AppleTalk® Phase 2 Introduction and Upgrade Guide

20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010

Contents

CHAPTER 1

Introduction

APPLETALK® PHASE 2 PROVIDES EXTENSIONS TO THE APPLETALK NETWORK system that bring greater capacity and flexibility to AppleTalk networks. The **AppleTalk Internet Router** is an integral component of the AppleTalk network system, and implements some of the extensions found in AppleTalk Phase 2. This booklet explains these extensions, and describes the process by which you can upgrade an AppleTalk internet to support AppleTalk Phase 2 and the AppleTalk Internet Router.

This booklet is a companion guide to the *AppleTalk Internet Router Administrator's Guide*, which describes the installation and operation of the AppleTalk Internet Router software. The administrator's guide also defines the terms and concepts needed to understand routers and the AppleTalk network system.

Do you need to upgrade your internet before using the AppleTalk Internet Router?

Before proceeding to install and use the AppleTalk Internet Router, you may need to read about AppleTalk Phase 2 and the upgrading issues in this guide:

- If no other routers are connected to your network system, or if your internet has already been upgraded to AppleTalk Phase 2, skip directly to the *AppleTalk Internet Router Administrator's Guide.*
- If your internet has not yet been upgraded to AppleTalk Phase 2, use this booklet to learn about AppleTalk Phase 2 and to plan the upgrade process *before* setting up any routers. (If you are new to the AppleTalk network system, consult the administrator's guide as needed for definitions of any new terms or concepts.)

How to determine if your internet needs upgrading

Upgrading an internet to AppleTalk Phase 2 primarily involves making sure that all routers in the internet support AppleTalk Phase 2.

If you are not sure whether your internet has already been upgraded to AppleTalk Phase 2, you will need to find out before installing and using the AppleTalk Internet Router.

- Consult the documentation for any existing routers in the internet. Any connecting device used to define AppleTalk network addresses and AppleTalk zones is a router, even if the product name does not include the word *router*. If the device's documentation does not specifically indicate that the router supports AppleTalk Phase 2, you must assume that it does not. This router must be upgraded.
- Consult any previous network administrator or other individual responsible for setting up and maintaining the network system, to determine whether an internet upgrade has been performed.
- In addition to upgrading routers, you may need to upgrade EtherTalk™ network connection software on individual nodes. Chapters 2 and 3 of this booklet describe what's involved in an internet upgrade.

What is AppleTalk Phase 2?

AppleTalk Phase 2 provides extensions to the AppleTalk network system. These extensions enable the network system to support larger networks while remaining compatible with most current AppleTalk network hardware and software.

Certain aspects of the AppleTalk network system architecture have changed. The principal changes provide:

- extended addressing capacity to support more nodes per network
- zone lists to enable the creation of multiple zones per network

These extensions are available to EtherTalk and TokenTalk™ networks connected to an AppleTalk Internet Router.

LocalTalk™ networks are unchanged in AppleTalk Phase 2. Among the multiple network types supported by the AppleTalk network system, LocalTalk was designed for smaller, localized work groups; it does not require the functionality of extended addressing or multiple-zone networks.

The AppleTalk Internet Router software is compatible with all types of networks and network devices that were compatible with AppleTalk Phase 1, except routers. If an AppleTalk Internet Router (or any AppleTalk Phase 2 router from another manufacturer) is installed in an internet, *all* routers in that internet must be upgraded to AppleTalk Phase 2.

To clarify the upgrade process, this document refers to components of the AppleTalk network system that predate AppleTalk Phase 2 as components of *AppleTalk Phase 1*. (For example, an *AppleTalk Phase 1 router*.)

Network addressing in AppleTalk Phase 2

The most significant new feature of AppleTalk Phase 2 is the extension of the capacity of AppleTalk networks (other than LocalTalk) beyond the previous limit of 254 nodes (imposed by AppleTalk Phase 1). This extension has been accomplished by a change in the way AppleTalk networks are addressed.

In AppleTalk Phase 2, an AppleTalk network is identified by either a **network number** or a **network range.** These identifiers are defined during the router setup process.

