs). At the workgroup level
    Traxis Directory Hubs (TDHs) provide the means to integrate and
    connect Traxis Directory Engines to the wide variety of real world
    applications and systems which prevail in network environments. The
    TDE and the TDH support the myriad of client applications, including
    messaging and business applications, which require services from the
    Traxis directory.

    At the desktop level, the Traxis Desktop Client (TDC) provides a
    common set of facilities which simplify and enable communications,
    object manipulation, and results management as required between the
    Traxis Directory Hub and applications. These capabilities, which
    include full access and management of the directory, are provided to
    applications through XDS++, the Traxis object oriented API. The
    Traxis Desktop Client also supports industry standard client software
    interfaces such as Microsoft MAPI, Apple OCE, CMC and VIM, through
    Compatibility Modules which map the standard API into XDS++. Through
    these APIs the Traxis Desktop Client supports applications of all
    kinds on PC, Macintosh, and UNIX systems.

    Angeli supplied Traxis applications include the Traxis Administrative
    Console management station, the Traxis Global Browser general
    directory tool, the Traxis Operator Assistance high-speed look-up,
    the Traxis Data Base Gateway, the Traxis Import Export Utility and
    more.

    The Traxis Directory Engine includes an X.500 DSA. The Traxis
    Directory Hub includes an X.500 DUA.

COMPLIANCE (applicable only for DSAs and DUAs)

    Traxis Directory Engine DSA is CCITT-1988 compliant with extended
    security and access control. Supports access control on User, Entry,
    and Attribute levels. DIB or subtree administrative manager
    supported. Supports simple authentication with encrypted password.

    NIST OIW Stable Implementation Agreements [NIST-88] compliant.

    Support for February 14, 1993 CCITT X.500 planned. X.509 in first
    half of 1994. Replication and Administrative/Information Model in
    second half of 1994.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    Traxis conforms to RFC1274 which documents COSINE interoperability.

    LDAP (RFC 1487) is planned for inclusion in a later release of Traxis
    if market demand requires it.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    Traxis does not conform to the QUIPU RFC Internet Proposals cited.
    As noted elsewhere, Traxis is fully compatible with QUIPU
    operationally but does not use the cited RFCs in its internal
    operations.

INTEROPERABILITY

    Traxis has been extensively tested for interoperability with ISODE
    QUIPU Version 8. Traxis Directory Engine (DSA) will serve DISH or
    other QUIPU DUAs using DAP. Traxis Directory Hub interoperates with
    QUIPU DSA. All directory access functions and their chained
    equivalents are interoperable.

PILOT CONNECTIVITY

    PARADISE DUA/DSA connectivity tested.

BUGS

    Problems may be reported to support@angeli.com.

CAVEATS and GENERAL LIMITATIONS

    None.

INTERNETWORKING ENVIRONMENT

   Traxis Directory Hub to Traxis Directory Engine (or any DSA)
   communication via RFC1006 over TCP/IP, OSI TP4 with CLNS, and OSI TP0
   with X.25. Traxis Desktop Client to Traxis Directory Hub via SPX/IPX
   or TCP/IP. Other LAN protocols supported in 1994.

HARDWARE PLATFORMS

   Traxis Directory Hub and Traxis Directory Engine:
     Sun and PC currently supported. IBM RS/6000, HP 9000, and others in
     1994.
   Traxis Desktop Client and applications:
     PC currently supported; Macintosh in 1994.

SOFTWARE PLATFORMS

   Traxis Directory Hub and Traxis Directory Engine:
     All Sun platforms with Sun OS 4.1.3 currently supported, Solaris
     2.x in 1994. Industry standard PC platforms with SCO Open Desktop
     V3 currently supported. Other UNIX platforms in 1994. Windows NT
     in 1994.
   Traxis Desktop Client and applications:
     PC with Windows 3.1 currently supported. Macintosh Systems 6 and 7,
     UNIX Motif, DOS, X Windows, and others planned for 1994.

