



WEBSTER MultiPort/LT

Macintosh Connectivity

Internet Gateway

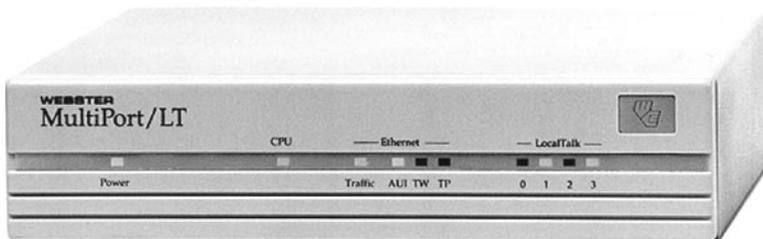
Macintosh Network Builder

LocalTalk/AppleTalk Router

Remote Access Dial-in Server

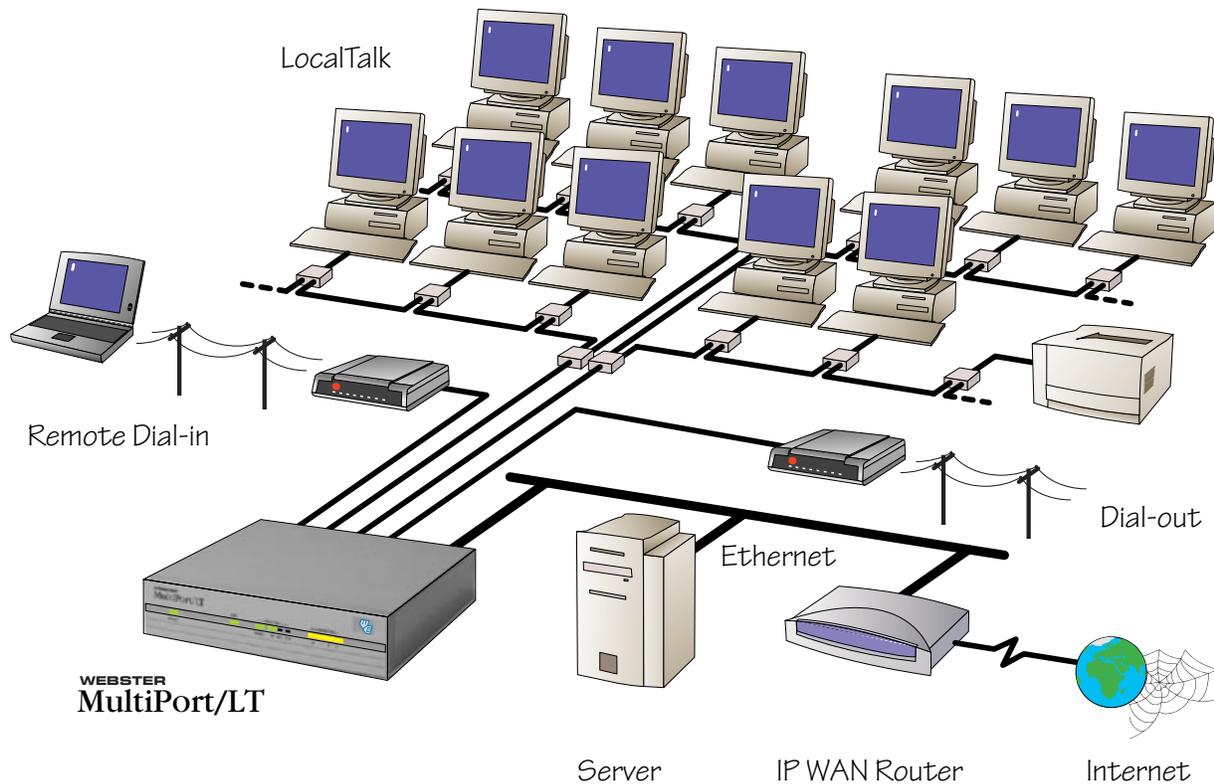
Network Modem Dial-out Server

Multiprotocol Ethernet Gateway



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- Four Apple serial ports may be flexibly assigned as LocalTalk or modem connections, in any combination.
 - Low cost networking through use of the computer's built-in LocalTalk port and daisy-chain topology.
 - High bandwidth connectivity to the campus Ethernet backbone.
 - Compatible with existing or planned category-5 structured wiring systems.
 - Network segmentation provides high performance and relief of congestion.
 - Scalable from small to very large networks.
 - Full TCP/IP and Internet connectivity to LocalTalk based clients.
 - DECnet Level-1 routing to LocalTalk based clients.
 - Unites remote AppleTalk networks over the Internet using IPTalk-2 tunneling.
 - Establishes chooser zones, and zone-based filtering controls, for efficient logical network structuring and security.
 - Supports dial-in remote access through external modems.
 - Supports local network dial-out modem serving, through shared external modems.
 - Network sharing of serial devices such as printers, plotters or device console ports.
 - Perfect connectivity solution for legacy Apple-IIs, early Macs, Newton and eMate; and for current Macs with moderate network usage.
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Product Guide



“ There is no other networking system in the world that provides this plug-and-play ease of use, and low, low cost ”

Figure 1

The "Swiss Army Knife" of Macintosh computer networking, Webster MultiPort/LT is at once a four-channel AppleTalk Router, Apple Remote Access Server, Network Modem Bank Server, and Ethernet and Internet Gateway. It has four Apple standard serial ports, which may be individually assigned as LocalTalk connections for AppleTalk routing, or as modem connections for remote dial-in or dial-out service, in any combination. A tri-media Ethernet connection provides EtherTalk, TCP/IP and DECnet access to the corporate network backbone, and to the Internet.

Let's Talk about LocalTalk

Nearly every Macintosh computer ever produced has a LocalTalk networking connector at the rear, for free. A few dollars buys you a PhoneNET adapter and a length of phone wire. With nothing more than this you can easily daisy-chain together as many Macs as you like, and create a network. The AppleTalk Protocol which runs over this network is self-configuring, and comes free with the Mac OS. There is nothing left to do but open your chooser and find the printers, file servers and other resources all waiting out there for you. There is no other networking system in the world that provides

this plug-and-play ease of use, and low, low cost.

For this self-configuring magic to work, all the AppleTalk nodes within a segment must maintain a background dialog with each other. When more than about ten or fifteen nodes are sharing a single physical segment, this management overhead begins to consume a significant portion of the limited 230Kbit/sec LocalTalk bandwidth. Then you will notice diminished throughput over your network.