- A LocalTalk network is identified by a single network number that is unique in the internet (as it was in AppleTalk Phase 1).
- All other AppleTalk networks can be identified by a network range—a range of contiguous network numbers, such as 1–10.

Each number in a network range is a network address that can be associated with up to 253 nodes. The size of the network range determines the maximum number of AppleTalk devices on the physical network. For example, a network having the range 1–10 could contain up to 10 x 253, or 2530 nodes.

The *AppleTalk Internet Router Administrator's Guide* provides detailed discussions of how to select and assign network ranges when setting up the AppleTalk Internet Router.

Zone lists in AppleTalk Phase 2

In AppleTalk Phase 2, the purpose of an AppleTalk zone remains unchanged: a zone is a means of conceptually grouping devices that makes it easier to locate and access network services. However, AppleTalk zones now provide greater flexibility. In AppleTalk Phase 1, all devices on a network were required to belong to the same zone; in AppleTalk Phase 2, they are not.

Any node on an AppleTalk network (other than LocalTalk) can now belong to any zone selected from a list of available zone names. During the router setup process, the network administrator defines one or more zone names for each network.

- A LocalTalk network can be associated with only one zone name (as it was in AppleTalk Phase 1).
- All other AppleTalk networks can be associated with a **zone list**—a list of zone names available to nodes on that network.

The zone to which any node belongs can be chosen from the list of zone names available to that node's network. This list is accessed from the node through the Macintosh® Control Panel. Unless a node's zone is explicitly selected from its network zone list, the node belongs to the *default zone* for the network, which is defined during router setup.

The administrator's guide provides an expanded definition of AppleTalk zones, as well as explicit instructions for creating and modifying zone lists in the AppleTalk Internet Router.

△ **Important** EtherTalk network software in Macintosh nodes must be upgraded to EtherTalk version 2.0 to be compatible with the extended features of AppleTalk Phase 2. See Chapter 3 of this booklet, "Running Different Versions of EtherTalk on the Same Network." △

CHAPTER 2

Upgrading an Internet to AppleTalk Phase 2

IF YOU ARE INSTALLING THE APPLETALK INTERNET ROUTER IN AN INTERNET containing AppleTalk Phase 1 routers, you must follow one of the upgrading procedures described in this chapter.

If you are using the AppleTalk Internet Router to create a *new* internet—that is, if no routers were previously connected to your network system—or if you are installing the router in an AppleTalk internet that has already been upgraded to AppleTalk Phase 2, no router upgrade is necessary. However, EtherTalk software on individual network nodes may require upgrading, as described in the following sections.

Upgrading network software

Upgrading an internet to AppleTalk Phase 2 requires that *all* connected routers support AppleTalk Phase 2 but does not necessarily require changes to any other hardware or software on the internet.

Only *network connection software*, such as an EtherTalk driver installed in a Macintosh, is affected by an upgrade to AppleTalk Phase 2. Network applications, such as AppleShare® File Server software, are not affected.

The following rules apply to upgrading network connection software on individual network nodes.

LocalTalk: LocalTalk network nodes require *no* software upgrading of any kind to operate in an AppleTalk Phase 2 internet.

EtherTalk: Macintosh computers running EtherTalk software should be upgraded to EtherTalk version 2.0. However, prior versions of EtherTalk can continue to operate while an internet is being upgraded to AppleTalk Phase 2. If you need to temporarily support more than one version of EtherTalk while upgrading, refer to Chapter 3, "Running Different Versions of EtherTalk on the Same Network."

TokenTalk: TokenTalk 2.0 software is fully compatible with all features of AppleTalk Phase 2. Since no version of TokenTalk predates version 2.0, no upgrading is required to use TokenTalk in an AppleTalk Phase 2 internet. TokenTalk software can be used only in an AppleTalk Phase 2 internet.

Upgrading routers

If you are installing the AppleTalk Internet Router in an internet containing AppleTalk Phase 1 routers, you must upgrade these to AppleTalk Phase 2.

Unless a router is explicitly documented as supporting AppleTalk Phase 2, it should be assumed to be an AppleTalk Phase 1 router.

To determine whether an AppleTalk Phase 2 upgrade is available for a non-Apple router, contact the product's dealer or manufacturer. If an upgrade is *not* available, this router must be removed before the internet can make use of the extended addressing or zone list features of AppleTalk Phase 2.

