Software
Product
Description

HP Tru64 UNIX Enterprise Directory for eBusiness V5.4 and HP **Administrator for Enterprise Directory V2.2**

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Description

The HP Tru64 UNIX® Enterprise Directory for eBusiness V5.4 implements a distributed network directory service over TCP/IP without the need to install DECnet-Plus or OSI transport in the environment. For those customers that wish to continue to deploy over an OSI transport, this capability is retained.

The product continues to conform to the ITU-T X.500 Recommendations. These Recommendations split the functions of the directory between one or more Directory System Agents (DSA), where all information is held and one or more Directory User Agents (DUA), from which all enquiries and other directory actions are made.

Using the X.500 model, departments and organizations may adopt an incremental independent approach to the establishment of a directory service using, if required, conforming products from multiple vendors. These separate implementations may then be connected together to provide a single logical directory service that spans the department, the organization, the region or the world, as appropriate. The Directory may contain information on anything of interest, typically people, authentication credentials and certificates (such as PKI) systems, network resources and may be accessed both by individual users and applications.

V5.4 includes an extended management client known as the HP Administrator for Enterprise Directory (HP AED) V2.2, which is described within this document.

The Tru64 UNIX Enterprise Directory product set includes:

* Tru64 UNIX Enterprise Directory Server - a Directory System Agent

* Lightweight Directory Access Protocol version 3 (LDAPv3) support

* Full management of the DSA from the HP Administrator for Enterprise Directory (HP AED) for Windows clients, eliminating the need for NCL commands

* An NCL emulator for those customers that must continue using NCL commands, perhaps in NCL scripts, but no longer wish to configure DECnet-Plus

* Use of an LDAP port number for operation with an RFC1006 Presentation Address over a TCP/IP network without DECnet-Plus being present

* Tru64 Cluster support

* Tru64 UNIX Enterprise Directory Administration Facility - a Directory User Agent

Other HP messaging and networking products such as all versions of Office Server and ALL-IN-1 V3.2, also provide the directory user agent function in order to access information in the Enterprise Directory Server.

The Tru64 UNIX Enterprise Directory products are based on the 1993 edition of ISO/IEC 9594 and the ITU-T X.500 series of recommendations.

Abstract Services

The Tru64 UNIX Enterprise Directory components provide and support all of the X.500 Abstract Services, including:

* Read
  Read attributes from a named entry
* Compare
  Test an attribute value without reading it
* Abandon
  Abandon an outstanding operation

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- List
  List names of subordinate entries
- Search
  Find entries matching a search expression
- Add
  Create a new entry
- Remove
  Delete an entry
- Modify Entry
  Add or remove attributes or values
- Modify RDN
  Rename an entry

The following operations are supported via the LDAPv3 protocol:

- Bind – with simple password
- Unbind
- Search – no extensibleMatch option
- Modify
- Add
- Delete
- Modify Distinguished Name – no newSuperior option
- Compare
- Abandon
- Backwards compatibility with LDAPv2 clients and directories

The following LDAP string syntaxes are supported:

- AttributeTypeDescription (not in v2)
- Binary
- BitString
- Boolean
- Distinguished Name
- DirectoryString
- FacsimileTelephoneNumber
- GeneralisedTime (not in v2)
- IA5String
- Integer
- Jpeg
- MHS-OR-Address
- Octet String
- UTC Time
- Telex Number
- NumericString
- ObjectClassDescription
- OID
- PostalAddress
- PrintableString
- TelephoneNumber
- Delivery Method
- Printable or Numeric String

In addition the LDAP extension ManageDSAIT is included.

Schema

The Tru64 UNIX Enterprise Directory uses a highly configurable schema, allowing customer definition of attributes, object classes, structure rules, and name forms. The schema is installed individually at each DSA. A default schema that implements the schema in X.520 and X.521 (1995 edition) as well as other useful definitions such as inetOrgPerson ObjectClass as defined in RFC2798 are included.