Introducing the MultiPort/LT Router

One MultiPort/LT Router allows you to



economically segment a large LocalTalk network into four smaller and faster logical subgroups; routing wider ranging traffic between the ports. You can build uncongested networks of up to 60 Macintoshes by connecting 10 to 15 users to each port of the MultiPort/LT (Figure 2). By stacking MultiPort/LTs on the Ethernet backbone, you can construct efficient LocalTalk networks supporting thousands of connected users (Figure 3).

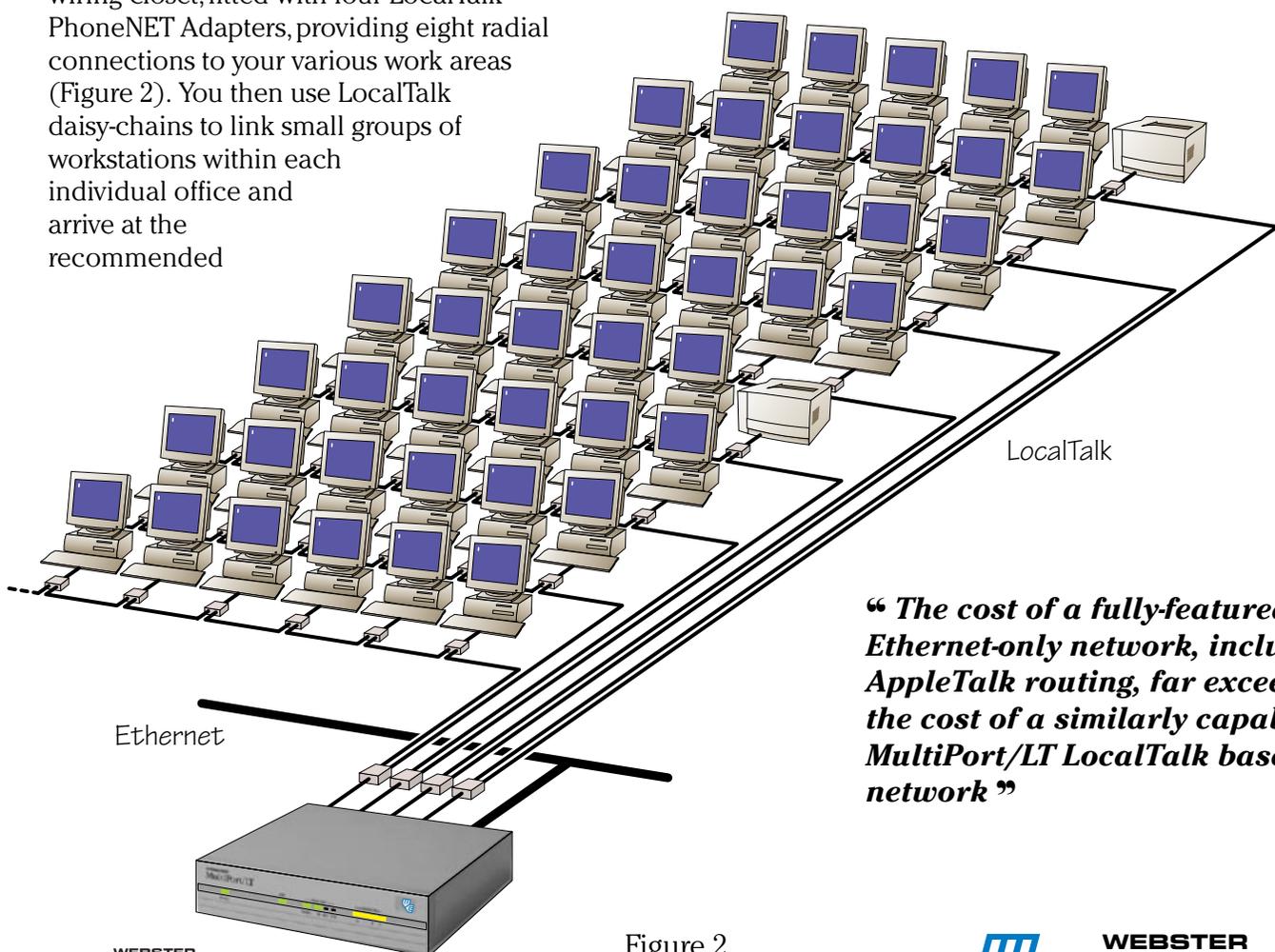
Structured Wiring Systems and the MultiPort/LT

Modern office buildings are fitted with a central wiring closet to house the network routers, hubs and communications equipment; and radial twisted-pair wiring to each individual workstation. This is somewhat at odds with LocalTalk's daisy-chain topology. An easy compromise is to locate your MultiPort/LT in the wiring closet, fitted with four LocalTalk PhoneNET Adapters, providing eight radial connections to your various work areas (Figure 2). You then use LocalTalk daisy-chains to link small groups of workstations within each individual office and arrive at the recommended

10 to 15 nodes per MultiPort/LT port. Alternatively, you may decide to interpose LocalTalk hubs or star controllers in each subnet, providing an individual radial connection to each workstation, and so conform fully with Structured Wiring conventions (Figure 4).

Do you really need Ethernet?

Even with congestion out of the way, it is still true that LocalTalk has a fundamental bandwidth limitation of 230Kbit/sec, versus a theoretical maximum of 10MBit/sec for standard Ethernet. In point of fact, LocalTalk speed is sufficient for most office and classroom situations. It is equivalent to four multiplexed ISDN B-channels. It is no obstacle for printing, electronic mail, and small file sharing. And, it is not generally a significant factor in the end-to-end performance of Internet browsing software



“ The cost of a fully-featured Ethernet-only network, including AppleTalk routing, far exceeds the cost of a similarly capable MultiPort/LT LocalTalk based network ”

Figure 2

“ By stacking MultiPort/LTs on the Ethernet backbone, you can construct efficient LocalTalk networks supporting thousands of connected users ”

such as Netscape Navigator, where such factors as remote server congestion or pipeline congestion are more likely to dominate.

LocalTalk would not be appropriate for applications requiring raw bandwidth, such as live video or frequent transfer of very large multimedia files. In these cases, even 10MBit/sec Ethernet is frequently inadequate. The fact remains that basic LocalTalk bandwidth is more than adequate for a typical user.

