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EtherTalk Card: A Description (Discontinued)

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TOPIC -------------------------------------------------------------

This article should answer some of the questions that you've been asking
about the EtherTalk card: what it is and what it does.

DISCUSSION --------------------------------------------------------

What It Is
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The EtherTalk card is a low-level transport mechanism that allows a
variety of protocols to be transported over an Ethernet network. This
means that the EtherTalk card addresses itself only to the lower two
layers of the ISO reference model: the physical layer and the data link
layer.  The upper layers of the session are controlled by whatever
protocol you wish to implement over these two lower layers.  Two examples
of upper layer implementations: AppleTalk and TCP/IP.

What It Does
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The card, using a software driver, places these upper layer protocol
packets in the data field of the Ethernet transport frame. The Ethernet
frame properly addresses these packets to their 'target' devices, which
strip off the frame and then process the packet inside. On the Ethernet
wire, no device really cares what is contained in the frame unless that
frame is directed at that device. This means that you can have devices
using different upper layer protocols (such as TCP/IP, XNS, or AppleTalk)
on the same physical wire. These encapsulated packets can co-exist on a
single Ethernet without interference, because the devices don't look at
what's inside unless the packet is directed specifically at that device.

The software shipped with EtherTalk is a driver for the Macintosh
operating system. This driver lets AppleTalk packets be redirected to the
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EtherTalk card rather than the printer port. The EtherTalk card then encapsulates the AppleTalk packet in an Ethernet frame, for delivery to a device on the Ethernet that understands AppleTalk packets. An example: a Macintosh II running AppleShare with EtherTalk as a 'server,' and a Macintosh II with EtherTalk as 'workstation.' Both devices are directly connected to Ethernet and use Ethernet only as a physical connection with delivery assurance and error correction.

This card can also be used to encapsulate other upper-level protocols with an Ethernet frame, for transport on the network. An example: the TCP/IP support under A/UX. Here, the Ethernet frame is the same as used in the earlier example, but the packet in the frame is TCP/IP rather than AppleTalk.

It's possible to use other protocols, such as XNS, with the same card and using the same Ethernet frame. The only thing that changes is what's in the frame.

Using Ethernet, it's also possible to have one device 'push' more than one protocol over the same physical connection. An example: a VAX running VMS, with AlisaTalk and DECnet installed. AlisaTalk will deliver AppleTalk packets to the VAX, which will encapsulate them with an Ethernet frame and send them out onto the Ethernet network. The VAX can also 'push' DECnet packets encapsulated in the Ethernet frame over the same card and physical connection. This happens serially, because Ethernet is a baseband network. In the example, the AppleTalk packet goes out first, followed by the DECnet packet over the same wire, following the rules of CSMA/CD, which provides the delivery assurance and error correction.

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