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HP OSI Transport Services/9000
Technical Data

Product Numbers
32069A, J2160A, 32070A
HP OSI Transport Services/9000 (OTS/9000) networking software
provides the Transport, Session, Presentation, and ACSE layers of the
OSI reference model. OTS/9000 also provides OSI network layer
services over the X.25/9000, FDDI/9000, or LAN/9000 Link. These
layers supply the necessary foundation to run OSI services, such as
MMS, FTAM, X.400, and X.500.

Figure 1

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These OSI products operate in both a local area and wide area network
environment. By supporting international standards specified by the
International Standards Organization (ISO) and the International
Telegraph and Telephone Consultative Committee (CCITT), HP's OSI
products operate in a multivendor environment.

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Features

For OTS/9000 features include:

- Highly conformant to many GOSIP profiles (see Figure 2 for supported profiles)
- Support of the OSI and TCP/IP protocols simultaneously, over the same interface card
- Support of dynamic routing for LAN using ES–IS protocol
- Ability to act as an Active Transport Layer Relay to bridge CONS and CLNS networks using MSDSG (Multi–System Distributed System Gateway)
- Superior administration support through the tool Osiadmin; a single user interface to all administration functions users need to manage their local OSI systems, configuration data can also be accessed through ASCII files
- Application interface to the ISO Session layer
- APRI, an application interface to the ISO ACSE, Presentation, and ROSE layers, based on an emerging standard interface

┤   XTI, the X/Open standard application interface to the ISO Transport layer, fully XPG3 compliant, allows XTI applications to run in a multivendor environment

┤   Application interface trace facility allows developers to trace calls and input/output parameters for the purpose of debugging

┤   C library of calls allows users to programmatically retrieve internal layer statistics

┤   Dynamic reconfiguration; using Osiadmin, some stack parameters, and information about remote systems can be modified without rebooting the system

┤   Support of HP MMS/9000, HP FTAM/9000, HP X.500/9000, and HP X.400/9000

┤   Tracing of data and header information at each layer (2¬7) of stack

┤   MP safe through use of STREAMS; the HP–UX 9.0 version of OTS uses STREAMS for interprocess communication and can run on an MP (Multiple Processor) system. The HP–UX 8.0 version of OTS uses a special version of STREAMS and does not run on MP systems

For X.25, features include:

┤   Support of up to 448 transport connections and switched virtual circuits

┤   Support of up to seven X.25 cards

┤   Load balancing across cards for improved performance and availability

┤   Support of transport classes 0, 2, and 4 over CONS

┤   Support of transport class 4 over CLNS

For 802.3 and FDDI, features include:

┤   Support of up to 448 connections

┤   Support of one or two LAN cards

┤   Support of transport class 4 over CLNS

OTS/9000 supports a total of 448 connections through the transport layer. This limit applies to connections established through APRI, Session API, XTI (the Transport API), or by a supported OSI application (X.400, FTAM, MMS, or X.500).

Figure 2

- CEN/CENELEC
- EN/ENV 41 101
- EN/ENV 41 102
- EN/ENV 41 104
- EN/ENV 41 105
- EN/ENV 41 106
- EN/ENV 41 107
- COS
- TA51
- TA1111
- TD1111
- MAP Version 3.0
- NIST Version 3 Addition 1
- POSI/INTAP
- TOP Version 3.0
- UK GOSIP Version 3.1
- subprofile GOSIP CO WAN
- subprofile GOSIP CL WAN
- US GOSIP Version 1.0 (FIPS 146)

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Tools

HP's Osiadmin provides superior OSI node administration through its menu–driven access to all configuration, administration, verification, and diagnostic tools. After installing the product from tape, Osiadmin is the only tool needed to configure, start, and verify an OSI node (including interoperability with remote nodes). Using Osiadmin, users can reconfigure some stack parameters and information about remote systems without rebooting the system.

For Osiadmin, features include:

- OSI network administration consistent with HP–UX's System Administration Manager (SAM)
- Extensive online help
- Integrated configuration for:
- X.400/9000 software
- FTAM/9000 software
- MMS/9000 software
- X.500/9000 software
- OTS/9000 software
- LAN/9000 Link
- X.25/9000 Link
- FDDI/9000 Link
- Automated configuration verification for the above components
- Integrated administration for the above components (start/stop)
- Integrated diagnostics for the above components, including:
- local verification tests
- remote interoperability tests
- automated trace and log generation
- cause/action error reporting

ACSE/Presentation and ROSE Interface

OTS/9000 includes APRI which provides an application programmatic interface (API) in C. This interface is based on the UNIX[a] International OSI ACSE/Presentation Library specification, Version 1.0.0 dated October, 1990. The emerging X/Open interface at these layers is derived from this specification, but was not finalized at the time of product release. Through this interface, users can establish associations (connections) with another application process, send and receive data, and release or abort associations. This API also allows users to negotiate the association release. The ROSE services may be used in conjunction with the ACSE/Presentation services to perform ROSE request/reply operations.