Only some of the more recent Macintosh computers come equipped ready for 10Base-T Ethernet. Depending on model, average cost for a 10Base-T Ethernet interface is \$100. Many Macintosh models need to be disassembled to install adapter cards, which entails the cost of skilled labor. Special structured cable runs must be installed from each and every workstation to a central wiring closet. Hubs are required with enough ports to receive each and every radial cable run. To do all this from scratch will cost you between \$500 and \$1000 per connected computer.

By contrast, the Webster MultiPort/LT allows you to build fast, efficient LocalTalk based networks. MultiPort/LT enables you to route between four independent LocalTalk subnets, and to the corporate Ethernet backbone. With a conservative 12 or 13 nodes on each subnet, around 50 Macintosh computers can be efficiently networked at a total cost of around \$50 per connected computer.

At many sites, structured wiring systems have

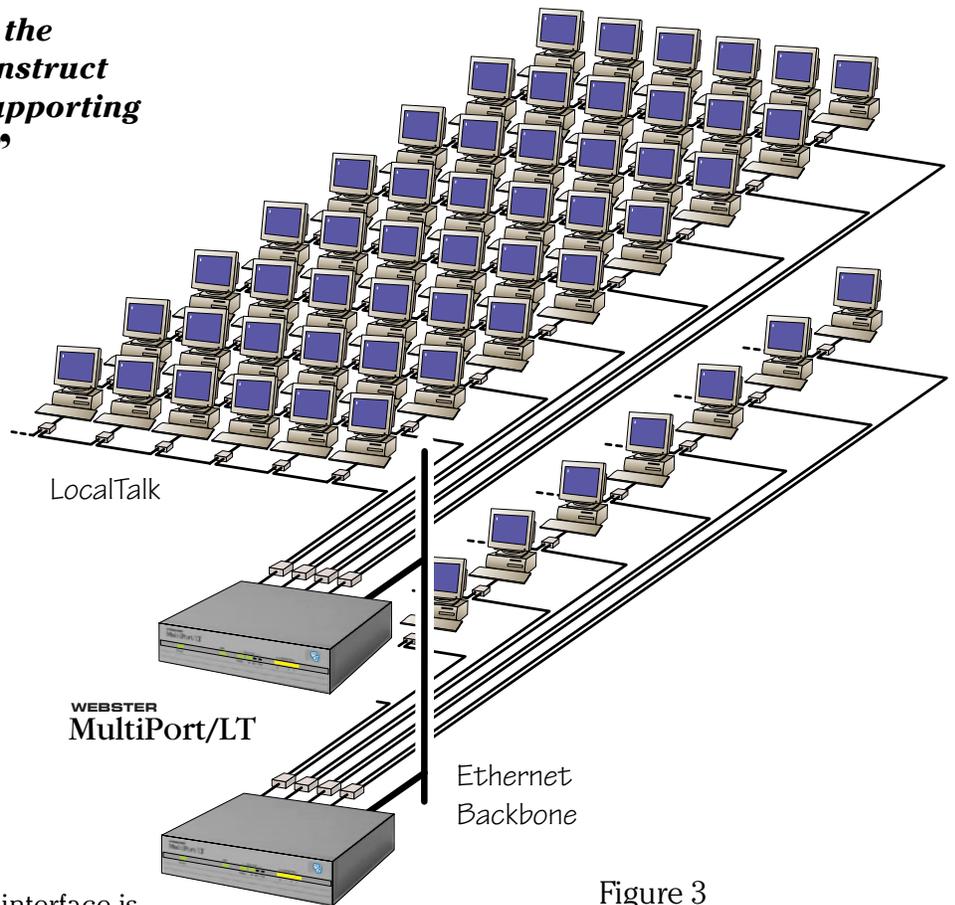


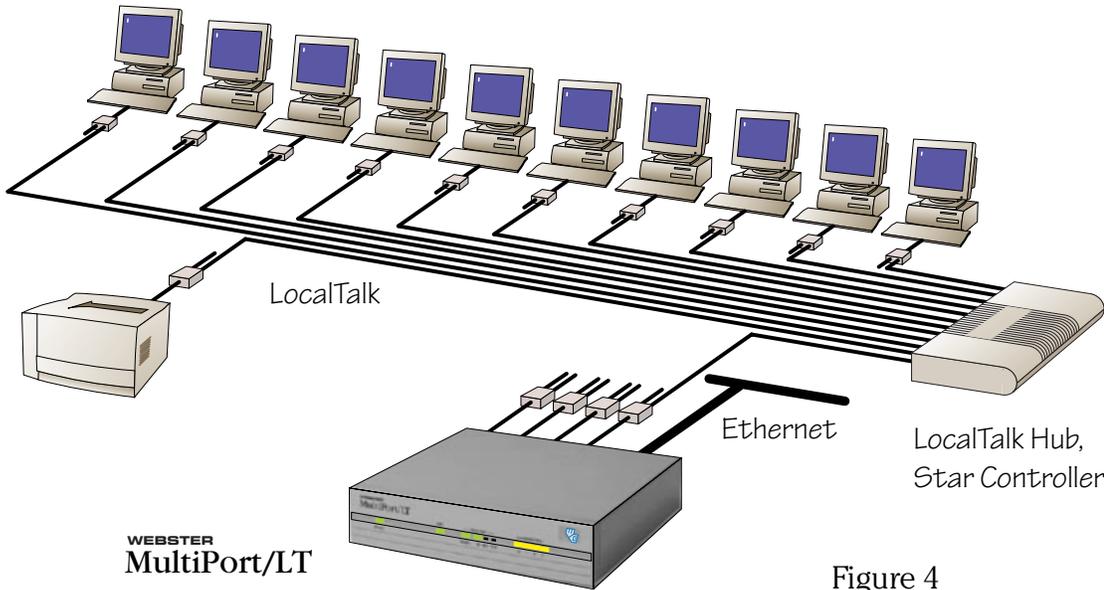
Figure 3

already been installed, which is required in any case for PC's, Unix workstations, and Macintosh users with heavy bandwidth needs. In these situations, there are still cost and other benefits in using MultiPort/LT and LocalTalk for the remaining Macintosh computers.

