

Ether•Route II

User Manual

**Compatible Systems Corporation
4730 Walnut, Suite 102
PO Box 17220
Boulder, Colorado 80308
(303) 444-9532**

Ether•Route II User Manual, 1.0

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Logo designed by Kawamura Design, Boulder, CO.

This product has been certified to comply with limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC Rules. It is designed to provide reasonable protection against radio or television communication interference in a commercial environment. Operation of this equipment in a residential area could cause interference with radio or television communication.

Contents

About This Manual	3
What You Will Need To Get Started	9
Supplied with Ether•Route II	9
Needed For Installation	9
LocalTalk connection needs	9
Ethernet connection needs	9
Cabling Needs	10
Using Routers With An AppleTalk Network	13
The AppleTalk Network System	13
Routers	14
Network Numbers and Node Addresses	15
Zones	15
Seed Routers	16
SNMP	16
Hardware Installation	19
Determining Ethernet Cable Type	19
Connecting to Thick Ethernet	20
Connecting to Thin Ethernet	21
Connecting to Twisted Pair Ethernet	22
Connecting Ether•Route II to LocalTalk	23
Ether•Route II Display Lights	24
	25
Ether•Route Manager Software	27
Ether•Route II Default Configuration	27
Ether•Route II AppleTalk Auto Adapt	28
Running Ether•Route Manager	29
Choosing a Router	29
Ether•Route Status Screen	31
The Menus	32
Administer Menu	32
Configuration Menu	33
File Menu	35
Statistics Menu	36
Window Menu	36

Configuring Your Router	37
Loading a Configuration for Editing	37
Configuration Summary	38
Editing Network Protocols	39
Editing Router Name	39
Editing Router Password	39
Edit System Info	40
View Summary	40
Sending the Configuration	40
AppleTalk Protocol Configuration	42
Configuring a LocalTalk Port	43
Configuring Ethernet for Phase 1 EtherTalk	45
Configuring Ethernet for Phase 2 EtherTalk	45
Security Options	46
Filtering	47
ANSP	48
TCP/IP Protocol Configuration	55
Ethernet IP Parameters	55
LocalTalk IP Parameters	57
Tunneling	62
KIP Options	65
Optional IP Parameters	69
DECnet Protocol Configuration	70
What happens when DECnet is turned on?	72
Appendix A - An Ethernet Primer	A1
Appendix B - Specifications	B1
Appendix C - Ether•Route II Statistics	C1
Appendix D - Ether•Route II Diagnostics	D1
Appendix E - Terms and Conditions	E1
Index	

About This Manual

This manual will help you to easily install and configure Ether•Route II and/or Ether•Route/TCP II. The manual is divided into a number of sections that will provide you with the information required at different stages of the installation process.

If you have any difficulties during installation or use which are not answered by this guide, please call Compatible Systems Corporation or your dealer. Compatible Systems' phone number is listed on the front of this guide. We will be happy to help you.

Note: In most parts of this manual, Ether•Route II and Ether•Route/TCP II may be used interchangeably. However, only Ether•Route/TCP II supports the TCP/IP and DECnet networking protocols. Ether•Route II is upgradeable to Ether•Route/TCP II at the factory.

What You Will Need

This part of the manual describes the contents of the Ether•Route II package and emphasizes the preparation and equipment you will need to install Ether•Route II.

Using Routers With An AppleTalk Network

This section will provide you with a quick overview of AppleTalk network systems in general and how Ether•Route II will fit into your overall network. The information found here is introductory in content and may be skipped if you are already experienced with AppleTalk internets.

Hardware Installation

This part of the manual describes, step by step, how you physically connect Ether•Route II to your network. Instructions are provided for connecting one or two LocalTalk zones. This section also describes how to connect Ether•Route II into a thin, thick or twisted-pair Ethernet cabling environment.

Ether•Route Manager Software

In most situations, once Ether•Route II is physically connected to the network, it will configure itself automatically to handle your AppleTalk network

traffic. This section will explain how to use the Ether•Route II management software to customize the router; naming zones and assigning network numbers. This section also includes detailed instructions for AppleTalk, TCP/IP and DECnet routing configurations.

Appendices and Index

Additional information that might be of interest to you such as technical specifications and a quick reference to specific information can be found at the end of this guide.

About Ether•Route II

Congratulations on your purchase of a member of the Ether•Route family -- high speed dedicated LocalTalk to Ethernet gateway/routers. Ether•Route II and Ether•Route/TCP II are second generation versions of Compatible Systems' award winning Ether•Route and Ether•Route/TCP routers.

The only difference between Ether•Route and Ether•Route II is the addition in Ether•Route II of connectors for all three standard Ethernet media types. Ether•Route/TCP II also includes all three media types, and has had its memory expanded to a total of 640K (this corresponds to the previous generation's Ether•Route/TCP 640 model, which has been discontinued).

Because of these similarities, older Ether•Routes and Ether•Route/TCPs can be managed with the management software supplied with Ether•Route II and Ether•Route/TCP II.

Ether•Route II supports the AppleTalk network protocols. Ether•Route/TCP II supports AppleTalk, TCP/IP and DECnet network protocols.

You can use Ether•Route II or Ether•Route/TCP II to link one or two LocalTalk networks, which may include a number of Macintosh computers and/or LaserWriter printers or other peripherals, to an Ethernet network. Depending on which

version of Ether•Route II you are using, the Macintoshes may be running AppleTalk protocols, TCP/IP encapsulated in AppleTalk, DECnet encapsulated in AppleTalk, or a mixture of these.

Once linked with Ether•Route II, devices using AppleTalk software protocols on one network can communicate with devices using the same protocols on another. This allows transparent communication between computers, servers and printers, throughout the connected networks. This communication can extend through multiple Ether•Route II routers and/or routers from other vendors.

Ether•Route/TCP II includes all of the features of Ether•Route II, along with features which enable LocalTalk connected Macintoshes running software packages which use TCP/IP encapsulated in AppleTalk, such as NCSA Telnet or Intercon's TCPConnect II, to communicate with mainframes, minicomputers, workstations or PCs that support TCP/IP. Ether•Route/TCP II also supports advanced features such as AppleTalk IP tunneling and filtering, and is compatible with routers from other vendors which support these features. Ether•Route/TCP II also supports DECnet encapsulated in AppleTalk, which is used by packages such as DEC Pathworks, and Thursby Software's TSSNet.

With Ether•Route II you gain the flexibility of putting some of your Macintosh computers directly on Ethernet, to take advantage of its high speed, yet leaving other Macintoshes on LocalTalk to control costs, all while maintaining complete connectivity between machines.

Listed below are some of the basic features of Ether•Route II:

- LocalTalk to Ethernet gateway/router
- Multiple Macintoshes can access Ethernet resources
- Ethernet access to LaserWriters and other LocalTalk peripherals

- **Advanced Flash ROM technology maintains network configuration**
- **Supports thick, thin and twisted-pair Ethernet**
- **Two independent LocalTalk ports**
- **AppleTalk Filtering and Advanced Network Security Protocol (ANSP™).**

Ether•Route/TCP II supports these additional features:

- **DDP-IP Routing - TCP/IP packets encapsulated in AppleTalk are routed onto the Ethernet segment as native IP packets. IP packets destined for LocalTalk nodes will be encapsulated in AppleTalk.**
- **KIP Forwarding and IP Subnetting**
- **AppleTalk Tunneling and Filtering**
- **Static and Dynamic IP Address Assignment for both LocalTalk ports.**
- **RIP broadcast and acceptance for any IP subnet. Includes IP routing table.**
- **UDP Encapsulation - Older and newer base ports are allowed**
- **DECnet Encapsulation and Routing - DECnet packets encapsulated in AppleTalk are routed onto the Ethernet segment as native DECnet packets. DECnet packets destined for LocalTalk nodes will be encapsulated in AppleTalk.**

A Few Notes

Please Read This Manual

The Ether•Route II manual contains some very important information about Ether•Route II and Ethernet networking in general. Please read the manual thoroughly; it's worth the few minutes it will take.

Also, please fill out the warranty registration card and return it to us today. This will help us keep you informed of updates to Ether•Route II and future products available from Compatible Systems.

Warranty and Service

Ether•Route II comes complete with a full one year warranty against manufacturing defects. Following this period, factory service is available.