Session Interface

OTS/9000 includes an application programmatic interface to the ISO Session layer. This API is a library of function calls providing developers open access to session services and the ability to develop applications with session layer peer–to–peer communication. The session API provides connection management for connection establishment, orderly release and aborts, and data transfer management for the exchange of normal and expedited data. This API also provides access to other session services such as token management, session synchronization, activity management, capability data, and exception reporting.

X/Open Transport Interface

OTS/9000 also includes XTI, an API offering open access to the transport services. HP's XTI has been developed specifically for OSI and complies with a subset of the X/Open Portability Guide, Version 3 (XPG3). XTI is implemented as a C library and enables processes on the same or different computers to communicate through the use of programmatic calls.

Coexistence

The X.25/9000, FDDI/9000, and LAN/9000 link products provide simultaneous support for both TCP/IP and OSI standards.

Functional Description

OSI ROSE and ACSE Services

These services reside at Layer 7 of the OSI Reference Model. OTS/9000 complies with ISO 9072 parts 1 and 2 (ROSE) and ISO 8649 and ISO 8650 (ACSE). ROSE supports the invoke, result, error, and reject operations.

OSI Presentation Layer

The Presentation layer corresponds to Layer 6 of the OSI Reference Model. OTS/9000 complies with ISO 8822/CCITT X.216 and ISO 8823/CCITT X.226. OTS/9000 provides the kernel functional unit, negotiated release, and normal mode connections.

OSI Session Layer

The Session layer corresponds to Layer 5 of the OSI Reference Model. OTS/9000 complies with ISO 8326/CCITT X.215 and ISO 8327/CCITT X.225 and T.62. OTS/9000 supports OSI Session version 1 and 2.

On session version 1, OTS/9000 supports infinite SSDUs on normal and typed data. Nine bytes of user data are allowed on abort; the maximum data size for expedited data is 14 octets; no user data is allowed on give tokens, give control, activity interrupt, activity discard. On other Session services, user data is limited to a maximum of 512 bytes.

On session version 2, OTS/9000 supports infinite SSDUs on normal and typed data. The maximum data size for expedited data is 14 octets. Extended user data up to 10240 bytes maximum is supported on all other Session services.

OTS/9000 supports the following session functional units: kernel, half–duplex, duplex, typed data, capability data, minor synchronize major synchronize, resynchronize, expedited data, exceptions, and activity management.

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OSI Transport Layer

The Transport layer corresponds to Layer 4 of the OSI Reference Model. OTS/9000 transport complies with ISO 8072/CCITT X.214 and ISO 8073/CCITT X.224 and T.70. User options include: expedited data, preferred and alternate classes, implicit or explicit flow control in class 2.

OTS/9000 supports TP class 0, 2, and 4 using Connection Oriented Network Service (CONS) and TP class 4 using Connectionless Network Service (CLNS) over X.25. OTS/9000 also supports TP class 4 using CLNS over 802.3 or FDDI Local Area Networks.

OTS/9000 running HP–UX 9.0 also supports Connectionless Transport Service (CTLS) over either X.25, FDDI, or 802.3 Local Area Networks. CLTS complies with ISO 8072 and is a transport layer datagram service. It consists of three services: send unit data, receive unit of data, and an error function. These services are supported over the CLNP network layer and are made available through the XTI programmatic interface.

Multi–System Distributed System Gateway (MSDSG)

MSDSG addresses the issue of internetworking between Connection Oriented (CONS) and Connectionless (CLNS) systems. The functionality is described in ISO Technical Report 10172 and is referred to as an Active Transport Layer Relay. OTS/9000 provides the MSVDSG functionality, so that systems on CONS networks may communicate at the Transport layer and above with systems on CLNS networks, using the OTS/9000 node as a relay.