Tip: To accommodate 10Base-T Ethernet, structured wiring systems typically employ 4-pair RJ45 connectors. These are physically wider than the 2-pair RJ11 connectors used by the LocalTalk PhoneNET system. Fortunately however, the narrower RJ11 plugs are mechanically and electrically compatible with RJ45 sockets. LocalTalk, Ethernet and even regular telephone connections may be freely intermixed in structured wiring systems.

Why do you need a Router?

Routers divide the network into physically separate segments, and confine management



“ The fact remains that basic LocalTalk bandwidth is more than adequate for a typical user ”

Figure 4

traffic within these segments. Also, user traffic wholly within a given segment does not travel outside that segment. User traffic which must travel to another segment appears only in those two segments and the pathway between, never elsewhere. Routers eliminate network congestion by managing and controlling the broadcast of unnecessary data. This is especially important when dealing with "chatty" protocols like AppleTalk.

Any number of MultiPort/LT routers can be distributed on the corporate Ethernet backbone. LocalTalk-based networks may be scaled to thousands of connected computers by the simple process of divide-and-conquer. Because traffic is confined within the segments of each router, this approach leads to a quiet, lightly loaded Ethernet backbone.

Routers also allow you to create logical "Zones", which helps to organize access to system resources through the chooser. The MultiPort/LT further provides zone- and device-based filtering, which can be used to limit access by certain users to specified resources.

By contrast, the simple Ethernet wiring system just described still provides only a wide, flat network. There is no traffic segmentation, no logical zones and no access security. The traffic

congestion problem is not solved, merely deferred, only to resurface again when the number of Ethernet-connected nodes approaches 100. To overcome congestion at this stage would now require the purchase of high-end Ethernet-based AppleTalk routers, at considerable additional expense.

The cost of a fully-featured Ethernet-only network, including AppleTalk routing, far exceeds the cost of a similarly capable MultiPort/LT LocalTalk based network. The actual performance advantage in many typical scenarios is minimal.

Tip: AppleTalk protocol permits the creation of multiple zones on any given Ethernet segment, with each device flexibly assigned to its own logical zone within the same physical segment. This is valuable, because your organization's structure is not necessarily duplicated by your physical network layout. LocalTalk segments do not have this flexibility. Consequently, if you attempt to couple LocalTalk and Ethernet segments using LocalTalk bridges, hubs, StarControllers, EtherSwitches or any other bridge-level device, you will actually impose LocalTalk's single-zone limitation on the entire connected Ethernet segment. Only a Router, such as the MultiPort/LT, will preserve the Ethernet's multiple-zone capability.

Remote Access Server

You may assign any or all of the four MultiPort/LT serial ports as Modem Ports, for connection to the telephone network through external modems or ISDN system Adapters (Figure 5). Remote Macintoshes running Apple Remote Access (ARA) client software are able to dial in to the MultiPort/LT and gain access to all facilities of the corporate network, as if they were connected locally. The MultiPort/LT fully accepts both ARA Version 1 and ARA Version 2 clients, and automatically detects which version is connecting. The connected phone lines are commonly grouped in the exchange as a rotary switch, so that remote users need only deal with one telephone number. Where more than four modem lines are required, MultiPort/LTs are easily stacked via the Ethernet connection.

Serial ports are capable of speeds up to 128Kbps, and are suitable for use with virtually any modem or compatible ISDN system adapter.

MultiPort/LT supports all standard features of ARA 2, including encrypted passwords, user-changeable passwords, per-user connect time limits, and user callback for security and

centralized billing. A detailed log is available to the system administrator of all dial-in attempts and events.

In addition, many valuable extensions to the ARA specification are provided, including roaming callback, password expiry with grace logins, and sophisticated user grouping provisions for zone and device based access controls. The MultiPort/LT ARA function is implemented as a fully-featured AppleTalk Routing logical network, in cooperation with the LocalTalk and Ethernet routing networks.

TCP/IP and DECnet services are extended to the remote Macintosh user for seamless access to corporate Unix and Digital hosts.

Using Apple's ARA dial-in client software and the MultiPort/LT, home based or traveling users can access the corporate or campus network "almost like being there". You can access all corporate resources for which you are authorized, including personal files, corporate file servers, printers, or even the Internet via the corporate Internet feed.

“ almost like being there ”

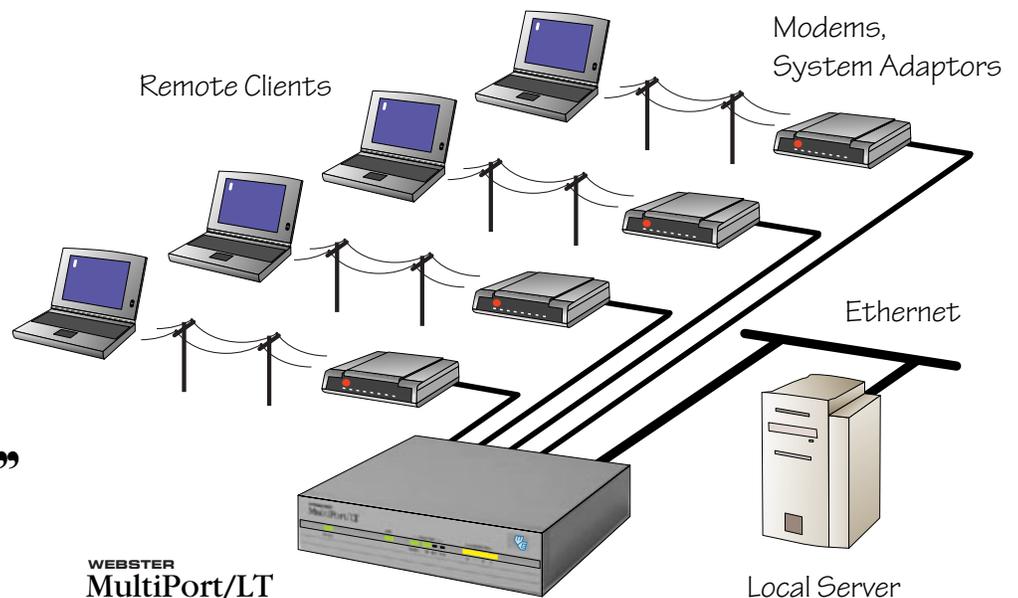


Figure 5

Network Modem Server

Complementing MultiPort/LT's dial-in services, the one to four modems or ISDN System Adapters connected to the serial ports are equally accessible for dial-out purposes from locally networked Macintosh clients (Figure 6). The MultiPort/LT acts as a network modem server, in conjunction with special modem-redirection client software in each Macintosh. The modems are automatically shared on a demand basis between the dial-in and dial-out users.