AVAILABILITY

   The Traxis Enterprise Directory is commercially available from:

     Angeli Systems Corporation
     1659 Eleventh Street
     Santa Monica, CA 90404
     +1 310 392 3000
     +1 310 392 4700 FAX

     info@angeli.com

DATE LAST UPDATED or CHECKED

   November 23rd, 1993

NAME

   UCOM.X 500 (tm) - E3.X [DSA and DUA]

KEYWORDS

   386, API, Bull, CLNS, Commercially Available, DEC ULTRIX, DSA
   Connectivity, DSA/DUA, DUA Connectivity, IBM RISC, Motif, Multiple
   Vendor Platforms, OpenLook, RFC-1006, RFC-1274, RFC-1277, RFC-1278,
   RFC-1279, Sequent, Sun, Tandem, UNIX, X.25

ABSTRACT

   UCOM.X 500 includes a Directory System Agent (DSA), various directory
   access APIs and Directory User Agents (DUAs). UCOM.X 500 is a product
   based on PIZARRO, the research prototype developed at INRIA by
   Christian Huitema's team, and commercialized by TS-E3X, a member of
   the France Telecom group.

   Characteristics of the DSA are:

   - The DAP and DSP protocols are provided conformant with X.500 (88).
   - The DIB is maintained in ASN.1 encoded format in the Unix file
     system. Utilities are provided to load and dump the DIB from and
     to ASCII text files.
   - The DIT structure is held in main memory. Frequently used attributes
     may be held in inverted tables in memory to speed up searches.
   - Knowledge management: knowledge on managed domains is stored in
     UCOM.X specific attributes of the DSA entries.
   - Schema: The X.500 (88), X.400 (88) and most of the Cosine and
     Internet Schema are supported. Object class and attribute
     definitions are enforced. Users may define their own.
   - Simple authentication is provided; strong authentication and
     signed operations are being tested operationally through TS-E3X's
     participation in PASSWORD, a VALUE project with aim to pilot a
     European security infrastructure for network applications.
   - Access control: private mechanisms are provided to allow access
     control lists to be specified for parts of the DIT, to control
     modifications, and to specify access restrictions on attributes.
   - Management: a UCOM.X DSA object has been defined to allow
     operational parameters of the DSA to be managed via DAP.
     Administration utilities are provided to, e.g., generate usage
     statistics and periodically update the database from various data
     sources including a knowledge discovery tool.

   The product offers a C language API conformant to X/Open's X/DS

specification, and a C++ API (for release 10/93).

The DUAs include a graphical directory browser with powerful search
functionality for OpenLook and Motif, and a full-screen curses-based
interface with full DAP functionality.

TS-E3X's strategy for UCOM.X500 is three-fold: Firstly, to use it as
the directory service for Spheris, France Telecom's range of
electronic mail products based on X.400 (88) (release mid '94).
Secondly, to offer it to third parties developing specific
applications using X.500: current applications include a distributed
application to control document transfer in a large French hospital
and distributed applications management in the French Post Office;
planned uses include office applications for control of document
circulation (workflow) and cooperative document editing. Thirdly, to
offer it to telecomms operators such as France Telecom for
application in network management. UCOM.X 500 is used extensively by
French research centers involved in PARADISE.

COMPLIANCE (applicable only for DSAs and DUAs)

UCOM.X 500 conforms to X.500 (88) as specified in paragraph 9 of
X.519.

Development of the product based on X.500 (93) is planned for '94
with release of a product conformant to the principal extensions at
the end of '94. Emphasis is being placed on the shadowing protocol,
the schema and access control.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

The COSINE and Internet Schema (RFC 1274) is supported with minor
exceptions.

The string representation of PSAPs and their internal encoding
conforms to RFC 1277.

The string representation of DNs will migrate to the Internet RFC
1485 definition.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

RFC 1279 (X.500 and Domains) is supported. The string representation
of PSAPs and their internal encoding conforms to RFC 1278.