If You Need Help With Ether•Route II

If you have a question about Ether•Route II and can't find the answer in this manual, please call us at Compatible Systems using the telephone number listed in the front of this guide. We will be glad to assist you with any questions or problems that might occur.

What You Will Need To Get Started

Before connecting Ether•Route II please make sure that you have all the items supplied with the Ether•Route II package and, also, any additional items that are necessary to connect Ether•Route II to your network.

Supplied with Ether•Route II

Please check the Ether•Route II shipping package for the following items:

- One (1) Ether•Route II unit
- One (1) External power supply
- One (1) User manual
- One (1) 3 1/2" diskette
- One (1) Warranty Registration Card

Needed For Installation

Before connecting Ether•Route II to your network, you need to make sure that you have the necessary equipment for connecting to the LocalTalk and Ethernet networks.

LocalTalk connection needs

Ether•Route II allows for one or two LocalTalk networks to be connected. The connectors provided on the back of the Ether•Route II unit are the standard mini-DIN 8 pin connectors found on all Macintosh models from the Macintosh Plus to the latest model. Since your Macintosh LocalTalk network can be run over different media types (shielded twisted-pair, unshielded twisted-pair, fiber-optic) you will want to be sure that your network cabling has the proper connection box for attaching to the Ether•Route II LocalTalk connectors.

Ethernet connection needs

Ether•Route II includes connections for the three main types of Ethernet cabling (thick, thin and 10BaseT twisted pair). When a correctly configured network cable is connected to

Ether•Route II, the cable type will automatically be sensed and the unit will configure itself to make the connected port active. Only one of the Ethernet connections can be active when Ether•Route II is in operation.

To connect Ether•Route II to a standard (thick) Ethernet cable you will need to have a transceiver cable connection at the correct location on your Ethernet cable. The transceiver cable will attach directly to the DB-15 connector on the Ether•Route II unit.

To connect Ether•Route II to a thin Ethernet cable you will need to have a T-connector at the correct location on your Ethernet cable.

Do not attach the Ethernet cable directly to the BNC connector on Ether•Route II without the use of a T-connector. The resulting network will be incorrectly terminated and will not operate correctly.

To connect to twisted-pair Ethernet cabling you will need an unshielded twisted-pair wire that is connected to a 10BaseT compatible twisted-pair hub.

Note The hardware installation instructions assume that the Ethernet cable network you are connecting Ether•Route II to is already in place. The installed Ethernet network cable should be terminated at each end. A connector or transceiver must be available in the location where you will be installing Ether•Route II. For twisted-pair Ethernet you will need a 10BaseT compatible twisted-pair hub for your network. (For more information on Ethernet see Appendix A in this manual: "An Ethernet Primer.")

Cabling Needs

If you are unsure how to create a connector or transceiver location for Ether•Route II, please contact your network administrator or refer to the documentation supplied with the transceiver.

If you are installing a complete Ethernet network and have no previous experience doing so, we recommend that you ask your dealer for help.

Cables and cable connectors are not supplied with the Ether•Route II product. Please contact your dealer or Compatible Systems representative for information on obtaining the correct cabling supplies.

Two national catalogs that carry cabling supplies are:

Inmac Catalog - (800) 526-9778

Black Box Catalog - (412) 746-5530

Using Routers With An AppleTalk Network

This section of the manual will serve as a brief introduction to AppleTalk networking and the function of routers in your internet. It's purpose is to familiarize you with some of the terminology that will be used in the upcoming sections. Before you install and use the Ether•Route II router, you should be familiar with the terms and concepts of AppleTalk networking that are discussed in this section.

The AppleTalk Network System

A network is a group of computers and shared peripherals connected in a continuous cabling system. A network system is a communication environment in which network devices and software observe a common set of rules (protocols) for communicating. The AppleTalk network system uses a specific set of network protocols that describe exactly how network devices will communicate with each other.

AppleTalk protocols can be used by a wide variety of devices and transmission standards. Even though all AppleTalk networks use the AppleTalk protocols, they do not all use the same transmission standards or media. For the purpose of simplicity, this guide will only refer to two transmission standards, LocalTalk and Ethernet (referred to as EtherTalk within the AppleTalk network system). LocalTalk is the transmission standard that allows AppleTalk data to be transmitted at about 230 kilobits per second. LocalTalk is built into all Macintosh computers. EtherTalk is the transmission standard that can transmit data at 10 megabits per second. EtherTalk can be added to Macintosh computers using Ethernet adapters which are available from various vendors, including Compatible Systems.

Both the LocalTalk and EtherTalk transmission standards can be utilized over different transmission media, such as twisted pair, coaxial or fiber optic cabling. The transmission standards and media that your network site utilizes should be one that best suits your needs and budget. For more

information on the different type of cabling used for Ethernet transmission, please refer to the Ethernet Primer that is included in Appendix A of this manual.

Routers

A router is a device that connects two or more networks together. This grouping of two or more networks is referred to as an internet. Routers keep track of the most efficient route for data going from one network to another within the internet, and forward data along that route as needed.

AppleTalk routers like Ether•Route II can interconnect AppleTalk networks that combine the use of LocalTalk and EtherTalk transmission standards. Information can be exchanged transparently between networks and network devices regardless of which transmission standard is used.

Below is a quick summary of the services that an Ether•Route II router can perform within an AppleTalk network system:

- Connect both LocalTalk and EtherTalk into a seamless AppleTalk internet.
- Increase internet speed and efficiency by attaching groups of LocalTalk connected devices to the same Ethernet backbone cable to take advantage of the fast transmission rate.
- Create zones that separate the internet to allow users more efficient access to shared services and devices.

Even in a small internet it's important that all devices on the network are in agreement on the relevant network information. The network information, which is transmitted by the routers on the internet, designates the location and availability of the network services, file servers, printers, etc., to the users on the internet. The AppleTalk network system keeps track of this information through the use of network numbers and node addresses.

Network Numbers and Node Addresses

Regardless of the transmission standard and media that is installed, the AppleTalk network system transmits information in the same way. AppleTalk utilizes an addressing scheme that identifies the sender and destination of each transmission using network numbers and node addresses.

An AppleTalk network address is identified by a network number. Each network must be identified within the internet by a unique network number. No two networks can share the same number. Routers define the network numbers for the networks to which they are attached. (AppleTalk Phase 2 allows network ranges, a range of network numbers, to be defined for EtherTalk zones only. Like a network number, a network range must be unique within the internet such that no two network ranges overlap or have any network numbers in common. Network ranges are explained in detail during the software installation section of this manual under Ethernet Phase 2 installation.)

Every addressable device connected to an AppleTalk network is referred to as a node. Every node in a network, whether it is a computer, printer or even a router, is identified by a node address. A node address is automatically assigned when a node is started up. Unlike a network number, the node address does not need to be assigned by an administrative device, such as a router.

Zones

Each node in an AppleTalk internet belongs to a specific zone. Zones are used to group devices to make it easier to locate and access network services. Any user in the internet can communicate with devices in any zone, but it is more efficient to communicate with devices within one's own zone. Zones, which are designated by unique zone names, are defined by the network administrator through the use of one or more routers. Please note that zone assignments should be based on network traffic patterns, not the physical connections of the network. Nodes belonging to the same zone do not have to be in proximity to each other or even within the same network.

A router is used to identify the networks connected to it and associate each network with a zone name. Each network is associated with only one zone name. (EtherTalk networks under Phase 2 can be assigned to a zone list that lists the zone names that are available to the nodes on that network.) Network services that are available within different zones on an AppleTalk internet can be viewed through the Macintosh Chooser desk accessory.

Seed Routers

A router that sets up all the information for a network mentioned above, network numbers, zone names, etc., is referred to as a seed router for that network. Other routers attached to the network that are not the seed router (referred to as “non-seed” routers) will gather the information about that network from the seed router.

A network should have one and only one seed router. If more than one router is trying to seed the network the result will be conflicts and confusion regarding the network information. Since routers have multiple ports that attach to different networks, it is possible that the same router may be a seed router for one network and a non-seed router for another network.

As noted in the software section of this manual, Ether•Route II can be set up to be either a seed or non-seed router for each of its network ports. If at startup, Ether•Route II detects another router seeding the network, it will automatically adapt to that router’s network information, regardless of whether Ether•Route II is set as a seed router or not. This avoids any possible conflicts concerning network information.