Dial-out clients may use any software or application which either supports Communication ToolBox (CTB) devices, or expects to see a directly connected modem and telephone line. This includes terminal emulators, fax-modem applications, ARA, PPP or SLIP clients, etc. Port redirection client software, available from Webster, captures the modem traffic and redirects it over the LocalTalk or Ethernet network to a cooperating server component in the MultiPort/LT. This in turn assigns an idle modem to the task and completes the connection.

You no longer have to provide a separate modem and telephone line to each desktop requiring dial-out services. You make a smaller

investment in shared hardware on an as-needed basis. In addition, the password protection and access filtering security features of the MultiPort/LT provide an access "firewall" against sneak paths in and out of the corporate network. All dial-out attempts and events are logged for access by the system administrator.

When several modems are connected to one or more MultiPort/LT, they may all be shared as a single group for dial-out purposes. It is not necessary for the user to "search" for an idle modem: the MultiPort/LT server makes the assignment and connection automatically and transparently. When all modems are busy, the user can elect to be notified as soon as a modem becomes available.

Suggested applications include desktop fax services, bulletin board services, PPP Internet connections, CompuServe, America Online, and ARA dial-out to branch offices.

Use of the dial-out function is not just limited to modems. Any serial device which would normally be connected directly to a Macintosh is similarly accommodated, such as serial printers or plotters. Even the console ports of minicomputers, network hubs or other components may now be shared over the

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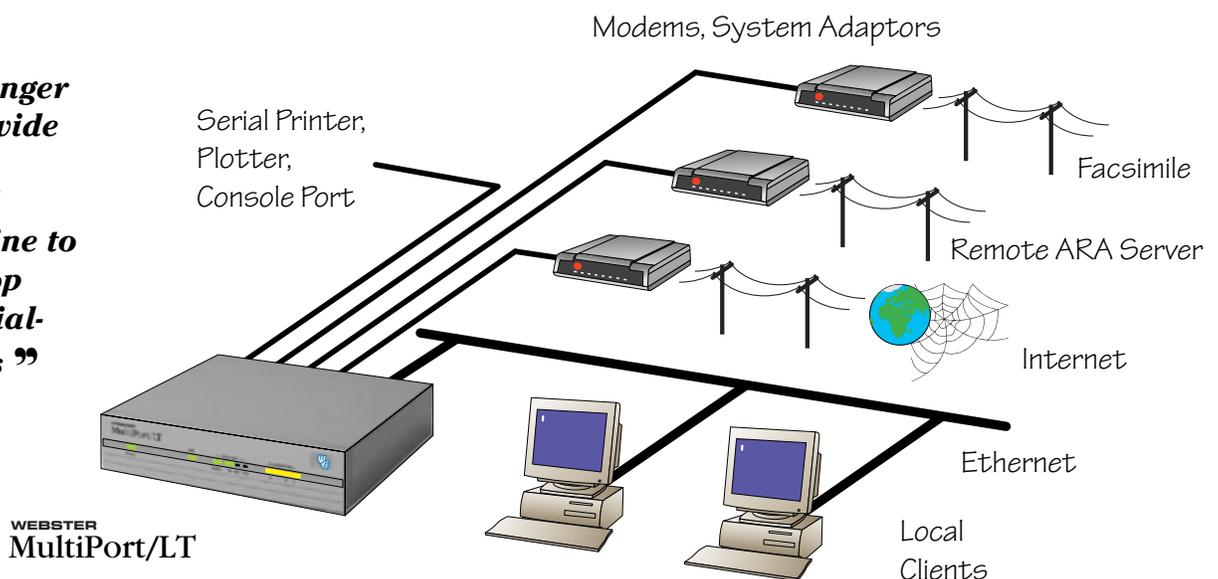


Figure 6



network, using terminal emulation software such as ZTerm.

The MultiPort/LT dial-out function is a special implementation of Stalker Software Inc's PortShare Pro protocol. The PortShare Pro server function is fully implemented within the MultiPort/LT as standard. PortShare Pro client software is separately available from Webster Computer Corporation in inexpensive 10-user or site license packs.

Multiprotocol Ethernet Gateway

Multiprotocol access to the corporate Ethernet backbone provides seamless and simultaneous connectivity to Apple, PC, DEC, and to UNIX environments, such as the Internet (Figure 7). MultiPort/LT is a full AppleTalk Router, while for TCP/IP and DECnet protocols MultiPort/LT functions as an end-node router.

EtherTalk routing provides AppleTalk access to Ethernet connected Macintoshes and AppleShare file servers. This includes UNIX and PC

environments such as Helios EtherShare, XiNet K-Ashare, public domain netatalk, Novell NetWare for Macintosh, and Microsoft Windows NT.

DECnet Level 1 Routing permits access to Digital VAX/VMS services from both LocalTalk and ARA clients. DECnet packets are encapsulated within AppleTalk for transport over these media, and de-encapsulated at the Ethernet port.

MacIP protocol allows TCP/IP and Internet access from LocalTalk and Apple Remote Access connected clients. IP protocol is not compatible with LocalTalk or ARA links. MultiPort/LT, in cooperation with Open Transport or MacTCP, encapsulates IP packets within AppleTalk for transport over these media, presenting regular IP protocol to the Ethernet connected hosts. MultiPort/LT acts as a MacIP Zone Server, and the administrator has a choice of static or dynamic (server-mode) IP address serving to all connected Macintoshes.