AFRO (algorithme francais de recherche optimise), the search / name
resolution algorithm proposed by UCOM.X 500, differs from the UFN
algorithm principally in that it attempts to optimize by performing

read operations before resorting to searches in order to exploit the
name error information.

INTEROPERABILITY

   Through UCOM.X 500's use in the French PARADISE pilot,
   interoperability has been informally but extensively tested with
   Quipu and other implementations.

   Detailed interoperability tests with Quipu, Marben and Siemens/Bull
   DIR/X are being conducted by the PARADISE OIFP (Operational
   Interworking) team at INRIA Rocquencourt, France.

   The product is currently also undergoing formal tests for
   conformance to the CTS2 DSA/DAP and ACSE/Presentation/Session
   specifications at the French OSI conformance test centre.

PILOT CONNECTIVITY

   DSA and DUA connectivity to the PARADISE pilot.

BUGS

   UCOM.X 500 is a commercial product. As such, it is supported and bugs
   are fixed when detected. Bug reports can be sent to our support team
   via electronic mail.

CAVEATS AND GENERAL LIMITATIONS

   The DIT structure and inverted attribute tables are stored in main
   memory. The recommended main memory size for a DSA is 1 kb per node,
   i.e., 10 Mb for a database of 10,000 objects. The current recommended
   maximum is a database size of the order of 100,000 objects.

   Of the selected attribute types defined in X.500 (88), the
   searchGuide attribute is not supported ; neither are the following
   attributes from the Cosine and Internet Schema (RFC 1274):
   OtherMailbox, MailPreferenceOption and the various quality
   attributes.

   The X/DS API supports the Basic Directory Contents (BDCP), the MHS
   Directory User (MDUP) and the Strong Authentication (SAP) packages
   with minor limitations. A proprietary mechanism for defining new
   classes and attributes is offered. Asynchronous operations and
   multiple concurrent sessions are not supported. Whilst referral may
   be handled automatically, continuation references are not.

INTERNETWORKING ENVIRONMENT

   UCOM.X 500 includes a transport stack for TP0 with TCP/IP (RFC 1006)
   and X.25. The stack has been ported to SunNet OSI for TP4 with CLNP.

HARDWARE PLATFORMS

   UCOM.X 500 can easily be ported to any UNIX machine. It currently
   runs on: Sun 3 and 4, IBM RS 6000, DEC ULTRIX (Vax and Mips), 386-
   based PCs, Bull DPX/2 and DPX/20, Sequent, Tandem and others.

SOFTWARE PLATFORMS

   UCOM.X 500 is portable to any UNIX-like operating system. It has been
   ported to: UNIX SVR3 and SVR4, SUN OS 4, AIX, SCO Unix, Interactive
   Unix, ULTRIX, HP-UX, Dynix (Sequent), BOS (Bull) and others.

   Ports to the following are planned: OS/2 ('94), Windows 3 ('94).

   The product does not make use of an external DBMS for the information
   base.

AVAILABILITY

   UCOM.X is commercially available. For further information contact:

        Pascal Duchamp, International Sales

        Address: TS-E3X, Le Capitole 44, avenue des Champs Pierreux,
                     99029 Nanterre Cedex, France
        Tel: (+33) 1-46-14-50-00
        Fax: (+33) 1-46-14-58-16
        Email: C=FR;A=atlas;P=e3x;O=e3x;OU1=paris;S=duchamp
               duchamp@paris.e3x.fr

     or: Laurence Puvilland, Marketing
         Email: C=fr;A=atlas;P=e3x;O=e3x;OU1=paris;S=puvilland
                puvilland@paris.e3x.fr

     or: Ascan Woermann, R&D
         Email: C=fr;A=atlas;P=e3x;O=e3x;S=Woermann
                woermann@e3x.fr

DATE LAST UPDATED

   July, 1993

NAME

    Wang OPEN/services (tm)
    Wang Laboratories, Inc.

