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Open Transport 1.1: Component Technologies Q & A (3/96)

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TOPIC -----

This article is the Reference Q & A (questions and answers) on component technologies for Open Transport 1.1.

DISCUSSION -----

Question: What technology components comprise Open Transport?

Answer: Open Transport supports LANs and WANs and will integrate serial communications, modems, and remote (dial-up) networking in a consistent model for end-users, network managers, and developers. The Open Transport architecture consists of:

- standards based programming interfaces for applications developers and for network interface controller developers,
- a new cross-platform development model for integration of networking with the underlying operating system,
- a set of dynamic link-and-load memory management services,
- new implementations of Mac OS protocol stacks,
- new human interface applications and control panels, and
- a set of backward-compatibility support modules.

Question: What current Mac OS technologies and components will Open Transport replace?

Answer: When installed, Open Transport replaces the current Mac OS implementations of AppleTalk and TCP/IP (including the protocols and the "Network", "MacTCP", and "Admin TCP" control panels).

Over time, Open Transport is also designed to replace the Connection Manager and the Communications Resource Manager of the current Communications Toolbox architecture.

Question: Does that mean that Apple is migrating serial communications away from the Communications Toolbox (CTB)?

Answer: Partially, but not entirely. The CTB File Transfer and Terminal Managers continue to be supported and will be preserved in the Copland OS release - although on new Open Transport/Serial underpinnings.

Over time, plans call for the CTB Connection Manager and its tools to be phased out in favor of Open Transport. In particular, while the Copland release of Mac OS is expected to provide support for the Connection Manager APIs, at this time Apple has no plans to port the existing Connection Manager tools to Copland. Thus, Apple recommends that developers plan their update to Open Transport/Serial (and away from CTB Connection Manager) to coincide with (or precede) the availability of the Copland OS release.

Question: What standards are implemented in the Open Transport architecture?

Answer: Open Transport brings standards based networking into Mac OS with support for:

- the X/Open Transport Interface (XTI), the POSIX compliant API for support of networking applications,
- the Datalink Provider Interface (DLPI), for development of network interface controller (NIC) drivers,
- a port of a UNIX System V release 4.2 compatible STREAMs environment for network protocol developers.

Question: Did Apple develop the STREAMs environment for Open Transport?

Answer: To maximize the stability, performance, and robustness of Open Transport, Apple selected Mentat Inc. - the leading supplier of high performance kernel-level network software - to supply the STREAMs environment for Open Transport.

Mentat Portable STREAMs (MPS) is an independent fast, full-featured, multiprocessor safe version of the UNIX System V Release 4 STREAMs environment. Its incorporation into Open Transport provides a reliable platform for protocol development, including Apple's own implementation of a STREAMs based AppleTalk stack. MPS also allows easy porting from other platforms of third party protocols. MPS is the same implementation of STREAMs found inside many industry standard UNIX operating systems, including those from IBM and OSF, as well as other platforms such as Novell NetWare.

Question: Did Mentat supply other technology to Apple in connection with Open Transport?

Answer: Yes. Mentat supplied the source code base for Open Transport/TCP, and has worked closely with Apple on the development of an archetypal high-performance DLPI driver.

Mentat TCP (MTCP) is a robust implementation of TCP/IP that conforms with all industry standards, and is the basis of another leading workstation TCP stack. It makes a significant contribution to the performance and functionality of Open Transport/TCP.

Question: Is there more information available about Mentat Inc. and its products?

Answer: Mentat maintains a presence on the world wide web at:
<http://www.mentat.com>

Question: What dynamic link-and-load technology is used by Open Transport?

Answer: On 680x0 Mac OS systems, Open Transport uses the Apple Shared Library Manager (ASLM) 2.0. On PowerPC Mac OS systems, Open Transport is based on a combination of ASLM (for 680x0 applications) and the newer Code Fragment Manager, CFM (for PowerPC applications).

Question: Which protocols are supported by Open Transport?

Answer: Open Transport version 1.1 includes implementations of AppleTalk, and TCP/IP, and consistent API access to serial communications.