Security

The Tru64 UNIX Enterprise Directory supports a subset of the Simplified Access Control scheme from the 1993 edition of the standard. This allows administrators to define policies that control access rights (such as read, browse, modify, remove) to entries and individual attributes within a particular part of the directory (naming context).

The Tru64 UNIX Enterprise Directory allows for the authentication of users by name and password. It also allows access to be restricted based on network address and for chained operations.

Distributed Operations

The DSA supports standard X.500 distributed operations including chaining and referrals. Knowledge management of superior and subordinate references allows a Tru64 UNIX Enterprise Directory DSA to participate as a first-level DSA or a subordinate DSA in a multi-vendor distributed Directory Information Base (DIB).

Replication

The Tru64 UNIX Enterprise Directory supports shadowing of data between DSAs, allowing data to be replicated in the network for high availability and performance. Shadowing also allows replication of knowledge information for distributed operation, access control policies and authentication information, thus reducing the amount of management required.

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Selective Shadowing

V5.4 supports Selective Shadowing – the ability to specify which attributes can and cannot be shadowed to a consumer DSA.

The shadowing filter is controlled by the shadowingAttributeSelection attribute in the shadow agreement subentry. Thus every shadowing agreement has its filter.

Shadowed information is represented using the DSA Information Model defined in the 1997 edition of the standard. Tru64 UNIX Enterprise Directory supports the shadowing service defined in X.525, including supplier initiated and consumer-initiated agreements, both scheduled and on change replication providing full or incremental updates.

Protocols

The Directory Service is based on the client-server model. The DSA server supports the directorySystemAC application context (DSP protocol) to communicate with other DSAs. Communications between server DSAs and client DUAs are supported by the directoryAccessAC application context (DAP protocol). DAP enables DUAs in other X.500 implementations to access the Tru64 UNIX Enterprise Directory DSA and vice-versa. DSP enables full interworking with DSAs in other implementations.

The DSA server supports LDAPv2 and LDAPv3 protocols.

For shadowing, the DSA supports shadowSupplierInitiatedAC and shadowConsumerInitiatedAC application contexts in both the synchronous and asynchronous variants (DISP protocol) and the directoryOperational BindingManagementAC application context (DOP protocol).

The Tru64 UNIX Enterprise Directory V5.4 runs on the Tru64 UNIX operating system. It provides integrated, multi-protocol support allowing concurrent DAP and DSP access over OSI (using transport classes TP0, TP2, TP4) and RFC1006 over TCP/IP.

Security – SSL/TLS Support

Secure Socket Layer/Transport Layer Security support is provided utilising the object library shipped with this kit.

The Directory can receive commands over a secure line using LDAPv3. The following protocols are non-simultaneously supported:
- SSLv23
- SSLv3
- TLSv1

The Directory does not provide a default or private key. These may be obtained from http://www.openssl.org

The Directory can be placed in one of three management selectable security states – no security; selectable security; mandatory security.

Database

The Tru64 UNIX Enterprise Directory provides a Directory Information Base based on the 1993 edition of Extended Information Models. This indexed database supports high-performance searching and sophisticated matching including approximate (Soundex) match. The database is held in main memory to ensure optimal response times.

Support for NCL Service Management

The Tru64 UNIX Enterprise Directory provides DSA management conforming to the Enterprise Management Architecture (EMA), integrated with DECnet-Plus. This provides remote management facilities to configure and control DSAs, and to log significant events.

Programming Interface

Application access to the Tru64 UNIX Enterprise Directory is provided through the X/Open™ Company Limited's OSI-Abstract-Data Manipulation API and API to Directory Services, also known as the XDS/XOM Application Program Interface.

Documentation, useful libraries and supporting files for the API are included with the Tru64 UNIX Enterprise Directory.

The Tru64 UNIX Enterprise Directory includes a base component that contains the DUA libraries and other supporting files necessary to support applications written to the directory API. This base component, therefore, provides run-time client access to the API libraries; it is distributed with the Tru64 UNIX Enterprise Directory product.