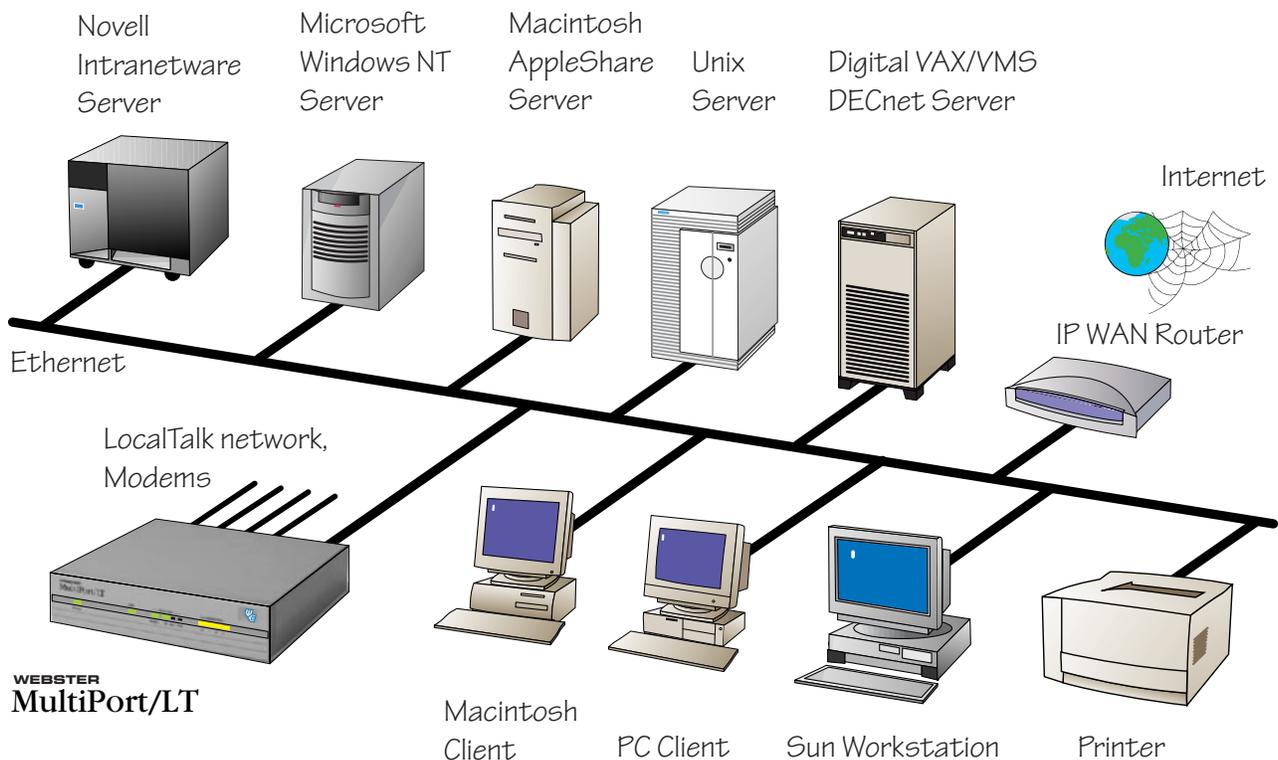


Figure 7

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IPTalk encapsulation of AppleTalk into TCP/IP permits access to Columbia AppleTalk Package (public domain) and Intercon NFS Share file servers. It also allows tunneling of data, zone and network information between AppleTalk networks across TCP/IP links, permitting the creation of large distributed AppleTalk networks over the corporate IP backbone or Internet.

Internet Gateway

With the Internet now growing exponentially, it is no surprise that businesses and schools everywhere are scrambling to provide access for their staff and students. For Macintosh based organizations, network-wide Internet connectivity has never been easier, using the Webster MultiPort/LT.

With its extensive support for MacIP protocol, IP address serving, IPTalk2 tunneling, and PPP or SLIP dialout sessions, MultiPort/LT provides in one box most of the functionality you need for corporate internet service. This service is provided to every Macintosh on your network, including remote dial-in users.

For cost-effective Internet access, arrange for a single-user PPP account with your local Internet Service Provider (ISP). You configure the MultiPort/LT for dial-out through one or more modems or ISDN System Adapters, and enable MacIP on the LocalTalk ports (Figure 8). Open Transport/PPP and PortShare Pro client software