KEYWORDS

    CLNS, Commercially Available, DSA/DUA, DUA Interface, HP, IBM PC, IBM
    RISC, Limited Functionality, OSI Transport, RFC-1006, Wang, X.25

ABSTRACT

    Wang's X.500 products are a part of our OPEN/services product whose
    main features include the following:

    X.500 directory - Contains information about organizations,
    individuals, and distribution lists. The directory is the primary
    vehicle by which users of OPEN/office, Wang's X.400 electronic mail
    product, address mail.

    Authentication Services - Verifies the login name and password of
    each user logging into OPEN/services.

    International support - Provides character translation tables so that
    users can display screens containing international characters and use
    international collating sequences.

    Object management - Greatly increases the integration between
    OPEN/services, OPEN/office and other Windows-based applications.

    Activity logging - Records the activities of OPEN/services. This
    information can be useful for monitoring the OPEN/services processes
    and for troubleshooting.

    Database management - Provides utilities that validate and reorganize
    the OPEN/services databases including the Directory Information Base
    (DIB).

    OPEN/services includes a DSA, a DUA, and a DUA interface all rolled
    into one product. (The DUA interface protocol is private.)

    Wang OPEN/services consists of two parts: software installed on a
    server and software installed on PC clients on a LAN. The client or
    end-user software enables users to log in and log out; change the
    login password; use the OPEN/services directory; and perform various
    actions, such as open and print, on files in the Wang
    OPEN/applications and in certain third-party applications including

Microsoft Windows File Manager. The server consists of the DSA, the
DUA, the Directory Information Base, the service administration
programs such as login authentication, the database management
utilities, and activity logging.

COMPLIANCE (applicable only for DSAs and DUAs)

Wang OPEN/services complies with the 1988 CCITT Recommendations
X.500-X.521 [CCITT-88] with the following exceptions. Whole tree
searches are not supported, nor does the product support chained
adding, modifying, or deleting. Simple authentication is supported,
but strong authentication is not.

In the future, the 1992 extensions to the X.500 standard will be
supported by Wang OPEN/services.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

None are supported at the present time.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

None are supported at the present time.

INTEROPERABILITY

The interoperability of OPEN/services with other X.500 products is
untested.

PILOT CONNECTIVITY

Pilot connectivity between OPEN/services and the AARNET project, NADF
Pilot Project, NIST Pilot Project, PARADISE, and PSI White Pages
Project has not been attempted.

BUGS

To report problems with Wang OPEN/services, contact your local Wang
sales office, your Wang authorized reseller or call your regional
support center. (In the USA, the number is 404-432-9001).

CAVEATS and GENERAL LIMITATIONS

None

INTERNETWORKING ENVIRONMENT

Wang OPEN/services currently runs in the following environments:
RFC1006 with TCP/IP, TP4 with CNLS, TP0 with X.25 and SLIP.

HARDWARE PLATFORMS

Server Requirements

Installing Wang OPEN/services Server requires the following hardware:
a Wang RISC Series Server 220 or greater, or an IBM RISC
System/6000(tm) with a minimum of 32 MB of memory, or a Hewlett-
Packard 9000 Series 800 system with a minimum of 32 MB of memory. For
each system a minimum of 20 MB of free disk space in a file system is
required.

Client Requirements

Installing OPEN/services for Windows requires the following hardware:
a 386/SX CPU or later, at least 4 MB of memory, a hard disk drive
with at least 2.5 MB of disk space, and a VGA monitor. A pointing
device is not required to run OPEN/services but is strongly
recommended.

Network Requirements

OPEN/services has the following network requirements: 802.3 or 802.5
LAN, network interface cards (NICs) to support TCP/IP on client PCs,
Ethernet or token ring adapters on the servers, and optionally X.25
cards on the servers.

SOFTWARE PLATFORMS

Server Requirements

Installing Wang OPEN/services Server requires the following software:
AIX Operating System, release 3.2.3 or later, with bundled support
for the TCP/IP protocol suite, or HP-UX Operating System, Release 9.0
or later.