Why upgrade all routers on the internet?

The extended addressing and zone list capabilities of AppleTalk Phase 2 cause AppleTalk Phase 2 routers to store network information in a format that is somewhat different from AppleTalk Phase 1 routers.

Since AppleTalk routers periodically exchange *routing tables* to compare network information and update each other about internetwork routes, the conflicting address formats in AppleTalk Phase 1 and Phase 2 routers would create confusion and break down connectivity. Consequently, AppleTalk Phase 1 and Phase 2 routers should not be operated on the same internet.

A temporary solution to this conflict can be applied while upgrading your internet (see upgrade Scenario 3 later in this chapter), but the concurrent operation of AppleTalk Phase 1 and Phase 2 routers should not continue beyond the upgrade process. The objective of an internet upgrade should be full conversion to AppleTalk Phase 2 as rapidly as possible.

Choosing an upgrade strategy

Three recommended scenarios for upgrading an AppleTalk internet are described on the following pages.

The strategy you choose will be determined by the size of your internet and the importance of maintaining internet connectivity—without interruption—while the upgrade is in progress.

- Scenario 1 calls for upgrading all routers at once. This scenario requires that internet services be interrupted for the duration of the upgrade process.
- Scenario 2 provides for incremental upgrading to AppleTalk Phase 2. Partial internet connectivity can be maintained throughout this upgrade process.
- Scenario 3 involves a software utility, installed in the router Macintosh, that allows full internet connectivity to be maintained throughout the upgrade process (except for brief interruptions to connect networks to router ports and to start up routers).

These scenarios can be used in combination. If there are convenient places to sever your internet into independent sections, each of these sections can be treated as a separate internet, and upgraded using the most appropriate method.

The relative benefits and limitations of each upgrade scenario are discussed in the following sections.

Scenario 1: Upgrading all routers at once

Scenario 1 is the simplest and most direct upgrade method, but it will disrupt user services longest. Connectivity among devices *on the same network* may be maintained during this process, but all internet services are interrupted.

Upgrading all routers at once eliminates the risk of conflict between AppleTalk Phase 1 and Phase 2 routers operating on the same internet. All routers are shut off and remain off until the last upgrade is completed.

This scenario is ideal for small-to-medium-sized internets, in which upgrading is completed in a short time. For internets with many routers, the upgrade process may take a relatively long time, and the ability to maintain partial or full connectivity for the duration may be needed (see Scenarios 2 and 3).

To upgrade all routers at once, first *plan* the desired internet configuration, including network ranges and zone names. Then follow the procedure below:

1. **Give users adequate warning about the loss of internet services.**

2. **Perform an orderly shutdown of all routers on the internet.**

3. **If a router is to be replaced by an AppleTalk Internet Router, follow the instructions for installing and setting up the new router in Chapters 5 and 6 of the *AppleTalk Internet Router Administrator's Guide*. However, do *not* start up the router when setup is completed.**

   If the router is to be upgraded with a manufacturer's upgrade kit or replaced by a non-Apple router, follow the manufacturer's instructions for installing and setting up the device. Do *not* start up the router when setup is completed.

4. **Repeat step 3 for each router in the internet.**

   When all routers have been upgraded and no AppleTalk Phase 1 routers remain connected to the internet, the upgrade procedure is completed.

5. **Restart all routers, beginning with *seed routers*. These are the routers in which you have identified connected networks. *Nonseed routers* acquire this information from seed routers upon startup.**

   Seed routers and nonseed routers are defined in the administrator's guide.

Scenario 2: Maintaining partial internet connectivity while upgrading

Scenario 2 illustrates how you can gradually upgrade routers in an internet to AppleTalk Phase 2 without shutting down all routers at once.

Partial connectivity is maintained throughout the process by isolating the upgraded portion of the internet from the portion that is not yet upgraded. Such a gradual upgrade permits routing to continue *within* each isolated portion of the internet, but also prevents the two portions from communicating with each other.

Internet-wide routing cannot be reestablished until *all* routers have been upgraded to AppleTalk Phase 2.