Compaq Administrator for Enterprise Directory V2.2

Description

The HP Administrator for Enterprise Directory (HP AED) is a Graphical User Interface designed to enable system managers and administrators to easily manage multiple Enterprise Directory servers. The HP AED provides multiple views of a directory network, visually depicting associations and dependencies.

The HP AED provides full DSA Management, replacing NCL commands when an OSI Transport is not present and can be configured to run over pure TCP/IP even when an OSI transport is present.

The HP AED is written as a Java™ application designed to run on any platform that supports the Java2 Runtime Environment (JRE) V1.4-2 or later. JRE V1.4-2 is supplied with the kit.

The "Look-and-Feel" of the CAED is that of the Sun *Metal* look and feel chosen because of its multi-platform support and minimal software dependency on the host platforms.

All communication with Enterprise Directory servers is via LDAP over an IP network allowing management of multiple directories from a single HP AED. The HP AED takes full advantage of features within the Enterprise Directory V5.4 to maximise manageability.

All management operations performed by the HP AED are subject to checking by Enterprise Directory, which prevents the user inadvertently modifying a DSA in such a way that it is left in an inconsistent state.

Functionality Supported

The HP AED allows an administrator to connect simultaneously to an arbitrary number of Enterprise Directories - subject to suitable authentication - and provide a view of the DSA which highlights and allows manipulation of the following entities:

- Naming Contexts

  - Display and highlight existing naming contexts
  - Create new naming contexts
  - Remove existing naming contexts

- Superior References

  - Display an existing Superior Reference
  - Create a new Superior Reference
  - Modify or delete an existing Superior Reference

- Subordinate References

  - Display existing subordinate references
  - Create new subordinate references
  - Modify or delete existing subordinate references

- Replication

  - Display existing replication information
  - Create new replication agreements
  - Modify or delete existing replication agreements

For operations that involve multiple DSAs e.g. setting up a subordinate reference, the HP AED makes checks on all DSAs involved before proceeding, and will issue appropriate diagnostic information in the case of inconsistency.

HP AED Utility Functions
For the following operations the GUI relies on the HP AED Utility:
- Displaying a list of the available schema files
- Creating a new schema file
- Editing an existing schema file
- Recompiling the schema
- Restarting the DSA
- Editing the DSA Characteristics

The system manager can decide whether or not the HP AED Utility should be enabled on any given server. The GUI only requires that the HP AED Utility be available in order to carry out the functions listed above. Other administrative operations (such as viewing and updating the contents of the DSA) do not require the HP AED Utility to be running.

Use of the HP AED Utility is dependant upon a management password that is specific and should be made unique to the Utility.

Communication between the HP AED and the Utility is performed using an SSL-secured

connection. The TCP port number is configurable and is set to 907 be default.

Security and Authentication

An authentication mechanism is available to ensure security and integrity of the DSAs and Schema.

For DSA Management operations the HP AED communicates with a Utility programme that runs on the same node as the target DSA. Access to this utility is restricted by password that will be supplied by the system manager to trusted administrators etc.

For operations that involve multiple DSAs e.g. setting up a subordinate reference, the HP AED makes checks on all DSAs involved before proceeding, and will issue appropriate diagnostic information in the case of inconsistency.

Supported Platforms

The HP AED has been tested and certified with the following platforms:

* Windows 2000 SP3
    or
* Windows XP
    with
* Java2 Runtime Environment V1.4-2
    and
* Connection to an IP network

Disk Space Requirements

75 MB

Memory Requirements

32 MB

DISTRIBUTION MEDIA

This product is supplied with the Tru64 UNIX Enterprise Directory V5.4 kit and is downloadable from the Web.

The on-line documentation for this product is included in the supplied kits.

Tru64 UNIX Enterprise Directory User Agents

The Tru64 UNIX Enterprise Directory Administration Facility provides a Directory User Agent. The Information Management Utility (DXIM) allows users to search and browse the directory and to maintain the data stored in it. Operations include the addition, modification, and deletion of entries. DXIM supports both DECwindows™ Motif® and command line interfaces. It can be used on a DSA node or remotely from any other node in the network.