Client Requirements

OPEN/services for Windows requires the following software: Microsoft
MS-DOS(tm) Operating System, Release 5.0 or later and Microsoft
Windows 3.1 or later.

AVAILABILITY

    Wang OPEN/services is commercially available from:

        Wang Laboratories, Inc.
        1 Industrial Avenue
        Lowell, Massachusetts 01851
        Phone: 508-967-6114
        FAX: 508-967-1105

    To obtain OPEN/services, contact your local Wang sales office, your
    Wang authorized reseller or call 1-800-NEW-WANG.

DATE LAST UPDATED or CHECKED

    December 6th, 1993

NAME

    Xdi - DUA
    Bellcore

KEYWORDS

    Available via FTP, DUA Connectivity, DUA Only, Free, Limited
    Functionality, Multiple Vendor Platforms, Needs ISODE, RFC-1274,
    RFC-1484, Source, Sun, UNIX, X Window System

ABSTRACT

    Xdi is a Directory User Agent (DUA) for the X Window System. In
    addition to providing a user-friendly interface, it supports
    Directory interactions of different levels of complexity. Users can
    select different window screens to browse, search and modify the
    Directory. There are two different search screens for name based
    search and attribute based search. It is simple to use for novice
    users but is also useful for more advanced users to formulate complex
    search filters. Xdi also supports "user-friendly naming" in many
    cases so that users are not required to know X.500 naming format.

COMPLIANCE (applicable only for DSAs and DUAs)

    88 standard compliant: Delete and Add operations, and strong
    authentication not implemented. There are no facilities to modify the
    RDNs of entries.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    RFC 1274 is supported.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    RFC 1484 is supported.

INTEROPERABILITY

    Believed to be interoperable with other DSAs. Only tested against
    ISODE/QUIPU DSAs.

PILOT CONNECTIVITY

    DUA Connectivity

BUGS

    Send bug reports to sywuu@thumper.bellcore.com

CAVEATS and GENERAL LIMITATIONS

INTERNETWORKING ENVIRONMENT

    Same as ISODE.

HARDWARE PLATFORMS

    This software has been tested on SUN4. It is expected that the
    software is portable to SUN3 and other UNIX machines.

SOFTWARE PLATFORMS

    Xdi is expected to run on ISODE (release 7.0 upwards) in UNIX
    environment. The 'xdi' directory has been designed to fit directly
    into the ISODE source tree. Xdi requires X11R4, the associated Xt
    toolkit and Athena widget libraries. Also see the operating
    environments of ISODE.

AVAILABILITY

    The Xdi software is available via anonymous FTP from
    thumper.bellcore.com in file pub/xdi.tar.Z. Source code and
    executables can be freely distributed or modified for non-commercial
    and non-profit use provided that all copyright notices, permission
    and nonwarranty notice included in the software distribution remain
    intact.

    For further information contact Sze-Ying Wuu at
    sywuu@thumper.bellcore.com.

DATE LAST UPDATED or CHECKED

    March 18th, 1993

NAME

    XLU
    Brunel University, UK

KEYWORDS

    DUA Connectivity, DUA Only, Free, Multiple Vendor Platforms, Needs
    ISODE, Source, UNIX, X Window System

ABSTRACT

    XLU (X LookUp) is an X.500 DUA interface for the X Window System.

    XLU can be configured for many different styles of interaction.
    Example configurations are provided for single window and multiple
    window use.

    XLU implements the 'User-Friendly Naming' search strategy and also
    has a form-filling search mode. Asynchronous directory operations are
    used.

    Full user friendly add and modify functions are provided, with the
    ability to tailor the modify screen to present simple subsets of the
    available attributes.

COMPLIANCE (applicable only for DSAs and DUAs)

    88 Standard compliant: Strong authentication not yet implemented. No
    plans for support of the 1992 Standard.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    No plans at present.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    No plans at present.