SNMP

SNMP, the Simple Network Management Protocol, is part of the TCP/IP protocol suite, and was developed to allow central administration of a multi-vendor network. Information is passed back and forth to network devices from a control station (such as a Macintosh running Watchtower from InterCon Systems) using Management Information Bases or

MIBs. The Ether•Route/TCP SNMP agent supports the second version of the Management Information Base, MIB-II (see RFC 1158). MIB-II incorporates all of the information base from MIB-I (see RFC 1156) and extends it, without loss of compatibility. A MIB for the AppleTalk protocols has also been proposed and approved.

Currently the Ether•Route/TCP SNMP agent supports all SNMP operations except the SET operation on writeable MIB variables and Traps.

Suggestions For Setting Up Your Internet

Since most network installations are different, it's beyond the scope of this introductory section to describe exactly how your internet should be set up. However, we can offer a few helpful suggestions.

Every internet design, regardless of size, should be carefully planned out in order to maximize network performance. The drawing of a network map that designates where each device will reside on your internet should be your first step in designing your internet.

The network map will provide you with a quick visual reference to every network and device on your internet. You will be able to determine exactly where you will need to place routers to separate your networks and provide the most efficient communication routes.

Hardware Installation

This section of the manual describes how to connect Ether•Route II into your network environment.

Determining Ethernet Cable Type

Ether•Route II will connect directly to thick, thin, or twisted-pair Ethernet cabling.

Thick Ethernet cable, sometimes referred to as “standard” Ethernet, consists of a large main cable that runs throughout the building with drop boxes that tap off of this large cable. These drop boxes, referred to as Medium Attachment Units (MAU’s) or transceivers, connect to the various workstations through 15-pin transceiver cables.

Thin Ethernet cable, sometimes referred to as “Cheapernet,” is usually a thin black coaxial cable similar (but not equivalent) to Cable TV cable. Each workstation has a BNC connector that attaches to the main cable at a T-connector.

Twisted-pair cable is unshielded twisted-pair cabling (like phone wire) where each workstation is connected through its own length of wire back to a central “hub.” The accepted industry standard for Ethernet over twisted-pair is referred to as 10BaseT. All Compatible Systems twisted-pair products comply with the 10BaseT standard.

For twisted-pair Ethernet you will need an unshielded twisted pair wire that is connected to your 10BaseT compatible twisted-pair hub.

Before attempting to connect Ether•Route II to the Ethernet network, you should have the T-connector, twisted-pair port or transceiver cable prepared and available in the location where you will be installing the router.

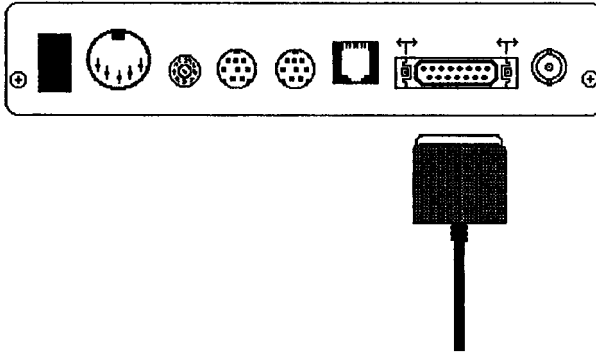
If you are unsure how to create a connector or transceiver location for your Ether•Route II, please contact your network administrator.

Connecting to Thick Ethernet

To connect Ether•Route II to a thick/standard Ethernet network simply plug one end of the transceiver cable into the transceiver connector located on the back panel of the Ether•Route II box. Then, plug the other end of the transceiver cable into the transceiver that is connected to the Thick Ethernet network.

The detailed steps for installation are:

1. If Ether•Route II is turned on, please switch it off and unplug the Ether•Route II power supply from the wall outlet.
2. Plug one end of the male 15-pin transceiver cable into the 15-pin transceiver connector on the back of the Ether•Route II box. Secure the cable by sliding the locking guide on the sides of the connector. See diagram below.



3. Plug the other end of the 15-pin transceiver cable into the transceiver on the Ethernet cable. The cable should connect to the transceiver in a similar manner to step 2, but please check the documentation supplied with the transceiver to verify the installation instructions.

This completes the installation for your Ether•Route II onto a thick Ethernet network. Please proceed to the “Connecting Ether•Route II to LocalTalk” section to complete the hardware installation.

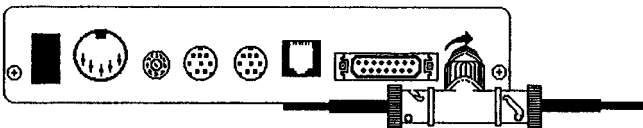
Connecting to Thin Ethernet

In order to connect Ether•Route II to a thin Ethernet cable, you will need to connect a T-connector onto the BNC connector located on the back of the Ether•Route II box.

Make sure that the T-connector is connected to the thin Ethernet cable on both sides that extend out from the Ether•Route II connection. If Ether•Route II is to be the last device on the Ethernet network, then one end of the T-connector will be connected to the thin Ethernet cable and the other end will have a network terminator installed. This should be done by your network administrator before connecting the T-connector to the Ether•Route II port.

Step by step instructions for installation onto a thin Ethernet network are:

1. If Ether•Route II is turned on, please switch it off and unplug the Ether•Route II power supply from the wall outlet.
2. Install the T-connector onto the BNC connector on the back panel of the Ether•Route II box. Twist the T-connector securing sleeve clockwise in order to lock the connector into place. (See diagram below).



This completes the installation of Ether•Route II onto a thin Ethernet network. Please proceed to the “Connecting Ether•Route II to LocalTalk” section to complete the hardware installation.

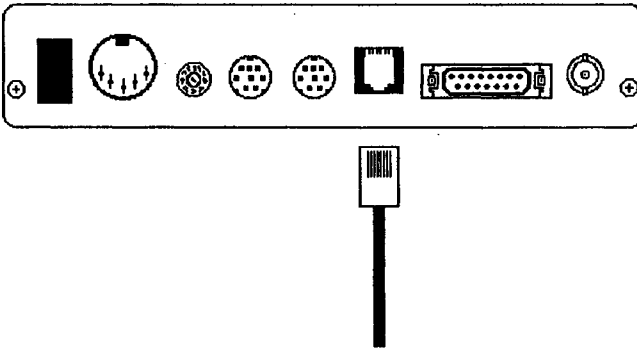
Connecting to Twisted Pair Ethernet

Before connecting Ether•Route II to twisted-pair cabling you will need an unshielded twisted-pair cable that is connected to a 10BaseT compatible wiring hub. To connect the Ether•Route II box to the twisted-pair network simply plug in the twisted pair cable that is run from your hub into the RJ-45 connector on the Ether•Route II unit.

Please make sure that the twisted-pair hub that you use to control your network is designed for the IEEE 10BaseT specifications. The documentation provided with the hub should provide this information along with other useful information on this type of network.

Step by step instructions for installation onto a 10BaseT twisted-pair Ethernet network are:

1. If Ether•Route II is turned on, please switch it off and unplug the Ether•Route II power supply from the wall outlet.
2. Plug the 10BaseT cable's connector into the RJ-45 connector on the back panel of the Ether•Route II box. Make sure you have inserted it firmly enough that it clicks and locks the connector into place. (See diagram below).



This completes the installation of Ether•Route II onto a 10BaseT Ethernet network. Please proceed to the next section to complete the hardware installation.

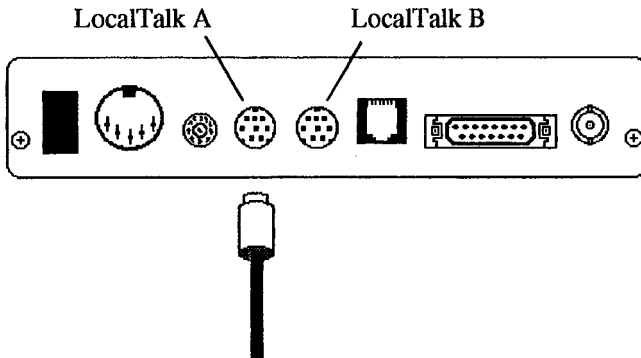
Connecting Ether•Route II to LocalTalk

Ether•Route II comes with two mini-DIN 8 pin LocalTalk connectors, and supports two independent LocalTalk networks. A LocalTalk network can run over different cable types such as shielded or unshielded twisted-pair.