If *no* such temprorary segmentation of your internet is acceptable during the upgrade process, refer to Scenario 3, "Maintaining Full Internet Connectivity While Upgrading," following this section.

Regaining connectivity after each upgrade

To upgrade the internet without halting all routing services at once, you must segregate the new AppleTalk Phase 2 segments as they become upgraded.

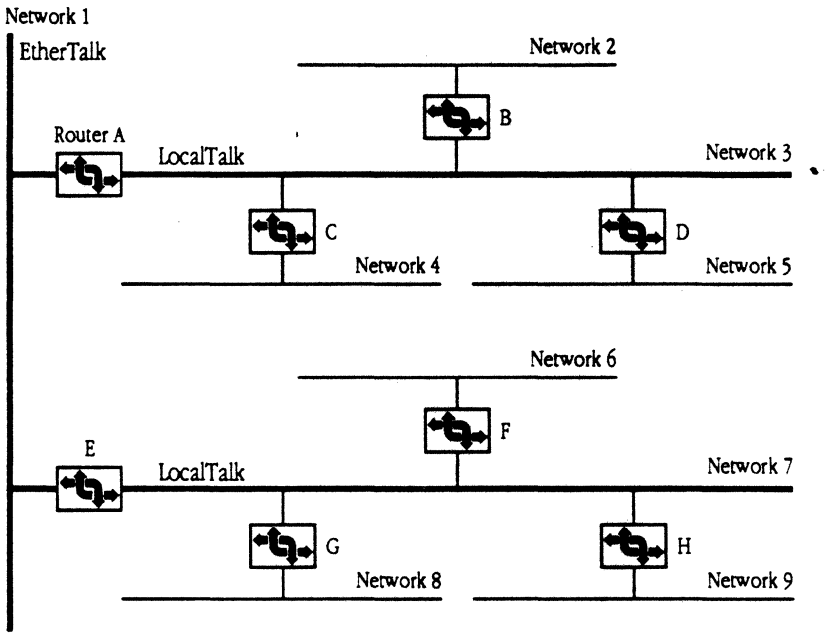
As you proceed through the upgrade sequence, you will be disconnecting the routers you upgrade from the internet in order to isolate AppleTalk Phase 2 routers from AppleTalk Phase 1 routers. However, to minimize the loss of internet services to users, you can reconnect the upgraded portions of the internet to each other after each router upgrade.

Reconnecting the upgraded portions will create a growing AppleTalk Phase 2 internet that will be complete following the last router upgrade—rather than several disconnected clusters of AppleTalk Phase 2 networks.

The following example illustrates how an upgrade sequence can be designed to minimize the disruption of internet services, and how connectivity can be restored gradually throughout the internet upgrade.

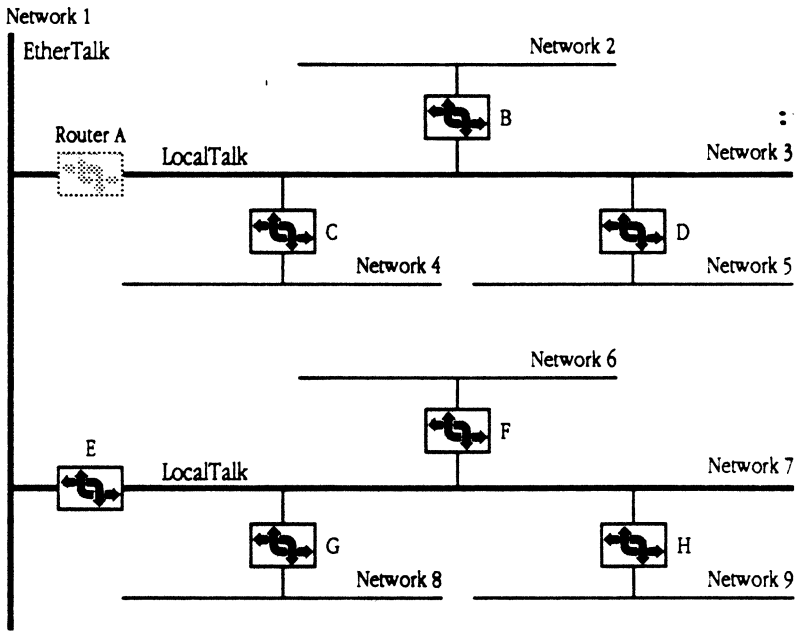
A sample upgrading sequence

The internet example below shows an EtherTalk backbone network to which two LocalTalk networks are connected by routers. On each of these networks, routers are used to connect additional LocalTalk networks.



