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Open Transport: Compatibility Q & A (3/96)

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TOPIC --

This article is a series of questions and answers on compatibility for Apple
Open Transport.

Open Transport 1.1 is now available, and Apple recommends upgrading to it. Also
refer to Open Transport 1.1 Reference Questions and Answers Tech Info Library
articles for the most recent information.

DISCUSSION ---

Question: Is Open Transport interoperable with installed AppleTalk or TCP/IP
networks?

Answer: Open Transport is compatible with existing AppleTalk and TCP/IP network
and network applications at the "packets on the wire" level. Organizations can
introduce one, a few, or hundreds of new Macintoshes running Open Transport into
their environment without worrying about interoperability with existing
networking services.

Question: Will Open Transport require organizations to make changes in network
administration, planning, or design?

Answer: The first Open Transport protocols -- AppleTalk and TCP/IP -- offer new
features that give a network manager more flexibility and control. Some of these
features, when implemented in a network environment will require additional
thought and planning by a network manager.

In particular, Open Transport/AppleTalk adds support for the use of static
(manually assigned) AppleTalk node addresses. If implemented, a network manager
may prefer to assign addresses based on a pre-designed protocol address

management plan.

Open Transport/TCP adds support for the Dynamic Host Configuration Protocol (DHCP). DHCP allows network managers to allocate TCP/IP addresses and other configuration information from a DHCP server. Optimum deployment of DHCP services within an enterprise does require planning.

Question: Which DHCP servers are supported by Open Transport/TCP?

Answer: DHCP is an Internet Engineering Task Force (IETF) standards-track protocol. Apple's implementation conforms to the current versions of the applicable RFCs. To date, Open Transport/TCP has been tested successfully against the following DHCP server implementations:
• Competitive Automation (CA)
• FTP Software
• Hewlett Packard HP-UX
• Microsoft Windows NT Advanced Server
• Silicon Graphics (SGI)
• Sun Solaris
• Sun SunOS
• TGV

Question: What about compatibility with existing applications and network extensions?

Answer: Open Transport provides "backward compatibility" services in five areas:
• To support existing AppleTalk applications
• To support existing MacTCP applications
• To support existing Chooser devices
• To support existing applications dependent on the Mac OS LAP Manager
• To support existing applications dependent on the Mac OS classic network driver architecture.

Open Transport also provides compatibility software to ease the transition from classic NuBus NIC drivers to the new DLPI drivers and PCI bus cards.

Apple is working with developers to compile and publish a detailed compatibility and solutions guide for Open Transport. This is expected to be available later this calendar year.

Question: How is backward compatibility for AppleTalk implemented?

Answer: AppleTalk applications backwards compatibility is accomplished by intercepting all AppleTalk networking calls at the ".ddp" driver API. Above this protocol layer, applications written to the classic AppleTalk APIs continue to rely on the classic (680x0 based) implementation of AppleTalk. Calls to the ".ddp" driver are translated to the corresponding Open Transport XTI calls and are then passed to the new native implementation of DDP for processing. The process is reversed for incoming packets.

Using this approach, backwards compatibility is very robust - the classic implementations of ADSP, ASP, ATP, NBP, ZIP, and PAP are actually present (vs. simply mimicked). This also decreases the total memory footprint of backwards compatibility as compared to an implementation based on individual adaptation layers for each of the AppleTalk protocols. The primary disadvantage of this approach is that applications relying on backwards compatibility do not gain any meaningful performance increases on Power Macintosh; only native DDP is actually in use in these cases.

Open Transport/AppleTalk also includes broad support for existing applications and devices that rely on the existing Chooser or the Network Control Panel software for selection and configuration, known as "cdevs" and "adevs" respectively.

Question: How is backward compatibility for MacTCP implemented?

Answer: TCP/IP (MacTCP) applications backwards compatibility is accomplished by intercepting all MacTCP networking calls at the ".ipp" driver level. Calls to the ".ipp" driver are translated to corresponding Open Transport XTI calls and then passed to the native TCP/IP stack for processing. The process is reversed for incoming packets.

This approach allows all TCP/IP applications to benefit from the native implementation of the TCP/IP protocols on Power Macintosh, at least to some degree. While the backwards compatibility layer itself must run as 680x0 code, most of the handling of the packet happens in the new native Open Transport/TCP implementation. The drawback of this implementation is that "warts and all" backward compatibility is potentially less robust; applications depending on idiosyncrasies of MacTCP are more likely to need an update.

TCP/IP backward compatibility also includes targeted support for existing software products that rely on the MacTCP (or AdminTCP) Control Panel software for configuration. Support for these software modules, known as "mdevs", is more limited than that provided for "adevs", for certain technical considerations. A listing of supported "mdevs" is included with the Open Transport release documentation.

Question: Are there other known limitations to backward compatibility?

Answer: Yes, a few. Applications that rely on undocumented APIs or examine private memory data structures in the current AppleTalk or MacTCP implementations will not be fully compatible with Open Transport. Examples of this include the MacSNMP AppleTalk Agent and the shareware utility MacTCP Watcher. Updated versions of such software will be required.

For dial-up TCP/IP access, current implementations of SLIP and PPP (known as "mdevs") will not be able to auto-dial (automatically connect to the service provider when launching a TCP/IP application). Connections can, however, be made manually. New versions of SLIP and PPP will be able to support auto-dial.

Certain networking extensions - such as MacIPX from Novell, or PATHWORKS from Digital Equipment Corp. - as well as a few applications such as Insignia Solutions SoftWindows bypass AppleTalk and MacTCP networking APIs, and talk directly to the Macintosh OS Ethernet driver software. With the introduction of Open Transport and PCI bus to the Macintosh, this driver architecture and software has changed.

Open Transport backward compatibility allows these existing networking extensions and applications to communicate with the new DLPI based Ethernet driver as if it were a "classic" Ethernet device. This aspect of backward compatibility is limited to the built-in Ethernet adapter of Power Macintosh systems with PCI bus. Thus, current versions of such network extensions and applications (those that write directly to the Ethernet driver) cannot access PCI based network interface cards.

Apple is working directly with developers to identify and address all problems as quickly as possible.

Question: What about MacSNMP? When will it be revised to work with Open Transport?

Answer: MacSNMP v1.5 is under development and is planned to ship early in 1996. This release will include support for MIB II statistics from the Open Transport/TCP stack, transport of SNMP data over Open Transport/TCP, and support in the Macintosh System MIB for PCI interface cases.

Question: Is the Power Macintosh 9500 with Open Transport recommended as an AppleShare or PowerShare server platform?

Answer: Not at this time. As is discussed elsewhere in this document, to meet customer expectations in regards to anticipated increases in flexibility and performance, the AppleShare and PowerShare server applications need to be accelerated for Power Macintosh and adopt the new Open Transport APIs. Also, Apple must complete development and ship Open Transport version 1.1. Work on these projects is under way; additional details available will be available at a later date.

Article Change History:
26 Mar 1996 - Added statement on Open Transport 1.1 release.
27 Nov 1995 - Added keyword and reference to OT 1.0.8 compatibility article.
22 Aug 1995 - Changed title.

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