Each station on the network, of which Ether•Route II will be one, requires a connection box to attach to the LocalTalk cable. Ether•Route II uses the same type of connection box as all shipping models of the Macintosh, with a standard mini-DIN 8 pin connector. To connect Ether•Route II to a LocalTalk network, use the following procedure:

1. Connect a LocalTalk connection box to one of the mini-DIN 8 pin connectors on the Ether•Route II box (See diagram below).

Make sure that the mini-DIN 8 pin connector is situated correctly before pushing the connector into place. Do not force the connector or you may damage the mini-DIN or the Ether•Route II's LocalTalk connector.



2. Connect the connection box to the existing LocalTalk network by plugging one end of the desired media cable into the connection box attached to Ether•Route II. Then plug the other end of the cable into another connection box connected to a LaserWriter or some other network device.

Power Up Ether•Route II

You may now plug the power supply in and turn on the power switch on the back panel. Ether•Route II will take less than one minute to come up on the network. During this time it will automatically sense the presence of other AppleTalk routers on one or more of the connected networks.

Ether•Route II will auto-adapt on any network where it finds one or more other routers. On networks where no other routers are found, Ether•Route II will provide a default AppleTalk configuration. This configuration is described in the next section of this manual.

Note: If this Ether•Route is the first AppleTalk router added to an existing Ethernet, it may be necessary to reboot servers and printers to re-initialize their network information.

Ether•Route II Display Lights

The Ether•Route II box has ten numbered display lights on the front panel. Once Ether•Route II is connected to your network, the display lights will indicate different kinds of network conditions and network activity with different display patterns:

- Light 1 on continuously (10BaseT operation only)
Indicates good link status on the receive pair
- Light 10 on continuously (10BaseT operation only)
Indicates incorrect polarity on the receive pair
- Lights 6-9 indicate LocalTalk traffic (either channel)
A flash pattern from 6 to 9 indicates packets sent.
A flash pattern from 9 to 6 indicates packets received.

- Lights 2-5 are for Ethernet traffic
 - A flash pattern from 5 to 2 indicates packets sent.
 - A flash pattern from 2 to 5 indicates packets received.

- Lights 5 & 6 blinking simultaneously
 - Indicates the router is starting up (about 45 seconds).

- Lights 2,3,4 & 7,8,9 on continuously
 - Indicates a Flash Memory download is taking place.
 - The router will restart after this procedure is complete.

- Lights 2 thru 9 come on in a sequence.
 - Indicates the stages of initial startup. The next pattern after this startup sequence will be lights 5 & 6 blinking simultaneously.

- Lights 2,4,6,8 are blinking simultaneously
 - Indicates a "panic" condition has occurred. Call Compatible Systems Corporation.

Appendix D contains additional information about using the front panel lights for diagnostic tests (this information is not required during normal operation).

This completes the hardware installation section of the Ether•Route II Manual. Please proceed to the next section which describes how you may customize your network connection by using the Ether•Route Manager software to configure the Ether•Route II unit.

Ether•Route Manager Software

Note: In the following discussion, Ether•Route II may be taken to mean either Ether•Route II or Ether•Route/TCP II, except where noted.

Ether•Route II Default Configuration

Ether•Route II and Ether•Route/TCP II are shipped with a default network configuration for AppleTalk only routing. This configuration is sufficient for most small AppleTalk networks. This means that under Ether•Route/TCP II's default configuration, TCP/IP and DECnet routing are turned off.

In larger or more complicated network installations, and to set up TCP/IP and DECnet routing on Ether•Route/TCP II, you will want to modify the defaults using Ether•Route Manager. Instructions on how to do this are contained in the next several sections of this manual.

The default configuration is listed below. Ether•Route II will seed each network connected to a port, unless it detects a seed router on a port. Note that the "xxxxxx" in each zone name will be filled in with part of each router's unique Ethernet address. This prevents zone name conflicts when multiple Ether•Route II units are connected to the same network with default configurations in use.

The Default Configuration for each port is:

LocalTalk A is on, with a zone name of:
A LocalTalk A5xxxxxx

LocalTalk B is on, with a zone name of:
B LocalTalk A5xxxxxx

EtherTalk Phase 1 is on, with a zone name of:
Ethernet A5xxxxxx

EtherTalk Phase 2 is on, with a zone name of:
P2Ethernet A5xxxxxx

TCP/IP is off on all ports (Ether•Route/TCP II only).

DECnet is off on all ports (Ether•Route/TCP II only).

When an Ether•Route II unit is attached to a network that doesn't have a network number and it is running its default configuration, it will automatically assign a network number based on the last two digits of its Ethernet address.

Ether•Route II AppleTalk Auto Adapt

Ether•Route II is designed not only to automatically configure itself to route AppleTalk data as soon as it is connected to a network, but also to adapt to most existing network environments.

If another gateway or router is seeding a network (supplying AppleTalk zone names and network numbers), Ether•Route II will automatically adapt to that information so that it will not conflict with the existing network information. This adaptation will occur regardless of whether the default configuration is running or not.

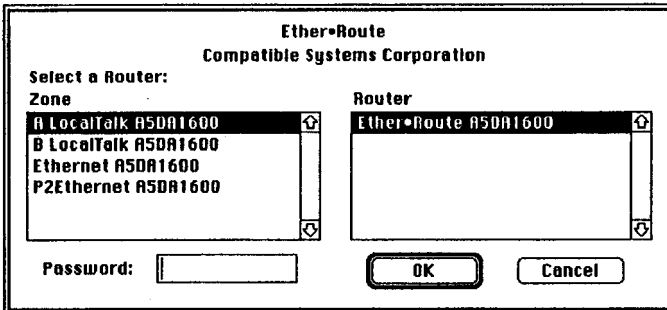
On any network that is not being seeded by another router, Ether•Route II will continue to act as a seed router with the default configuration listed above. This means that Ether•Route II will seed Phase 1 EtherTalk, even on a Phase 2 only network, until you have turned Phase 1 off with the Ether•Route Manager. Similarly, on a Phase 1 only network, Phase 2 will be seeded until turned off with the Ether•Route Manager.

If you wish to change the default configuration, or your network environment requires a complex configuration, you must edit the configuration and load it into the router. This is done using Ether•Route Manager.

Running Ether•Route Manager

The Ether•Route Manager program can be found on the Macintosh disk which was included with your Ether•Route II router. You can run the manager from any Macintosh on your AppleTalk internet. It allows you to administer and configure any Ether•Route II which is on your AppleTalk internet, from either the LocalTalk or Ethernet side, even across other routers which support AppleTalk protocols.

To run the Ether•Route Manager simply insert the Ether•Route II disk into any Macintosh on the network (or internetwork) that includes an Ether•Route II router. Double-click on the Ether•Route Manager icon and the program will open to the first screen.



Note: The management software included with Ether•Route II and Ether•Route/TCP II will also work with older Ether•Route and Ether•Route/TCP routers.

Choosing a Router

This first screen of Ether•Route Manager allows you to select a zone and a router within that zone. When you launch Ether•Route Manager, the zone where your Macintosh is located will be preselected in the "Zone" window and a list of all the Ether•Route family routers found in that zone will be listed in the "Router" window.

If you have a simple network that contains one Ether•Route II, your screen will be similar to the one displayed above. If you have multiple zones, it may be necessary to scroll through the

zones in order to find the zone that contains the Ether•Route II you wish to configure.

In order to access a router for configuration or to display statistics information, you must first enter the password for that router. Ether•Route II is shipped with the password:


letmein

Note: As explained later, it is possible to enter a new password into your router as part of a configuration. In case you lose your new password, Ether•Route II is designed so that the *letmein* password is always valid for the first five minutes after a unit is powered up, along with any password you may have downloaded as part of a configuration.

After typing the password, click the “OK” button or press return and the “Ether•Route Status” screen will be displayed as shown below.