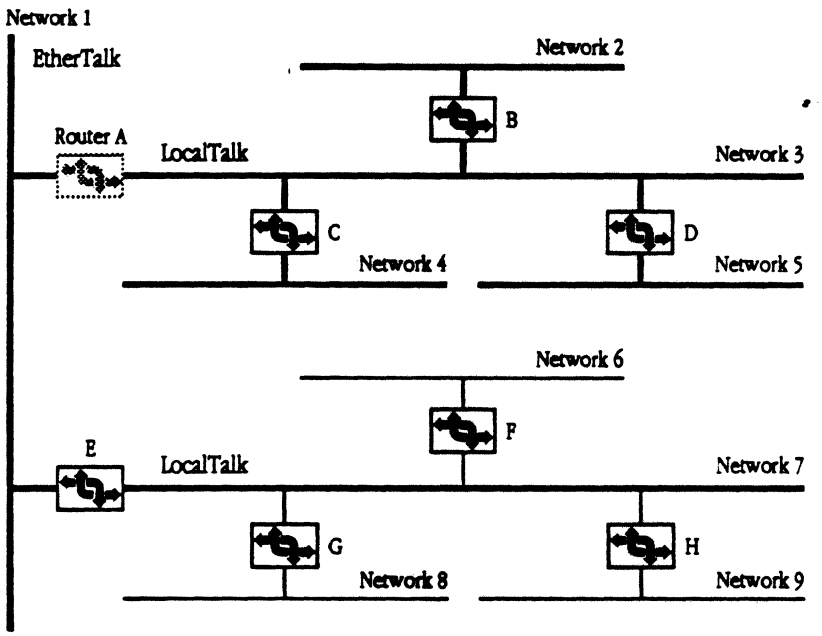
An orderly upgrade sequence for this internet might progress as follows:

1. Shut down Router A to separate the portion of the internet that is to be upgraded to AppleTalk Phase 2.



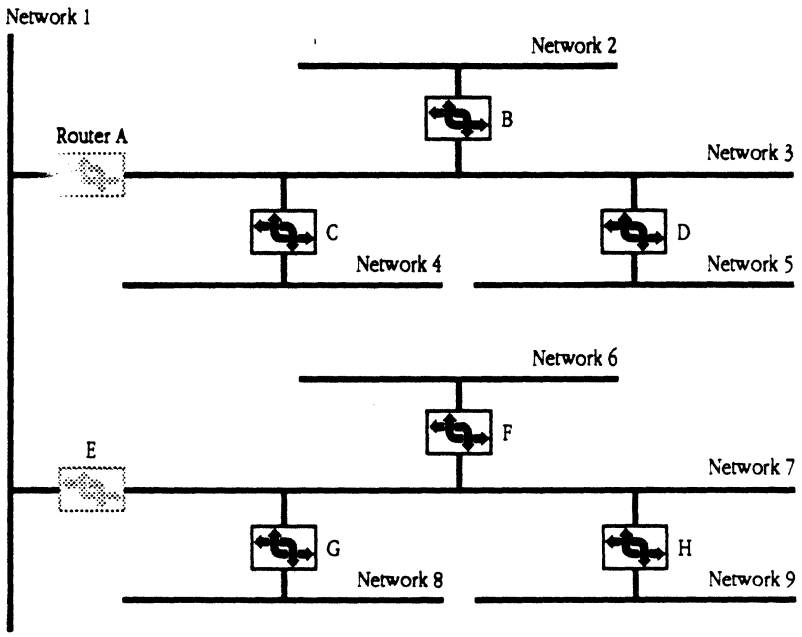
2. Shut down routers B, C, and D.
3. Upgrade, then restart routers B , C, and D.