DXIM is configurable, based on the schema definitions, to support customer defined attributes and classes.

Access to the Tru64 UNIX Enterprise Directory may also be obtained through other HP software products that contain the Directory User Agent function. For example, Office Server will allow users of TeamLinks, Outlook, IMAP4, POP3 and Web clients access to information in the Directory.

Inclusion of the LDAP interface enables the following clients to obtain directory information:

* Internet Explorer
* Netscape Web Client
* Outlook Client

And any client accessing via Office Server V5.0, V6.0 and V6.1.

STANDARDS SUPPORTED

The Tru64 UNIX Enterprise Directory products are implemented according to the 1993 edition of ISO/IEC 9594 and the ITU-T X.500 series of Recommendations. The products have successfully completed testing to the Open Systems Testing Consortium (OSTC) 1988 X.500 conformance tests. The conformance testing was carried out by the United Kingdom National Computer Centre, an accredited OSTC testing centre, that produced OSTC test reports valid in all European Community states. The products have been registered by the U.S. National Institute of Standards and Technology (NIST) as conformant to U.S. GOSIP.

The product is designed and implemented to conform, with some minor exceptions, to the following European and US profiles:

NIST OIW Stable Implementor's Agreements - Version 5 edition 1

- ENV 41210
- ENV 41212
- ENV 41215
- ENV 41512

The product also supports, where applicable, the following Internet standards:

- RFC 1006
- RFC 1274
- RFC 1277 (as it applies to TCP/IP networks)
- RFC 1278

The LDAP functionality will conform to the following standards. For LDAP V2:

- RFC 1777 Lightweight Directory Access Protocol
- RFC 1558 A String Representation of LDAP Search Filters
- RFC 1778 The String Representation of Standard Attribute Syntaxes

For LDAP V3:

- RFC 2251 Lightweight Directory Access Protocol (v3)
- RFC 2252 Lightweight Directory Access Protocol (v3): Attribute Syntax Definitions
- RFC 2253 Lightweight Directory Access Protocol (v3): UTF-8 String Representation of Distinguished Names
- RFC 2254 The String Representation of LDAP Search Filters
- RFC 2255 The LDAP URL Format
- RFC 2256 A Summary of the X.500 (96) User Schema for use with LDAP V3

Character Set Support

LDAPv3 strings are based on the UTF-8 character set and are restricted to characters that can be mapped to the T.61 character set. Input characters will be substituted by their base character wherever possible, if they can't be mapped to T.61.

HARDWARE REQUIREMENTS

Processors Supported

Tru64 UNIX Enterprise Directory is supported on all Tru64 UNIX AlphaServer configurations that can support the memory and disk requirements.

For deployments utilising DECnet-Plus refer to the DECnet-Plus for Tru64 UNIX Alpha Software Product Description (SPD 50.45.xx) for further information on supported hardware configurations.

Disk Space Requirements

The counts below refer to the space required to install the Directory Server, Administration, and Application Programming components. The Base component is a mandatory component for all installations. Permanent disk space requirements for the components are cumulative. Directory data files are not included and will require additional space that can be on a non-system disk.

Disk space required for installation and for use (permanent):

Component	Blocks	(Kbytes)
Base:	8000	4096
Server:	18000	9216
Administration:	7000	3584
Application Programming:	1000	512
Look-up client:	5000	2560
Reference Pages:	300	
Release Notes:	300	

Directory data files are stored in the /var file system.

If the HP AED is installed this will require an additional 70,000 blocks and the HP AED Utility will require a further 60,000 blocks.

Memory Requirements

The performance of this product is dependent on the amount of system memory. The memory size suggested for most typical hardware configurations is at least 512 Mbytes for systems running the Directory Server. On these server systems, memory usage increases in proportion to the amount of data stored in the database.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed Trucluster* configuration without restrictions. More than one Directory System Agent (DSA) can be active on a Trucluster at any one time. The HARDWARE REQUIREMENTS section of this document details any special hardware required by this product.