File Edit Administer Configuration Statistics Window

Ether•Route R50R1600 - Ether•Route Status

	Software Version:	Ether•Route/TCP(SNMP) V2.0.b4	Ether•Route/TCP Manager Compatible Systems Corporation
	Hardware:	128K Flash ROM, 512K RAM	
	Last Configuration Date:	none	
	Configuration File:	none	
Ethernet Address:	0000A5DA1600	Up Time:	0 days 0 hrs 2 mins 31 secs

AppleTalk Port	Net Number	Zone Name	Node
LocalTalk(A)	Seed: No 1	R LocalTalk R50R1600	190
LocalTalk(B)	Seed: No 2	B LocalTalk R50R1600	239
Ethernet Phase 1 EtherTalk	Seed: No 3	Ethernet R50R1600	127
Phase 2 EtherTalk	Seed: No 4	4 P2Ethernet R50R1600...	71

Ether•Route Status Screen

Once you have accessed a router and provided the correct password, Ether•Route Manager will bring up the “Ether•Route Status” screen and will enable a number of menu options. The status screen displays specific information about the selected router and also shows information about the networks connected to the router.

The top of the status screen shows the name of the router that you have selected and accessed. A default name, the router’s Ethernet address, will be displayed if no name has been given to the router. Below the name is a box which displays some important general information about the selected Ether•Route II router:

- The Ether•Route II ROM or FLASH software version number.
- The hardware configuration of ROM and RAM.
- The date this router was last configured.
- The Configuration File name. If no file is in use this space will indicate *none*.
- The Ethernet address for this Ether•Route II device.
- The “UpTime.” Amount of time since the last restart.

The remaining information on the screen shows the AppleTalk Node Number, AppleTalk Net Number and AppleTalk Zone Name(s) for each of the three ports on the Ether•Route II device. The Ethernet port will display the relevant network information on that port for both Phase 1 and Phase 2 (if that option has been selected in the configuration).

The information displayed in this “Ether•Route Status” screen is the actual information for each network, this is not necessarily the same as the configuration information stored in Flash ROM if conflicts exist.

If Ether•Route II finds that another router is seeding the network (supplying AppleTalk net numbers and zone names) it will automatically adapt so that it does not interfere with that seed information. If Ether•Route II has determined that information from another router conflicts with its own configuration, a dialog box will appear when the “Ether•Route Status” screen is opened that says:

“Some network(s) you have set up are in conflict with that network’s actual number. They are indicated with an *”

An ‘*’ will be displayed in front of the Configuration File name in the box at the top of the screen. There will also be an ‘*’ in front of the port(s) where the conflict is occurring.

This message does not mean there is something wrong with your network. It simply means that the information on the connected network (network number/range, zone name/list) does not match the information configured into this router. Check the AppleTalk Routing Table under the Statistics menu to see the current parameters for the network.

The Menus

The following is an alphabetic list of the Manager menus with a brief description of the items under each.

Administer Menu

The Administer Menu provides options which allow you to control the router and update the software contained in its Flash ROM. These options include:

- **Choose Router**
This option allows you to bring up the original Ether•Route Manager screen, as described above, to select another router.
- **Download Software**
In the future, it may be desirable to update the software in Flash ROM which the processor in your Ether•Route II

box is running. This menu selection allows new software to be loaded into the Flash ROM in an Ether•Route II router.

When you select this option, a file-dialog will allow you to locate the upgrade software file on one of your Macintosh storage devices. Once found and selected, a dialog box will give you the option to download the software or to cancel the download and maintain the Ether•Route software in its present state. When the new software is downloaded the old software is overwritten and will be lost.

Although the old software is overwritten, Ether•Route II will maintain any configuration information (zone names, network numbers, router name, etc.) you had previously loaded.

- **Restart and Pause**

At certain times you may wish to pause or restart an Ether•Route II router. These two options are available under the Administer Menu. Selecting *Restart* will restart the router you are accessing 2.5 seconds after you choose the option. Selecting *Pause* will pause the router you are accessing for 2 minutes. Lights 3 and 8 will flash together while the router is paused.

Configuration Menu

The Configuration Menu provides options which allow you to load one of several possible types of configuration image into Ether•Route Manager's edit area in Macintosh memory, then edit that image if you wish, and finally download the image to the router you are accessing. These options include:

- **Load From Router**

This option loads into the edit area an image of the configuration as it exists in the router you are presently accessing.

- **Load Defaults**

This option loads into the edit area an image of the default configuration which is shipped with every Ether•Route II.
- **Edit Protocols**

This option brings up a submenu which will show all of the protocol types your router is capable of handling. If you have a standard Ether•Route II, you will only be able to edit AppleTalk information. If you have an Ether•Route/TCP II, you will be able to edit AppleTalk, TCP/IP and DECnet information. Detailed instructions on how to configure your router for these protocols follows later in this manual.
- **Edit Name**

This option brings up a dialog box which allows you to edit/enter a router name into the configuration image located in the edit area. The name will be downloaded to the router along with other configuration information when a configuration download is performed.
- **Edit Password**

This option brings up a dialog box which allows you to edit/enter a router password into the configuration image located in the edit area. The password will be downloaded to the router along with other configuration information when a configuration download is performed.
- **Edit System Info**

This option brings up a dialog box which allows you to edit/enter administrative information about this router into the configuration image located in the edit area. The info will be downloaded to the router along with other configuration information when a configuration download is performed.
- **View Summary**

This option brings up a screen which shows all the vital information about the configuration image which is in the edit area.

- **Download Configuration**
This option downloads a configuration image from the edit area to the Ether•Route II you are accessing. You must first have loaded an image into the edit area, either using *Load From Router* or *Load Defaults*, or by loading a configuration file using the option under the File menu (as described below). You will generally want to edit the image before you download it.

File Menu

File Menu functions are as follows:

- **Load Configuration**
This option loads a previously saved configuration image from a storage device (such as a floppy or hard disk) into the edit area. Once you have loaded the image, you can edit it and view it using options under the Configuration menu.
- **Save Configuration**
This option saves a configuration file on a storage device (such as a floppy or hard disk) based on the configuration image in the edit area. These files can be retrieved and edited using *Load Configuration*.
- **Open Stats**
This option loads previously saved statistics from a storage device (such as a floppy or hard disk). Once you have loaded the statistics, all the statistic windows will be open and you can view them.
- **Save Stats**
This option saves the present values of all statistics on a storage device (such as a floppy or hard disk). This file can later be retrieved and the statistics viewed using *Open Stats*.
- **Print Configuration**
This option prints a copy of the configuration summary screen to the printer you have selected in the Chooser.

You must have a valid configuration image in the edit area to choose this option.

- **Quit**

Quitting takes you back to the Macintosh Finder. If you have been editing a configuration image in the edit area and have not saved or downloaded it, you will be given an opportunity to change your mind.

Statistics Menu

The Statistics menu options allow you to display a variety of statistic windows containing information on packet types and errors from the router you are accessing. Routing tables for both AppleTalk and TCP/IP (EtherRoute/TCP II only) are also available. The statistics are briefly described in Appendix C of this manual.

Window Menu

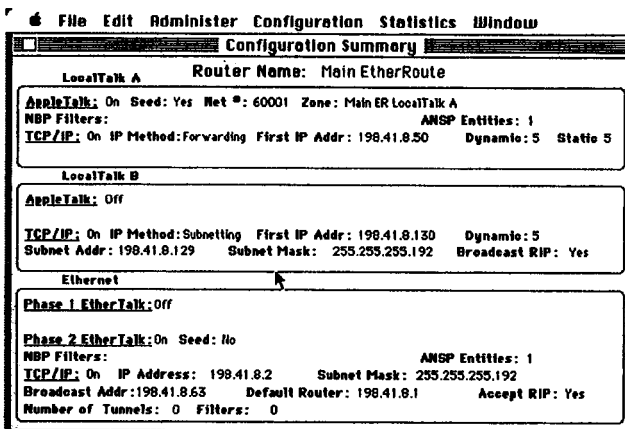
The Window menu is used to move between open windows during configuration. All windows, including the Statistic windows will appear here if they are opened.

Configuring Your Router

This section explains how to load a pre-existing configuration into the EtherRoute Manager's edit area, how to edit that information, and how to download it to a router. Specific information on protocols is included in the following two sections. You should familiarize yourself with the information presented in each section which is of interest to you before attempting to download a configuration.