Networks 2, 3, 4, and 5 now form an AppleTalk Phase 2 internet. Networks 1 and 6–9 continue to function as an AppleTalk Phase 1 intenet.



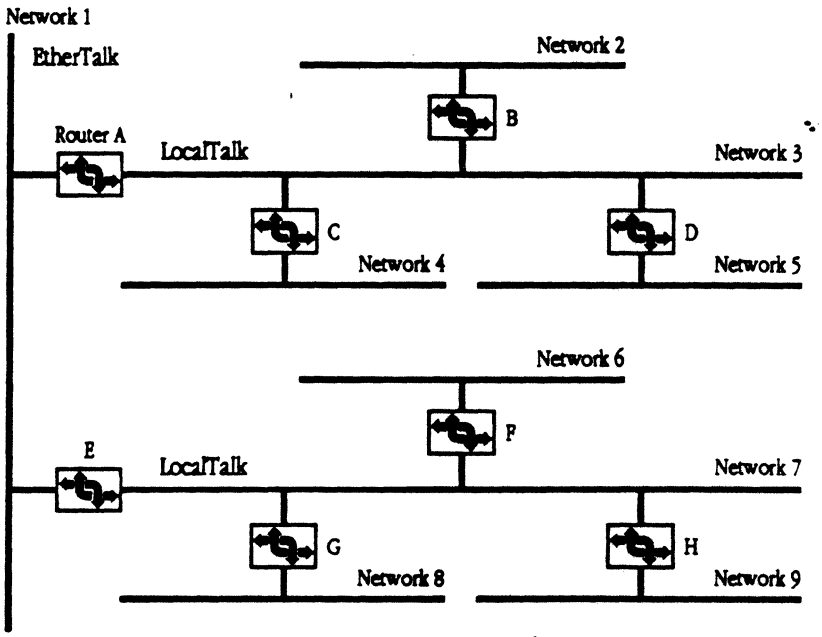
4. Shut down Router E
5. Shut down routers F, G, and H.
6. Upgrade, then restart routers F, G, and H.

Networks 2–5 and 6–9 now form two separate AppleTalk Phase 2 internets. Network 1 continues to function as an AppleTalk Phase 1 network.



7. Upgrade routers A and E.
8. Restart routers A and E.

The internet upgrade to AppleTalk Phase 2 is now complete.



Upgrading a router in a Scenario 2 upgrade

First, determine the most expedient order in which routers on your internet should be upgraded. Plan the upgrade in a sequence that assures complete separation of the upgraded portion of the internet from networks that have not yet been upgraded. (Drawing a map of the internet is recommended.)

Once the desired sequence of router upgrades has been established, repeat the following procedure for each router.

1. **Give appropriate warning to any users whose network services may be affected by the upgrade process.**

2. **If the router being upgraded is connected to any network on which *other* AppleTalk Phase 1 routers are connected, these routers must be either disconnected from the network or upgraded simultaneously. (Consult the owner's manual of any affected router before shutting down the router or disconnecting a network.)**

3. **Perform an orderly shutdown of the router being upgraded.**

4. **If the router is to be replaced by an AppleTalk Internet Router, follow the instructions for router installation and setup in Chapters 5 and 6 of the *AppleTalk Internet Router Administrator's Guide*.**

   If the router is to be upgraded with a manufacturer's upgrade kit or replaced by a non-Apple router, follow the manufacturer's instructions for installing and setting up the device.

5. **Once the router upgrade is completed, reconnect the router to the upgraded portion of the internet, as illustrated in the preceding sections, and start up the router.**

6. **Repeat steps 1 through 5 with the next router in your upgrade plan sequence.**

Scenario 3: Maintaining full internet connectivity while upgrading

If your organization's reliance on internet services makes it impossible to segment the internet while upgrading, you may wish to perform an incremental upgrade to AppleTalk Phase 2 in which *full* connectivity is maintained throughout the upgrade process.

Scenario 3 allows you to upgrade one router at a time, without requiring that all AppleTalk Phase 1 routers on the internet be shut down or that upgraded portions of the internet be isolated. This upgrade scenario makes use of a software utility called the AppleTalk Phase 2 Upgrade Utility.

