Apple IP Gateway: Overview (12/94)

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TOPIC ---

This article provides an overview of the Apple IP Gateway.

DISCUSSION --

The Apple IP Gateway, a DDP/IP (Datagram Delivery Protocol/Internet Protocol)
gateway, is Macintosh software which allows Macintosh computers using AppleTalk
(usually Remote Access or LocalTalk) to access IP services on an IP internet.
Typical services are Telnet, E-mail, WAIS, and Gopher which can be used to
access internal company hosts or data on the Internet. MacTCP is required on
both the client Macintosh (Apple Remote Access (ARA) or LocalTalk) and the
gateway Macintosh.

The Apple IP Gateway could run on a Remote Access server (MultiPort or
personal), an Apple Internet Router, or any other Macintosh on the network.
Administration of the gateway is provided through a local application for setup
and monitoring, along with an SNMP agent for remote monitoring.

Overview

A DDP/IP gateway is a node that sits both on an AppleTalk and an IP network and
translates packets between them. The basic purpose of the DDP/IP gateway is to
allow Macintosh clients on an AppleTalk only network to have access to TCP/IP
hosts on an IP network. In the past, the main purpose for this type of service
was the large number of Macintosh computers on LocalTalk. Recently, however,
another less obvious use of DDP/IP has emerged. This is the growing number of
ARA users. They too, need DDP/IP services because the ARA connection allows
only AppleTalk packets to be transmitted.

To accomplish this functionality, Macintosh clients using ARA or other forms of
AppleTalk send out IP packets that are encapsulated in DDP (by MacTCP) to the
DDP/IP gateway. The gateway strips off the DDP header and the packet is sent to
the IP host on the IP internet. When an IP packet comes in on the IP port of
the gateway, a DDP header is added and the packet is sent to the correct
Macintosh client. If the packet is larger than allowed by AppleTalk (576
bytes), it is fragmented before being sent.

Most DDP/IP gateways that currently exist support both forwarding and routing

of IP packets. The Apple IP Gateway only supports forwarding. That is, the Macintosh computers on the AppleTalk side of the gateway are an extension of the IP network as opposed to a separate subnet.

In addition to the basic packet translation service, the DDP/IP gateway provides address assignment services as well. One of the major advantages AppleTalk has over IP is that an AppleTalk node does not have to be configured with an address by a network administrator. The address assignment functionality of the gateway attempts to simulate this advantage. The gateway is configured with a range of IP addresses and can give them out to Macintosh computers who request them. Macintosh clients can also manually configure their own address if desired.

The DDP/IP gateway is useful on its own, but becomes even more powerful when combined with ARA servers or the Apple Internet Router (AIR). Combined with ARA, it allows ARA clients to access IP networks. Combined with AIR, it allows all of the AppleTalk networks on the router's AppleTalk internet to access IP networks.

The main components of the product are:

• System extension to load the gateway.
• Driver which implements the core gateway functionality.
• Administrative application for local configuration and monitoring.
• SNMP agent for remote monitoring.

The basic configuration required is a Macintosh II or later with System 7.1 or later, AppleTalk 58.1.3 or later, MacTCP 2.0.4 or later, and 4 MB of RAM. Any AppleTalk connection type is be supported (LocalTalk, EtherTalk, or TokenTalk) on the DDP side of the gateway, and Ethernet is be supported on the IP side of the gateway. The product runs in emulated mode on Power Macintosh computers.

MacTCP is required on the client and is configured to specify that a DDP/IP gateway is to be used and to indicate which zone it is in. A Macintosh client can request an IP address from the DDP/IP gateway at start-up and maintain the use of it until shutdown or reboot.

Because the clients may be in zones different from that of the gateway, it is difficult to know exactly when users are finished using their IP address. The correct method is to issue an NBPConfirm for the IP address in question and to time out the address when these confirms are not replied to for a given time. However, NBPConfirms are zone wide and the gateway does not know the zone of each client. The Apple IP Gateway implementation uses ICMP Echo (PING) to make sure the clients are still alive instead of NBPConfirms to avoid this problem.

Article Change History:
09 Dec 1994 - Made corrections for technical accuracy.
12 Sep 1994 - Changed product name to reflect finished goods.

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