Loading a Configuration for Editing

EtherRoute Manager allows a variety of methods for creating new configurations. The common element among all of these methods is that you must first load the edit area of EtherRoute Manager with a pre-existing configuration, then edit that configuration to create a new one. You can start with the default configuration, you can upload the existing configuration from a router, or you can load a configuration file you previously saved to disk.



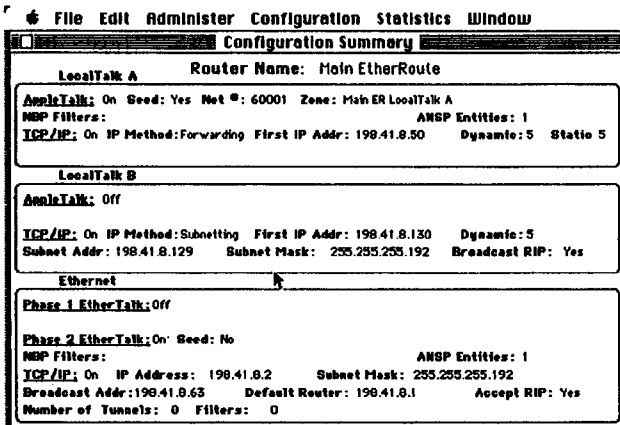
When you select *Load From Router* under the Configure menu, the last configuration that was downloaded into EtherRoute's Flash ROM will be requested from the router and loaded into the edit area. If you have already configured EtherRoute II and did not save a configuration file, you may want to use the *Load From Router* selection in order to add to this information.

Use the *Load Defaults* selection in order to load Ether•Route's default configuration, as described above. Ether•Route Manager will request the default information from the Ether•Route II router you are accessing and load it into the edit area. In explaining configuration for AppleTalk, this manual will assume that the default configuration was loaded into the edit area.

You may also load a configuration that you have saved to a disk file. A disk file configuration is loaded from the File menu under the selection *Load Configuration File*. When you use this selection the program will ask you to locate the disk file on your storage device. Once you have configured your Ether•Route II unit it is a good idea to save the configuration file on a floppy disk. You may want to use it again for other routers or for reference. Since the Flash ROM in Ether•Route II will retain its configuration even when powered off, it will rarely be necessary to reload a configuration from disk.

Configuration Summary

After loading a configuration file you will be presented with a "Configuration Summary" window. This window displays the configuration information that you loaded into the edit area. Below is a screen shot of the configuration summary of the default information that is available in the Ether•Route II ROM. You are now ready to modify this configuration for your network.



Editing Network Protocols

Select the "Edit Protocols" menu item and edit the network protocol parameters in your router by following the instructions in one or more of the following sections of this manual for specific protocols. With Ether•Route II, the only option available is AppleTalk. With Ether•Route/TCP II you should edit the AppleTalk information first, then the TCP/IP and/or DECnet information.

Once you have edited one or more of the protocols, you can follow the remaining instructions in this section of the manual to edit any other part of the configuration and to download it to the router.

Editing Router Name

This option will display a rename dialog box that will allow you to change the name in the edit area to any string of one to thirty-two characters. Embedded spaces in the router name are allowed. Selecting a name that is easy to remember and is associated with the function of the router (Such as "Accounting" or "Engineering") will help you identify it on your network.

Editing Router Password

If you are concerned about security, you may change the password in the edit area by selecting this option. You should select a password that you can remember, and that no one else knows. The password can be any alpha-numeric combination of eight characters or less that you desire.

If you happen to forget the password that you set, Ether•Route II has a built in safety feature. For five minutes after you cycle power on any Ether•Route II box, the *letmein* default password will be active, along with any password you may have set with the Ether•Route Manager software.

Note that this means for absolute security the Ether•Route II unit should be kept in a locked room or closet where unauthorized persons cannot cycle its power.

Edit System Info

The information entered in this screen is used by the router when it is queried by other devices or applications. For instance, this information is requested by SNMP control stations.

⌘ File Edit Administer Configuration Statistics Window

EtherRoute System Information

Name of Administrator and How to Contact:
John Gawf

EtherRoute Administrative Name (Domain Name):
Main EtherRoute @ compatible.com

Location of this EtherRoute:
On Main Equipment Rack at Compatible Systems 4730 Walnut St.
Suite 102 Boulder, Colorado 80301.

The information entered in the three edit boxes, by definition, must be printable ASCII characters. However, if you enter other characters that the Macintosh is capable of displaying, they will be translated to spaces by EtherRoute II when it answers an SNMP query. Each area will accept up to 255 characters.

View Summary

You should check the contents of the edit area before you download your configuration to the router by selecting this item. Make any changes you need to make by going back to the items described above.

Sending the Configuration

Once you are satisfied with the configuration, select "Download Configuration" from the Configuration menu. A dialog box will appear that will ask you if you want to send the configuration information to the router.

If you click on "Yes" the information will be sent to the router and the router will be restarted. The router will be ready and

back on the network in 45 seconds. If you answer “No” to the dialog box the program will cancel the download and return to the previous screen.

You can also save the configuration information that you have created to a disk file. Do this by pulling down the File menu and selecting “Save Configuration.” A dialog box will appear that will ask you to name the configuration file. You can store the configuration file on any drive that is available to you just like any other document.

Remember, the changes that you made to any Ether•Route II configuration will only be implemented in a router if you send the information to an Ether•Route II unit with the “Download Configuration” selection.

AppleTalk Protocol Configuration

Note: If you have not already done so, you should follow the instructions in the previous section “Configuring Your Router” to load a configuration image into the Ether•Route Manager edit area. Use the instructions in this section specifically to edit the AppleTalk part of that configuration.

Select the AppleTalk submenu from the Edit Protocols item in the Configuration menu. You will then be presented with the Ether•Route AppleTalk Configuration screen (see below). This window allows you to edit the network information for the three ports that are available on the Ether•Route II box.

AppleTalk Port	Net Number	Zone Name
<input checked="" type="checkbox"/> LocalTalk (A) <input type="button" value="Filtering..."/> <input type="button" value="Security..."/>	<input type="checkbox"/> Seed []	<input type="checkbox"/> Phase 1 []
<input checked="" type="checkbox"/> LocalTalk (B) <input type="button" value="Filtering..."/> <input type="button" value="Security..."/>	<input type="checkbox"/> Seed []	<input type="checkbox"/> Phase 1 []
EtherTalk		
<input checked="" type="checkbox"/> Phase 1 AppleTalk <input type="button" value="Filtering..."/> <input type="button" value="Security..."/>	<input type="checkbox"/> Seed []	[]
<input checked="" type="checkbox"/> Phase 2 AppleTalk <input type="button" value="Filtering..."/> <input type="button" value="Security..."/>	<input type="checkbox"/> Seed []	[] <input type="button" value="Zone List..."/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>		

The Ether•Route II router provides two LocalTalk ports and one Ethernet port. The AppleTalk Configuration window allows you to create a configuration for one or more of these ports. To select a port for configuration simply click in the check box to the left of that port.

When a port is selected, editable boxes will appear under Net Number and Zone Name (see diagram). The information displayed will be the configuration image loaded into the Ether•Route Manager edit area. The edit options are discussed below as they pertain to the different ports available on Ether•Route II.

Each active AppleTalk port on Ether•Route II must have a node number, and at least one network number and a zone name. In the case of LocalTalk and Phase 1 EtherTalk, only one network number and zone name are allowed per port. Phase 2 EtherTalk allows a range of network numbers and zone names on one Ethernet cable. You will not be able to change the node number. AppleTalk automatically assigns a node number when a router is connected to a LocalTalk or Ethernet network.

Configuring a LocalTalk Port

Ether•Route II has two ports for LocalTalk traffic, LocalTalk A and LocalTalk B. Both ports are configured in the same way.

You do not have to use both LocalTalk ports on Ether•Route II. If you do, keep in mind that the LocalTalk ports should be treated as separate zones on the network, with their own unique network number. Both ports may have the same zone name, although this configuration is generally not used. Network number conflicts for the two zones will adversely affect your network traffic.

In order to edit the configuration of a port you must select the “Seed” option. Establishing the zone names and network numbers for a network is referred to as “Seeding” the network.

You should only have one seed router per network. Although Ether•Route II adapts to seed information from other routers, even if it has been selected to be a seed itself, routers from other vendors may not. If you plan to have Ether•Route II seed a network, make sure that all other routers on that network are set to not seed. This is very important for proper network operation and performance.