The AppleTalk Phase 2 Upgrade Utility is provided on the AppleTalk Internet Router Utilities disk. When this utility is installed in a Macintosh running the AppleTalk Internet Router software, this router can be connected to a network on which AppleTalk Phase 1 routers are connected and can route packets to and from these routers. Full connectivity is maintained between nodes on the connected networks.

There is an important limitation to the use of the Upgrade Utility: As long as any AppleTalk Phase 1 routers remain active in the internet, the extended features of AppleTalk Phase 2 cannot be used. You must upgrade *all* routers before setting up any networks with extended addressing or multiple zones. To use these setup features in a router, you will need to change this router's setup once the internet upgrade is completed.

If you are installing the AppleTalk Internet Router to connect large networks and you wish to set up extended addressing immediately rather than add this functionality later, use one of the upgrade methods described in the preceding sections (Scenario 1 or Scenario 2).

Determining the upgrade sequence

You can install the AppleTalk Internet Router in any location on an internet if the router is running the Upgrade Utility. However, if you are upgrading non-Apple routers for which no such utility is available, you must observe certain guidelines.

- **On any LocalTalk network in which AppleTalk Phase 1 and Phase 2 routers are running concurrently, *all* Phase 2 routers must be running the Upgrade Utility.**

  As AppleTalk routers transmit their routing tables to all other routers directly connected to the same network, the format of Phase 2 routing tables would confuse Phase 1 routers. The Upgrade Utility translates the format of the AppleTalk Internet Router's routing table packets to AppleTalk Phase 1.

- **On any EtherTalk network in which AppleTalk Phase 1 and Phase 2 routers are running concurrently, there must be *at least one* AppleTalk Internet Router in which the Upgrade Utility and both EtherTalk 2.0 and 1.2 drivers are installed. (EtherTalk version 1.2 is provided on the EtherTalk 2.0 Installer disk.)**

  The Upgrade Utility isn't required on all routers in EtherTalk networks, because the Phase 2 routing packets that are broadcast to other connected routers are sent to a network address that is visible only to Phase 2 routers. This is explained in the section called "Effects of running dual versions of EtherTalk on the router," in Chapter 3.

The AppleTalk Internet Router, through the Upgrade Utility, serves as the sole means of communication between the AppleTalk Phase 1 and Phase 2 routers on connected networks.

The following sample upgrading sequence illustrates the use of the Upgrade Utility in upgrading both LocalTalk and EtherTalk networks.

A sample upgrading sequence

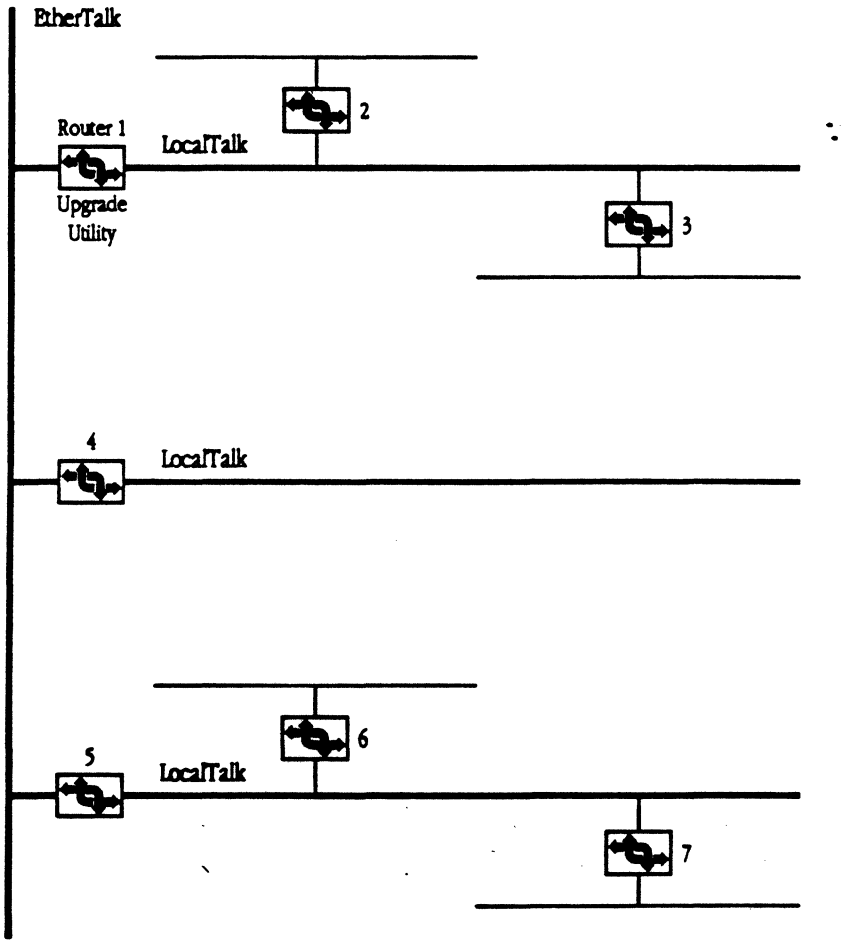
In the upgrade example that follows, the sequence begins with an internet in which all routers are AppleTalk Phase 1 routers.