OSI Network Layer

The Network layer corresponds to layer 3 of the OSI Reference Model. OTS/9000 running on HP–UX 8.0 supports both the 1980 and 1984 X.25 addressing schemes. OTS/9000 running on HP–UX 9.0 also supports the 1988 X.25 standards. 1984 NSAP addressing is supported over X.25 by taking advantage of the extended addressing facilities. OTS/9000 also supports the ISO 8345 CLNC Internet protocol and ISO 9542 ES–IS routing protocal.

Hardware and Software Requirements

	OTS/9000 S300/400 32069A	J2160A	OTS/9000 S700	OTS/9000 S800 32070A
C.03.00 Hardware	S330 or above, S400		S700	S800 except S890
C.03.00 Software	HP–UX 8.0 or 8.02		HP–UX 8.07	S8X7; HP–UX 8.02 other S800; HP–UX 8.0
C.04.00 Hardware	S330 or above, S400		S700	S800
C.04.00 Software	HP–UX 9.0 STREAMS/UX; **Must be ordered separately**			
Memory	16 MB memory 20 MB free disk space			
Links	X.25/9000 Link LAN/9000 Link FDDI/9000 Link			

Internet options include null subset, nonsegmenting subset, and full subset (discarding other subsets).

Product Requirements

HP OSI products are customer installable. OTS/9000 includes the software and manuals necessary to install, configure, use, and troubleshoot the product. X.25/9000, FDDI/9000, and/or the LAN/9000 Link is required. Concurrent purchase of HP MMS/9000 (P/N 32018A, J2161A, or 32019A), HP FTAM/9000 (P/N B1032A, J2163A, or B1033A), and/or HP X.400/9000 (P/N 32031A, J2162A, or 32032A) and/or X.500/9000 (P/N J2165A or J2153A) is optional. If updating from OTS/9000 Version C.03.00 or earlier, the services, FTAM, X.400, and MMS must be updated as well. Applications using XTI, the Session API, or APRI need to be recompiled and relinked.

Documentation

The following manuals are included with OTS/9000 running HP–UX 8.0:

32069–60001 OSI Planning and Troubleshooting Guide

32069–60002 HP–UX/9000 XTI Programmer's Guide
32069–60003 Installing and Administering OSI Transport Services
32069–60004 Session Access Programmer's Guide
32069–60005 ACSE/Presentation and ROSE Interface Programmer's
Guide

OTS/9000 running HP–UX 9.0 includes the manuals listed above as well
as the following addendums:

32069–90014 Addendum to Installing and Administering OTS
32069–90015 Addendum to XTI Programmer's Guide

For PICS information contact your local HP Sales office.

Ordering Information

For the Series 300 or 400, order P/N 32069A. You must also order one
of each of the options shown below.

Software Option
AAH   Software on DDS
AA0   Software on ╟" Cartridge Tape
AAU   Software on CD ROM

Operating System Option
APB   HP–UX version 8.0
APH   HP–UX version 9.0

For the Series 700, order P/N J2160A. You must also order one of the software and operating system options shown below. The other option is not required.

Software Option
AAH   Software on DDS
AAU   Software on CD ROM

Operating System Option
APB   HP–UX version 8.0
APH   HP–UX version 9.0

Other Option
0B0   Delete Manuals

For the Series 800, order P/N 32070A. You must also order one of the software, operating system, and processor options shown below. The other options are not requited.

Software Option
AAH   Software on DDS
AA0   Software on ╟" Cartridge Tape
AAU   Software on CD ROM
AA4   Software on QIC (Quarter Inch Cartridge)
AA1   Software on 1600 bpi tape

Operating System Option
APB   HP–UX version 8.0
APH   HP–UX version 9.0

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Processor Option
AH0 Tier 1 SPU
AEL Tier 2 SPU
AE5 Tier 3 SPU
AE6 Tier 4 SPU
AEN Tier 5 SPU
AEP Tier 6 SPU
AH1 Tier 7 SPU

Other Option
0B0 Delete Manuals

Processor Upgrades

Return credit is given to customers upgrading within the series 800 family. To order an upgrade, order P/N 32070A, select a software option, an operating system option , a processor option, and one of the following return credit options.

Upgrade Option
OGR Tier 1 SPU
OGE Tier 2 SPU
OC8 Tier 3 SPU
OGS Tier 4 SPU
OGT Tier 5 SPU
OGU Tier 6 SPU

Related Products

In addition to HP OTS/9000, the following HP OSI products are offered:

- HP X.400/9000
- HP FTAM/9000
- HP MMS/9000
- HP X.500/9000

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