* TruCluster configurations are fully described in the TruCluster Software Product Description (44.17.xx)

SOFTWARE REQUIREMENTS

Tru64 UNIX Operating System V5.1A or later

Note TCP/IP Services supplied with Tru64 UNIX is a pre-requisite if the HP AED is deployed.

and optionally, for deployments utilising OSI Transport:

DECnet-Plus V5.1b for Tru64 UNIX or later. Additionally the OSI Applications Kernel (OSAK) needs to be installed, instructions for which are in the DECnet-Plus for OpenVMS Applications Installation and Advanced Configuration manual. If you have installed DECnet-Plus then you must also install OSAK.

Note if it is intended to utilise RFC1006, then a TCP/IP network must also be deployed.

For LDAPv3 over SSL, HP SSL Version 1.1 for OpenVMS or later is required.

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

This product is available on the Tru64 UNIX Layered Products CD-ROM distribution's Software Product Library.

The on-line documentation for this product is available on the Tru64 UNIX Online Documentation CD-ROM distributions.

ORDERING INFORMATION

In this section, an asterisk (*) denotes variant fields. For additional information on available licenses, services, and media, refer to the appropriate price book.

Tru64 UNIX Enterprise Directory Server:

Software Licenses:

- QL-2FYA9-AA Unlimited Use
- QL-2FYAM-3C 500 entry Concurrent
- QL-2FYAM-3D 5,000 entry Concurrent
- QL-2FYAM-3E 25,000 entry Concurrent
- QL-2FYAM-3F 50,000 entry Concurrent

Software Product Services:

- QT-2FYA*-**

Tru64 UNIX Enterprise Directory Administration Facility:

Software Licenses on the Tru64 UNIX Alpha Software Products Library:

- QL-2FZA*-**

Software Product Services:

- QT-2FZA*-**

Documentation for all products:

Tru64 UNIX Printed Documentation:

- QA-0P4AA-GZ

SOFTWARE LICENSING

This software is furnished under the licensing provisions of HP Computer Limited Standard Terms and Conditions. For more information about HP's licensing terms and policies, contact your local HP office or Partner.

License Management Facility Support

This layered product supports the Tru64 UNIX License Management Facility (LMF).

License units are allocated on an Unlimited Use and a Concurrent Use basis and are available in units of 500, 5,000, 25,000 and 50,000 entries.

Each Server Concurrent Use license allows a specified number of entries to be added to the local directory database, according to the number of units in the license. These licenses behave cumulatively when additional licenses are registered. The number of entries counted includes:

- all sub-entries (access control, shadowing agreement and other sub entries)
- intermediate entries in the naming hierarchy
- a small number of overhead entries used for internal DSA management purposes
- all shadowed entries from other DSAs
- normal entries such as those used by human users or used by other dependent software, for example MAILbus 400 MTA routing and gateway entries.

In a messaging environment with mail user agents, a MAILbus 400 MTA and gateways, a 5,000 entry DSA may be sufficient to support a user population of around 1000 people. For further details of this mechanism, consult the product documentation.

The Tru64 UNIX Enterprise Directory includes a base component that contains the DUA libraries and other supporting files necessary to support applications written to the directory API. This base component, therefore, provides run-time client access to the API libraries; it is distributed with the Tru64 UNIX Enterprise Directory product. The license for the Directory Server includes the right to install this base component on any system having an application needing access to that properly licensed Directory Server. It is not required to load a license into the License Management Facility in order for the base kit to function.

SOFTWARE PRODUCT SERVICES
A variety of service options are available from Compaq. For more information, contact your local Compaq office or Compaq partner.

SOFTWARE WARRANTY

This software is provided by HP, with a warranty in accordance with the HP Tru64

UNIX operating system warranty that it is installed upon.