For any network on which you choose to make Ether•Route II a seed router, you will need to supply a “network number” and one or more “zone names” in the configuration information.

When two or more networks are linked together the overall network is referred to as an internet. Each network on the internet must have its own unique "network number." Once you have selected the "Seed" option on a network, you may set the network number to any decimal integer from 1 to 65279, as long as it is unique throughout the internet.

As part of its auto-adapt features, if a configured number is in conflict with another network number at power-up or restart time Ether•Route II will increase the number by 1 until it reaches a number that is not in conflict with any other detectable network number on the internet.

Once you have selected the "Seed" option on a network, you may set the zone name for the network in the space provided in the AppleTalk Configuration screen.

Note: If Ether•Route II detects another router seeding a network to which it is physically connected, Ether•Route II will adapt to that information. This will occur even if you have configured Ether•Route II as a seed router on that network. In order for Ether•Route II to seed a network in preference to another router, it must be the first seed router active on that network. You can detect seeding conflicts by checking for asterisks in the "Ether•Route Status" screen as explained above. Note that routers from some other vendors will simply not route if they detect a seeding conflict.

If you have bridges or routers connected to your LocalTalk which are older and only understand Phase 1 forwarding requests or Phase 1 RTMP packets, you will need to check the Phase 1 checkbox if you are running Phase 2 on the Ethernet interface. Older Hayes InterBridges and Solana R-Servers are two examples of hardware that may require this option to be set. See the Phase 2 section below for more details.

For a description of the "Filtering" and "Security" buttons, see the "Security Options" topic later in this section.

Configuring Ethernet for Phase 1 EtherTalk

Configuring EtherRoute for Ethernet Phase 1 is very similar to the LocalTalk port configuration discussed above. You must first select the “Seed” option before you may edit any of the fields.

Configuring Ethernet for Phase 2 EtherTalk

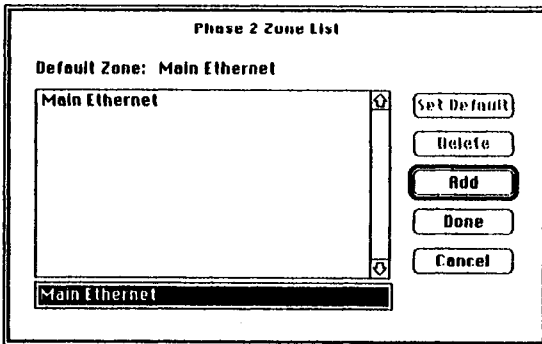
As you can see by the window, the Ethernet port allows you to configure for Phase 1 and/or Phase 2. You are allowed to configure the port for both Phase 1 and Phase 2, but as explained above, you must select network numbers which do not conflict with those of the LocalTalk port or with the Phase 1 EtherTalk zone.

EtherTalk Phase 2 can be set to seed the network. If you select this option, you will need to provide a range of network numbers and a list of zone names. Each network number in the range supports up to 253 node addresses.

Before setting the range, you should determine how many EtherTalk node addresses your Ethernet network will require. To determine the size of your network range divide the number of node addresses that you require by 253 and round the answer up to the next whole number. For example, if you want to accommodate 1000 node addresses, you should set up a range of at least 4 network numbers ($1000 / 253 = 3.95 = 4$). Keep in mind your future network needs since a range of 4 network numbers only leaves you with 12 more node addresses over 1000 ($4 \times 253 = 1012$). If you want to expand that network to over 1012 node addresses, you will need to reconfigure Phase 2 to handle a larger range.

Note: If you checked the Phase 1 checkbox in either of your LocalTalk port configurations you will not be able to configure the Phase 2 range with a size larger than one (i.e. 1000 to 1000, supporting 253 devices). This is because the Phase 1 bridge or router on the LocalTalk will not be able to handle an RTMP packet which contains a range. In addition, you will only be able to specify a single zone name for that zone, contrary to the explanation about zone names following in this section.

As with single network numbers, the range of network numbers cannot conflict with other network numbers on your internet. If, for example, you are seeding LocalTalk A to have the network number 5, you cannot use a range of network numbers that overlaps with the number 5.



To enter zone names for the network range click on the "Zone List..." button in the Phase 2 area. A dialog box, like the one pictured below, will appear which lists the zone names that are presently specified. You may specify one or more names but you do not have to specify a name for every network number in the Phase 2 range.

If you do not specify a default name, Ether•Route will assign the first name in the zone list as the default name. You may also assign the default name by selecting a name in the zone list and then clicking the "Set Default" button.

Security Options

When there are one or more routers on your network, they participate in supplying information about network services to any workstation on the network which requests it. The majority of these requests are generated by end-users when they select services and zones in the Macintosh Chooser.

The AppleTalk Name Binding Protocol (NBP) is used to map logical services, for example printing or file services, to the physical network addresses of specific network nodes. The

Chooser uses NBP to look up the physical addresses of network services in a particular AppleTalk zone. This look up process is a natural place in the AppleTalk protocols for providing network security. (For more information about NBP, see Chapter 7 of Inside AppleTalk.)

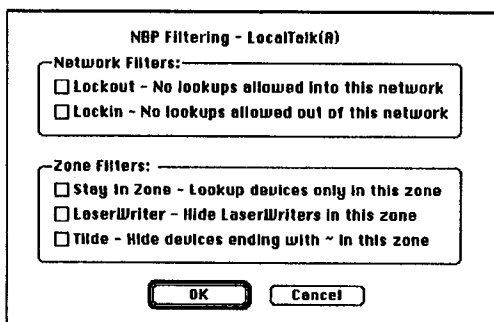
When a user opens the Chooser and selects a zone and an AppleTalk service, NBP Broadcast Request packets are directed to a router by the Macintosh. The router then sends NBP Lookup packets to the selected zone. Any service which matches the requests will respond to the Macintosh which made the original request (through the router, but directed at the Macintosh). The services which respond are then displayed in the Chooser.

When a security option is enabled, the router first checks the request against its security criteria and only sends the NBP Lookup to the selected zone if access has been enabled.

There are two different kinds of security options that you can define for each AppleTalk network. Both of these are accessed from the AppleTalk configuration screen and are explained below.

Filtering

The simplest type of security is NBP Filtering, which is accessed by clicking the "Filtering" button.



There are two types of NBP filters: network filters and zone filters. As you might expect, network filters operate over the extent of the physical network connected to the port of the

router configured for this type of security. Zone filters operate over the logical zone configured for this type of security.

If you choose to LockIn lookups for a network, the users on that network will not have access through the router to network devices. Conversely, setting LockOut for a network will protect devices on that network from access by users on other networks. You may choose none, one or both of these options, depending upon how you wish to secure your network.

Zone filters include Stay In Zone, LaserWriter and Tilde. Stay In Zone means the router will not forward lookups which are directed from the configured zone to any other zone. The LaserWriter filter protects all LaserWriters in a zone from access by Macintoshes in other zones. If you choose the Tilde filter option the router will protect all devices in a zone whose names end with a tilde (~) character from access by devices outside of that zone. On Phase 2 networks, zone filters are applied to the default zone.

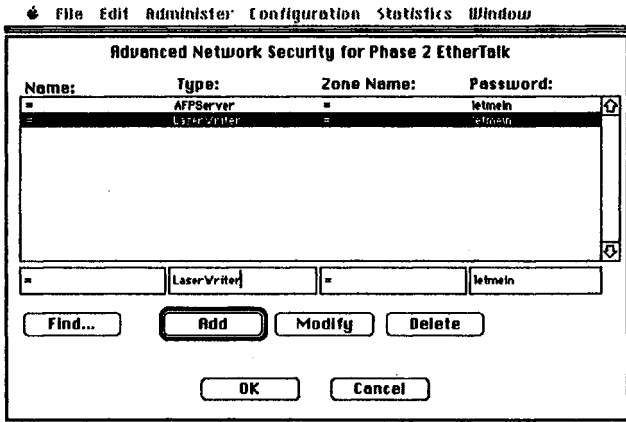
The default setting of the RISC•Router does not select any of these options, leaving access open to all users. These options can be used regardless of whether the RISC•Router is acting as a seed router or not.