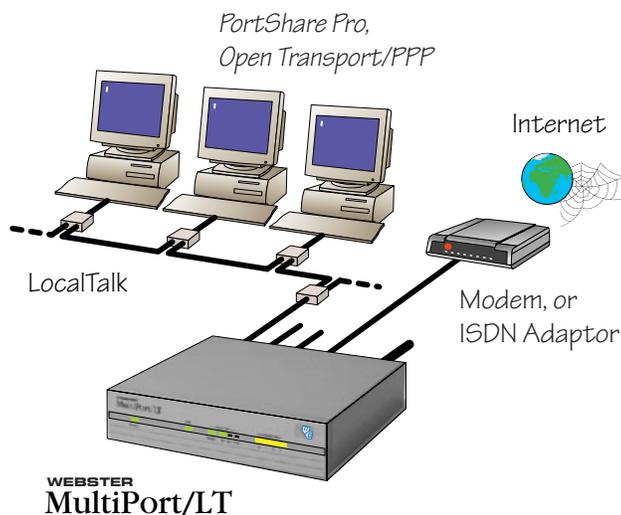


Figure 8

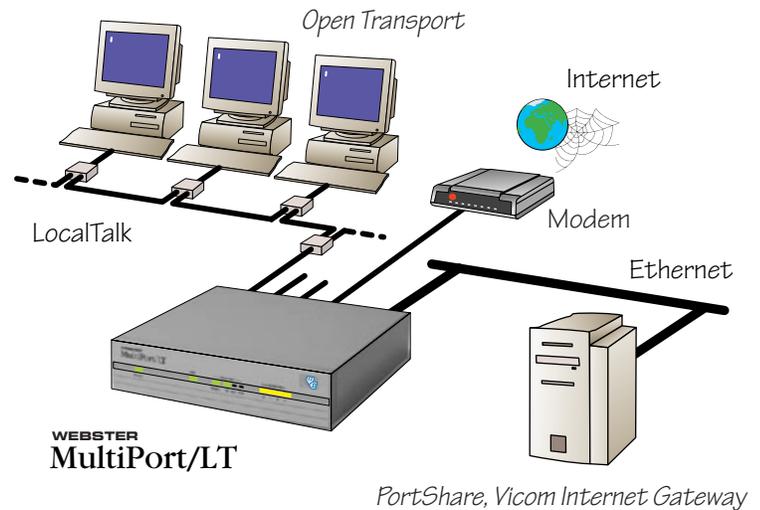


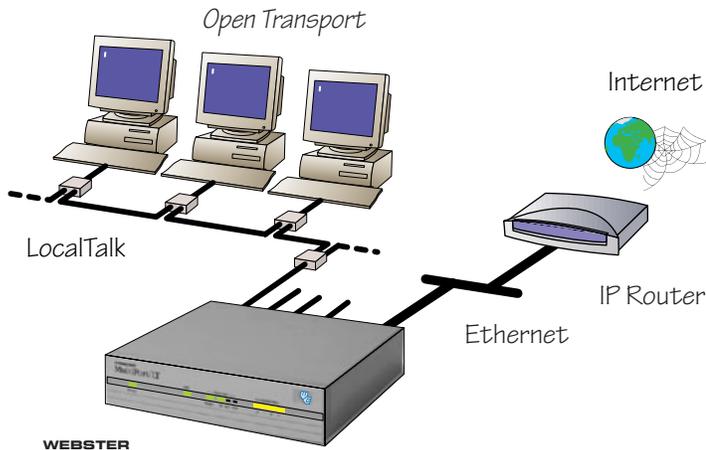
Figure 9

is installed on each Macintosh on the network, enabling use of standard Internet utilities such as Netscape Navigator, Internet Explorer, Eudora, Fetch and Telnet. With this simple approach, the maximum number of users at any one time is limited to the number of modems and phone lines connected to the MultiPort/LT.

To overcome the single user limitation, simply run Vicom Internet Gateway and PortShare Pro software in the background on an assigned Macintosh, and configure the MultiPort/LT as above. Now, any number of users on your LAN, both Macs and PCs, can access the Internet simultaneously through the same low cost single-user account with your ISP, without even the need for multiple modems (Figure 9). The Vicom Internet Gateway also includes valuable security, firewall, and DHCP automatic Ethernet client configuration features. This approach works well with up to 10 or even more simultaneous users.

Ultimately though, demanding network applications will need a permanent high bandwidth connection to the Internet. This requires an IP WAN Router at your site, and a dedicated frame relay or T-1 line to your ISP (Figure 10). You set up the MultiPort/LT to recognize MacIP protocol and serve IP addresses, and simply equip each Macintosh





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MultiPort/LT

Figure 10

with Open Transport. Although costs will rapidly escalate, you will now be able to host your own web server, FTP server, Domain Name Server (DNS) or SMTP/POP/IMAP mail server, together with unlimited user access.

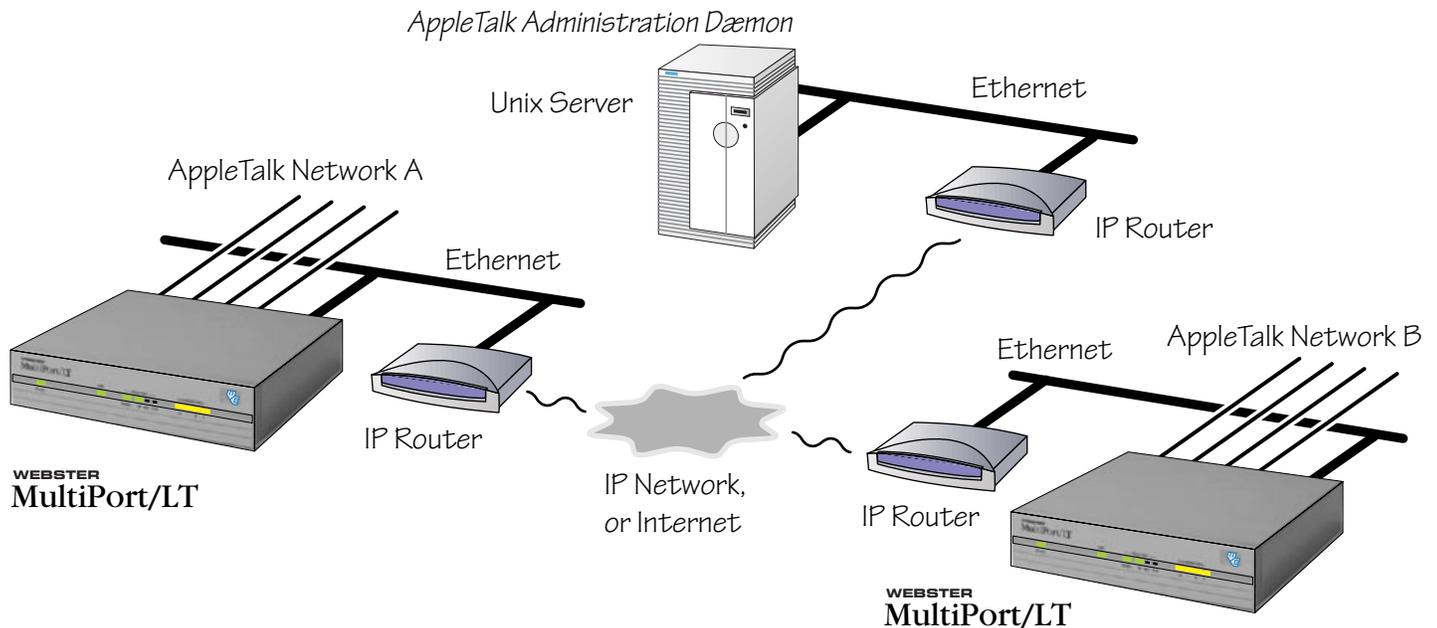
Groups of branch offices or schools each equipped with dedicated Internet connections can use MultiPort/LT's IPTalk2 capability to form AppleTalk tunnels over the Internet, and so create a giant multi-campus AppleTalk network. Communication between the networks is

managed by an AppleTalk Administration Dæmon, hosted on a Unix server located anywhere on the network (Figure 11). Now your remote office and all its networked resources are only a chooser-click away!

With its powerful network building capabilities, and its progressive support for simple to full-featured Internet access schemes, MultiPort/LT will certainly play a central role in your Macintosh network.

Security Features

Sophisticated zone-based device filtering is provided for each of the eight logical networks of the MultiPort/LT (LocalTalk 0-3, IPTalk, EtherTalk Phase 1, EtherTalk Phase 2, and the ARA users). This can be used for example to limit access to certain devices, or to force users to stay within specified zones. Remote users can be access-limited to definable zone-groups; such as sales, finance, engineering etc. Dial-in and dial-out users are controlled by passwords and access privileges. System Manager access to the MultiPort/LT for configuration and management purposes is also password-protected.