INTEROPERABILITY

    [No information provided--Ed.]

PILOT CONNECTIVITY

   DUA Connectivity: The interface is in use in the UK Academic
   Directory Pilot.

BUGS

   Bugs should be reported to x500@brunel.ac.uk.

CAVEATS and GENERAL LIMITATIONS

   [No information provided--Ed.]

INTERNETWORKING ENVIRONMENT

   As ISODE.

HARDWARE PLATFORMS

   Most UNIX machines.

SOFTWARE PLATFORMS

   UNIX
   MIT X11R5 libraries
   ISODE/QUIPU (version 8.0 >)

AVAILABILITY

   Sources are freely available for commercial or non-commercial use.
   Contacts.

   Postal Address:
       Andrew Findlay
       Computing and Media Systems
       Brunel University
       Cleveland Road
       Uxbridge, Middlesex
       UB8 3PH
       UK

   E-mail: x500@brunel.ac.uk.

   Fax: +44 895 32806 (Andrew Findlay)

   Telephone: +44 895 203066 (Andrew Findlay)

DATE LAST UPDATED or CHECKED

   March 1st, 1993

NAME

    XT-DUA
    NEXOR

KEYWORDS

    Bull, CLNS, Commercially Available, DUA Connectivity, DUA Only, HP,
    IBM RISC, ICL, Motif, Multiple Vendor Platforms, OpenLook, OSI
    Transport, RFC-1006, RFC-1274, RFC-1277, RFC-1278, RFC-1484,
    Solbourne, Sun, X Window System, X.25

ABSTRACT

    XT-DUA provides a X-Windows based user interface to the X.500
    Directory. Both Motif and OpenLook styles are supported.

    Browsing features include:

    - Passing of user address information to the XT-MUA X.400 user agent.
    - History - allowing quick access to previously referenced parts of
      the DIT.
    - Customizable entry display - allowing subsets of attributes be
      displayed when showing an entry.
    - User Friendly Name (UFN) based searching
    - Hypertext-like navigation.
    - Support for application entities e.g. startup of ftam session.
    - User defined name for attribute labels.
    - Support for photo and audio attributes.
    - Attribute value on scanline.
    - Intelligent choice of entries to display when moving to a new
      location in the DIT.

    Management features include:

    - Creation of new entries.
    - Modification of existing entries (including RDN) - based on
      Quipu EDB format.
    - Deletion of entries.
    - Friendly editor of modifying Quipu ACLs.
    - Rebinding - authenticated and to named DSA.
    - Full configuration of DAP request parameters

COMPLIANCE (applicable only for DSAs and DUAs)

   Compliant with X.500(88), and NIST SIA version 2 except X.509 strong
   authentication not implemented (under development).

   NEXOR is committed to migrate XT-DUA to the 1992 standards.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

   The following are supported: RFC 1274 and RFC 1277.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

   The following are supported: UFN [RFC 1484] and RFC 1278.

INTEROPERABILITY

   XT-DUA has interoperated with all DSAs used in the PARADISE pilot.

PILOT CONNECTIVITY

   Full DUA connectivity to the PARADISE and PSI White Pages X.500
   Pilots.

BUGS

   No known bugs. Support is given via phone or email to
   "support@nexor.co.uk"

CAVEATS and GENERAL LIMITATIONS

   None.

INTERNETWORKING ENVIRONMENT

   OSI TP4 with CLNP, OSI TP0 with X.25 or CONS, and RFC 1006 with
   TCP/IP

HARDWARE PLATFORMS

      Sun
      Solbourne
      IBM RS/6000
      Bull DPX 6000
      HP Apollo 9000

SOFTWARE PLATFORMS

        SunOs 4.1.x
        AIX 3.2
        HP-UX 9.01
        Windows 3.1 (over LDAP)

    Other ports planned include SCO Unix and ICL DRS6000.