ANSP

The Advanced Network Security Protocol (ANSP™) configuration screen is accessed by clicking on the Security button. ANSP is a security protocol developed by Compatible Systems which allows a router to request a password from a Macintosh before granting access to a network device (such as a specific LaserWriter), a class of devices (such as all LaserWriters), or all devices in a certain zone.

In general, ANSP can be used to restrict access to devices which are on one side of the router (such as a LaserWriter on LocalTalk), from access by Macintoshes on another side (such as Macintosh workstations on Ethernet). Protected devices may be multiple router hops away from the router which has

the ANSP entry. Of course, only requests which pass through the router with the ANSP entry will be checked for a password.



Minimally, for each device that you want to protect, you need to enter its name, its type and its password. Phase 2 has the additional option of specifying a zone name. Up to 100 ANSP entries can be stored in a router.

The following is a brief description of the required information needed to create an ANSP entry.

- **Name**
Every device on the network has a name which must be unique. Names can be up to 32 characters long and may include spaces.
- **Type**
AppleTalk devices are categorized by their type. The type is used when the Chooser does a Broadcast Request. Examples of types include LaserWriter for printers and AFPServer for AppleShare servers.
- **Zone Name**
For nonextended networks (LocalTalk or Phase 1), this enterable area will not be displayed. Instead, all entries for this zone will have an asterisk (*) entered

automatically. The asterisk is the AppleTalk naming convention for "this zone."

On Phase 2 extended networks (a network range greater than 1), you must supply a zone name. An asterisk is not a valid entry for extended networks and the Manager will display an error dialog and highlight the offending entry.

- **Password**

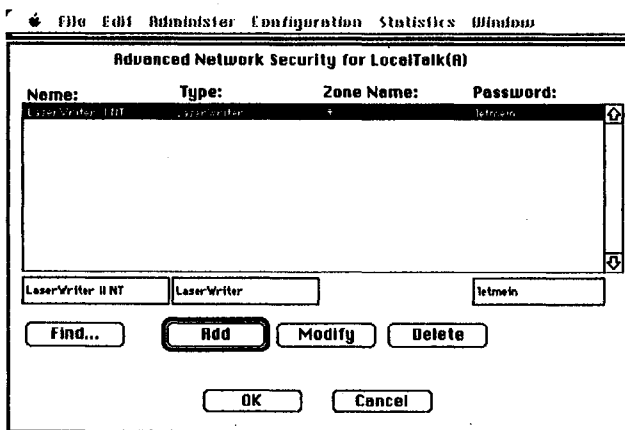
You should provide a password for all ANSP entries. Although they don't all need to be different, variety protects your network from being completely compromised if one password becomes known.

The "Add" button is used after you have filled in the enterable areas to add to the list.

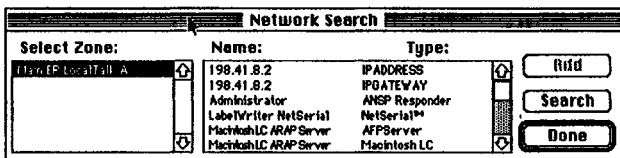
The "Modify" button modifies the selected ANSP entry with the changes made in the enterable areas.

The "Delete" button will delete the selected ANSP entry from the list.

For example, to protect a LaserWriter named LaserWriter II NT you would enter LaserWriter II NT in the Name area, LaserWriter in the Type area and then click Add.

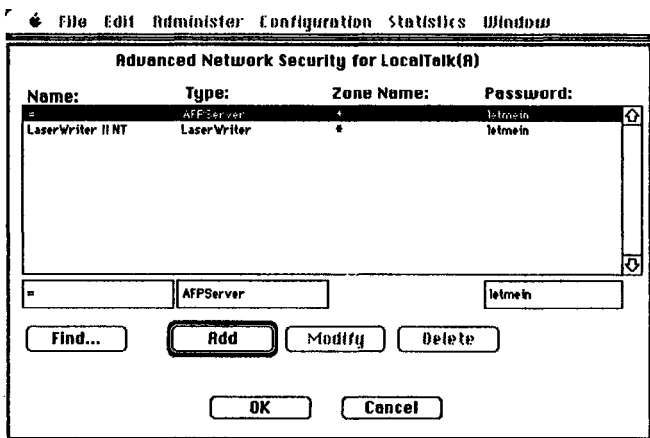


The “Find...” button is there to assist you in creating your ANSP list. Selecting the “Find...” button displays the Network Search dialog shown below.



This dialog lets you select a zone and search for devices. Then you can add ANSP entries by selecting devices and clicking the “Add” button. Adding devices in this manner allows you to avoid misspellings of names and types.

Note: The “Search” button finds all devices in the selected zone. However, if your network consists of separate physical networks with the same zone name, you will not be able to protect all the listed devices. **You can only protect devices in the network that you are configuring.** To protect the other devices you must edit the ANSP entry list(s) for the network(s) in which they reside.



You can double-click on the zone name to do a search in that zone and double-click on the Name or Type entry to add to the ANSP list. **Note:** Entries added through the Network Search dialog will use the password which is currently entered in the Password area of the ANSP Configuration screen.

Protecting a class of devices:

To protect a whole class of devices you would put an equal sign (=) in the Name area and the specific type to protect in the Type area. Below is an example of how to protect all AppleShare file servers in the LocalTalk(A) zone.

Similarly, you can protect all devices by putting an equal sign in both the Name and Type areas. Note: You can not use the equal sign as a wildcard for the zone name with extended networks.

Another wildcard which you can use is the approximately equal sign (≈). It will match zero or more characters anywhere within a Name or Type string.

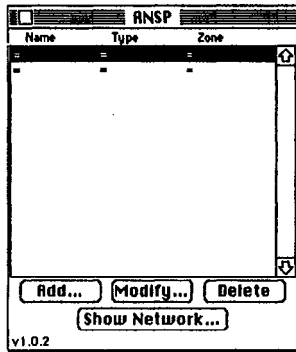
Your ANSP entries will become effective when you download the configuration to the router. Then, only Macintoshes with the ANSP init/cdev installed and with the correct password entries will be able to access the protected devices or services (See next section). Macintoshes which do not need access to the protected devices do not need the init/cdev.

Devices which are protected by the router will simply not show up in the chooser of Macintoshes which either do not have the init/cdev, or do not have a password for the given protected device(s).

ANSP on the Macintosh

People who need access to devices protected by the router will need to install the ANSP init/cdev on their Macintosh. Installation of ANSP is done by dropping the ANSP init/cdev into the System Folder and creating a password access list.

To create or change a Macintosh's ANSP list you must go to the Control Panel and select the ANSP cdev. The main ANSP screen is shown below.



When ANSP entries are made an ANSPPasswords file is created. A password file created on one Macintosh will not be useable on another Macintosh.

To add an entry to the list, click on the Add button. A blank form will be displayed. Fill in the Name, Type, Zone and Password and click OK.

Name	LabelWriter NetSerial
Type	NetSerial™
Zone	Main LocalTalk
Password	••••••••

Cancel OK

To modify an entry, select the item and click the Modify button. A form like the Add form will appear but with all enterable areas filled in. Note: The Password area will have eight (8) bullets, regardless of how many characters were actually typed.

The Show Network button is there as an assistance when creating the ANSP list. Entries can be selected by double-clicking on the desired items. Adding devices in this manner allows you to avoid misspellings of names and types.

Administrators would use this method to create an ANSPPasswords file prior to configuring the router. If you forget and configure the router first, not all devices will appear. This can be overcome by adding an entry with the equal sign (=) in the Name and Type areas, an equal or approximately equal sign (≈) in the Zone area and the router password in the Password area. You need to then close the ANSP screen and reopen it to see all devices.

Users can add their own ANSP entries as long as they know all of the relevant information. This may require getting the information from the network administrator or the owner of the device that is hidden.

The password file is the key to access for users of ANSP. When the Macintosh is booted the init looks for the ANSPPasswords file and loads itself if it is present. (If it is not present and the user creates one then the Macintosh will need to be restarted to load the init.) Once the init is running, changes made to the ANSP entries will take effect when you close the cdev.

Done?

Once you have completed editing the AppleTalk configuration information, you can view it and download it by following the instructions given in the previous section, "Configuring Your Router." If you are configuring an EtherRoute/TCP II, you should continue on to the next section of this manual to perform the IP configuration.