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Figure 11



Management

MultiPort Manager is a Macintosh application which provides intuitive, user-friendly configuration, management and statistical reporting to the System Administrator from anywhere in the network, even remotely (Figure 12). Command-line engineering utilities are also provided for use from Macintosh or Unix workstations over the network. Out-of-band management is available by serial connection direct to the console port of the MultiPort/LT. SNMP MIB II, AppleTalk MIB and Webster's

proprietary MIB provide status reporting to independent SNMP management workstations.

Installation Dimensions

The MultiPort/LT is normally placed on a user-provided shelf within the networking closet: there is no rack mounting hardware provided. Required shelf space is 2.4 inches (61mm) high, 9.6 inches (244mm) wide and 11.5 inches (292mm) deep including connector space. In addition, a 1-inch (25mm) space must be left clear on the left side for air circulation.

In North America, the included 2.3 x 2.8 x 3.5 inch (58x71x89mm) line transformer is equipped with an 8-foot (2.4m) output cable supplying 18-volt power to the MultiPort/LT, and a 6-foot (1.8m) 120-volt power cable.

In Europe and Australia, the included 2.8 x 3 x 4.8 inch (71x76x122mm) line transformer is equipped with an 8-foot (2.4m) output cable supplying 18-volt power to the MultiPort/LT, and a standard computer IEC socket to accept a user-supplied country specific 240-volt power cable.

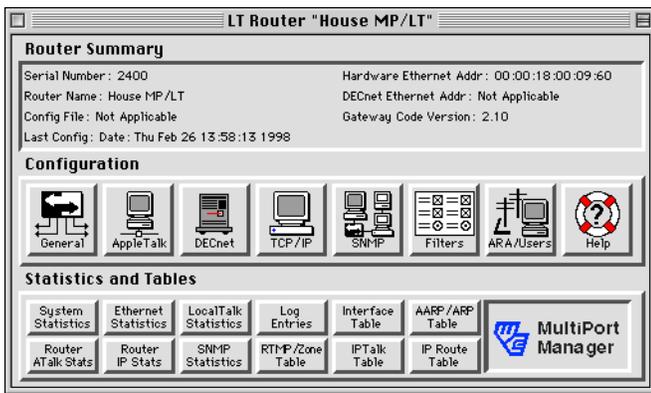


Figure 12

Specifications

Processor	Motorola 68331
I/O structure	Bidirectional DMA on all ports
Memory	2 Mbyte DRAM SIMM, expandable to 4 Mbyte
FLASH EPROM	512 Kbyte, expandable to 1 Mbyte
LocalTalk/Modem interface	Four by MD8 Apple standard serial connectors
Ethernet interfaces	10Base5, 10Base2 and 10BaseT (AUI, BNC, RJ45)
Console interface	MD8 serial RS232 (for optional out-of-band management)
Data rates	LocalTalk: 230.4 Kbit/sec - Ethernet: 10 Mbit/sec - Modems: 128 Kbaud
Size, including connectors	2.4 inch (61mm) high, 9.6 inch (244mm) wide, 11.5 inch (292mm) deep
Shipping package size	4.6 inch (117mm) high, 12.3 inch (312mm) wide, 17 inch (432mm) deep
Weight	4.6 lbs (2.1 Kg)
Shipping weight	11 lbs (5 Kg)
Operational temperature	32-113 fahrenheit (0-45 celsius)
Operational humidity	10-80% non-condensing
Heat dissipation	60 BTU/hr (15 watt)
AC input power	18 VAC 1.0A (external 120 volt or 240 volt line transformer supplied)
AC input frequency	50/60 Hz
Protocol standards	AppleTalk Phase 1&2, ARA 1&2, EtherTalk, TCP/IP, IPTalk, MacIP, DECnet
SNMP management	MIB II, AppleTalk MIB, Webster proprietary statistics based on SNMP
In-band management	MultiPort Manager for Macintosh, mgccc/mgcmd for UNIX
Regulatory compliance	FCC Class A, UL, CE

Rear Panel Connections

For connection to your corporate network backbone, MultiPort/LT comes ready equipped with three Ethernet standards: DB15 AUI (10Base5), BNC (10Base2), and RJ45 twisted pair (10BaseT). While only one connection may be active at a time, the choice provides you installation flexibility without need for external adapters (Figure 13).

Four standard MD8 Apple serial ports may be flexibly assigned as LocalTalk network connections, or as modem or ISDN System Adapter connections in any combination. A fifth MD8 connector is provided for connection to a console terminal, for maintenance purposes.

A mating power connector accepts the 18-volt cable from the supplied line transformer.

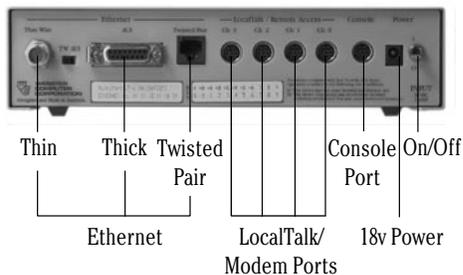


Figure 13

Ordering Information

Items shipped with the MultiPort/LT include 120- or 240-volt line transformer, one MD8-DB25 high speed modem cable, one MD8-MD8 maintenance console cable, software kit, disk-based handbooks, warranty card and customer registration form.

Additional hardware and software integration products available from Webster Computer Corporation include LocalTalk adaptors, extra modem cables, LocalTalk and Ethernet hubs, Modems, IP WAN Routers, PortShare client software, and Vicom Internet Gateway software.

Product

Order no.

MultiPort/LT, 120 volt	MLT-1000U
MultiPort/LT, 240 volt	MLT-1000A
High speed modem cable	EN-MD8-HSM
Maintenance console cable	EN-MD8-MD8
Spare line transformer 120 volt	AU-LTR-120
Spare line transformer 240 volt	AU-LTR-240
PhoneNet adaptors - box of 10	FA-PNA-10
PhoneNet adaptors - box of 50	FA-PNA-50
Farallon 577 StarController/24 hub	FA-SC-24
24-port rackmount RJ-11 panel	FA-PP-24
Cisco 1004 ISDN IP WAN Router	CI-1004
Cisco 1005 Serial IP WAN Router	CI-1005
PortShare Pro Client 10 users	ST-PSP-CA
PortShare Pro Client unlimited users	ST-PSP-CZ
Vicom Internet Gateway 5 users	VI-IGS-05
Vicom Internet Gateway 10 users	VI-IGS-10



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