Apple and third parties are working to add support to Open Transport for Point to Point Protocol (PPP), NetWare (NCP/IPX), Windows 95 (SMB/TCP/NetBIOS), DECnet, LAT, and X.25. Some of these additional capabilities may be incorporated or bundled with future releases of Apple Open Transport.

Question: Are there any changes in AppleTalk or TCP/IP with Open Transport?

Answer: Yes. The new Open Transport/AppleTalk and Open Transport/TCP protocol stacks both have been implemented as Open Transport STREAMS modules and as native code on PowerPC Mac OS computers. They support the new XTI APIs, and their shared libraries can be dynamically loaded and unloaded as needed.

Both protocols also support dynamic reconfiguration (changed settings without requiring reboot), and feature new configuration applications offering Basic, Advanced, and Administrator tools. The new configuration applications - AppleTalk and TCP/IP - replace the older control panel implementations - Network, MacTCP, and AdminTCP. For backward compatibility the new applications continue to be stored in the Control Panels folder.

Each protocol stack also offers addition protocol-specific feature enhancements.

Question: When should users update their systems to Open Transport?

Answer: With the availability of Open Transport v1.1, Apple encourages all Mac OS System 7.x users with systems meeting the minimum configuration requirements to take advantage of the increased performance and new features provided by System 7.5.3 and Open Transport v1.1.

Question: Does this mean that Apple expects everyone to stop using current AppleTalk and MacTCP?

Answer: Open Transport is designed to replace current AppleTalk (58.x) and MacTCP (2.0.x) on Apple Macintosh and Mac OS compatible systems meeting minimum configuration requirements. The transition will happen over time, as developers deliver Open Transport-ready and enhanced applications, as users gain experience with Open Transport, and as Apple continues to enhance Open Transport.

Open Transport is not designed to run on 68000 or 68020 Macintosh systems, which should stabilize on current versions of classic AppleTalk and MacTCP software. If Open Transport is installed on these systems, classic networking will still be selected and loaded at system start-up time.

Developers are strongly encouraged to begin all new development for Mac OS using Open Transport.

Question: What files are installed as a part of Open Transport?

Answer: When installed, Open Transport adds the following to the Control Panels Folder:

- AppleTalk - the control panel application replacing the classic Network control panel.
- TCP/IP - the control panel application replacing the classic MacTCP and AdminTCP control panels.

Open Transport adds the following files to the Extensions Folder:

- Shared Library Manager and Shared Library Manager PPC - extensions that implement the Apple Shared Library Manager for 680x0 and PowerPC, respectively.
- OpenTransportLib and Open Transport Library - shared libraries that implement core Open Transport services on PowerPC systems. The first library contains the modules and APIs for PowerPC native applications; the second for 680x0 applications running in emulation on PowerPC systems.
- OpenTptAppleTalkLib and Open Tpt AppleTalk Library - shared libraries that implement Open Transport AppleTalk protocols and services on PowerPC systems. The first library contains the modules and APIs for PowerPC native applications; the second for 680x0 applications running in emulation on PowerPC systems.

- OpenTptInternetLib and Open Tpt Internet Library - shared libraries that implement Open Transport TCP/IP protocols and services on PowerPC Mac OS systems. The first library contains the modules and APIs for PowerPC native applications; the second for 680x0 applications running in emulation on PowerPC systems.

- Open Transport 68K Library - shared library that implements core Open Transport on 680x0 systems.

- Open Tpt ATalk 68K Library - shared library that implements Open Transport AppleTalk protocols and services on 680x0 Mac OS systems.

- Open Tpt Inet 68K Library - shared library that implements Open Transport TCP/IP protocols and services on 680x0 Mac OS systems.

Depending on the specific system configuration, the following Extensions also may be installed:

- Ethernet (Built-In) - code resource to allow access to built-in Ethernet port.

- Serial (Built-In) - code resource to allow access to built-in serial port.

Open Transport documentation is also provided in electronic format:

- Open Transport Guide Additions - AppleGuide database that updates the Macintosh Guide with information about Open Transport (System 7.5 only);

- a User's Guide (in Acrobat Reader format) which parallels the printed manual;

- the Open Transport Read Me containing any late-breaking news,

- a text file called "Open Transport 1.1 Technical Info" which contains a distillation of this Q&A.

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