AVAILABILITY

    XT-DUA is commercial software. For more details contact:

        XT-DUA Sales
        NEXOR
        8 Faraday Building
        Highfields Science Park
        Nottingham
        NG7 2QP
        UK

        DN: c=GB@o=NEXOR Ltd
        Telephone: +44 602 520500
        Fax: +44 602 520519
        E-Mail: sales@nexor.co.uk

DATE LAST UPDATED or CHECKED

    August 2nd, 1993

NAME

    XT-QUIPU
    NEXOR

KEYWORDS

    Bull, CLNS, Commercially Available, DSA Connectivity, DSA Only, HP,
    IBM RISC, ICL, Multiple Vendor Platforms, OSI Transport, RFC-1006,
    RFC-1274, RFC-1276, RFC-1277, RFC-1278, RFC-1279, RFC-1484, RFC-1485,
    Solbourne, Sun, X.25

ABSTRACT

    XT-QUIPU is an X.500(88) DSA. Characteristics of the DSA are:

    - Full DAP access
    - Full DSP access
    - Support for X.400, X.500, and RFC 1274 attributes and
      object classes
    - Approximate match based on Soundex.
    - Flexible schema management
    - RFC 1276 Replication
    - Attribute level access control
    - Search and list access control
    - Knowledge management mapped onto DIT
    - Attribute inheritance
    - Caching
    - Remote management

COMPLIANCE (applicable only for DSAs and DUAs)

    Compliant with X.500(88), and NIST SIA version 2 except X.509 strong
    authentication not implemented (under development).

    NEXOR is committed to migrate XT-QUIPU to the 1992 standards.

CONFORMANCE WITH PROPOSED INTERNET STANDARDS

    The following are supported: String DN format [RFC 1485], RFC 1274,
    RFC 1276, and RFC 1277.

CONSISTENCE WITH INFORMATIONAL AND EXPERIMENTAL RFCs

    The following are supported: UFN [RFC 1484], RFC 1278, and RFC 1279.

INTEROPERABILITY

   XT-QUIPU interoperates will all DSAs used in the PARADISE pilot.

PILOT CONNECTIVITY

   XT-QUIPU DSAs are fully connected to the PARADISE and PSI White Pages
   X.500 Pilots.

BUGS

   No known bugs. Support is given via phone or email to
   "support@nexor.co.uk"

CAVEATS and GENERAL LIMITATIONS

   None.

INTERNETWORKING ENVIRONMENT

   OSI TP4 wtih CLNP
   OSI TP0 with X.25 or CONS
   RFC 1006 with TCP/IP

HARDWARE PLATFORMS

   Sun
   Solbourne
   IBM RS/6000
   Bull DPX 6000
   ICL DRS/6000
   HP Apollo 9000

SOFTWARE PLATFORMS

   SunOs 4.1.x
   AIX 3.2
   DRS/NX 6000
   HP-UX 9.01

   Other ports planned include SCO Unix.

AVAILABILITY

   XT-QUIPU is commercial software. For more details contact:

            XT-QUIPU Sales
            NEXOR
            8 Faraday Building
            Highfields Science Park
            Nottingham
            NG7 2QP
            UK

            DN: c=GB@o=NEXOR Ltd
            Telephone: +44 602 520500
            Fax: +44 602 520519
            E-Mail: sales@nexor.co.uk

DATE LAST UPDATED or CHECKED

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5. Security Considerations

   Security issues are not discussed in this memo.

6. Editors' Addresses

   Arlene F. Getchell
   Lawrence Livermore National Laboratory
   National Energy Research Supercomputer Center
   P.O. Box 5509, L-561
   Livermore, CA 94551

   Phone: (510) 423-6349
   EMail: getchell@es.net
   X.400: s=getchell;p=esnet;a= ;c=us;

   Srinivas R. Sataluri
   AT&T Bell Laboratories
   Room 1C-429, 101 Crawfords Corner Road
   P.O. Box 3030
   Holmdel, NJ 07733-3030

   Phone: (908) 949-7782
   EMail: sri@qsun.att.com