1. LocalTalk networks are connected to an EtherTalk backbone network by AppleTalk Phase 1 routers. Only a few connected routers are shown here, but the backbone networks can in fact be very long and have many connected routers.

2. To begin, upgrade Router 1 to an AppleTalk Phase 2 router and *install the Upgrade Utility.*

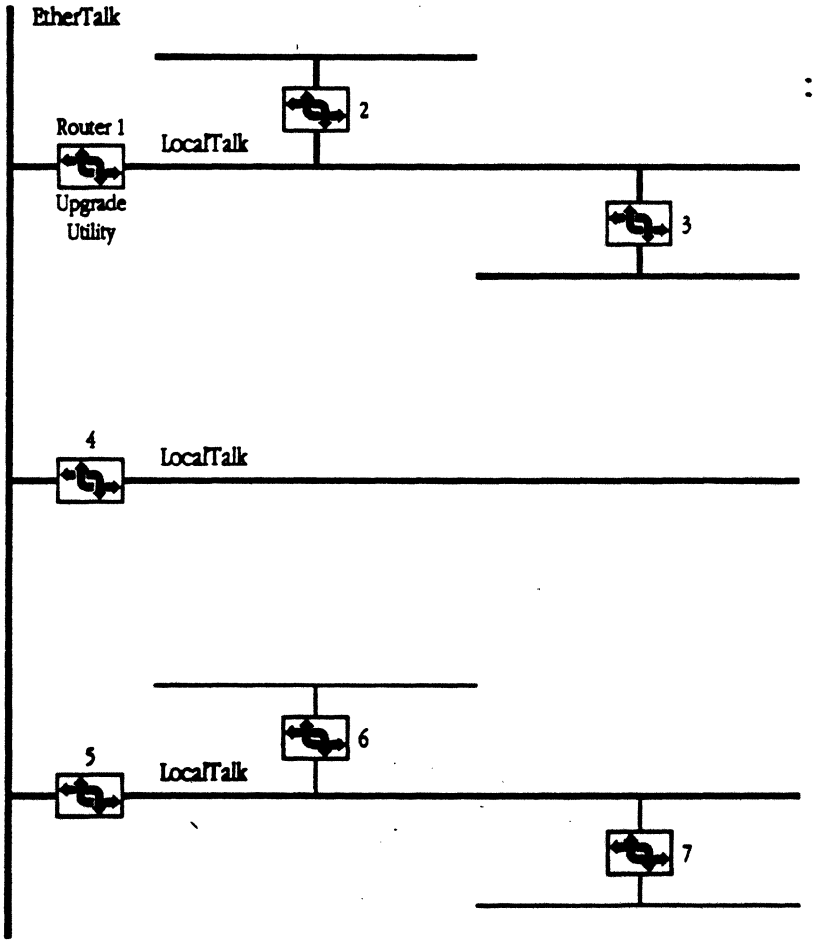
   This can be accomplished either by replacing the AppleTalk Phase 1 router with the AppleTalk Internet Router and Upgrade Utility, or by upgrading the non-Apple router—if the manufacturer's upgrade provides a feature equivalent to the Upgrade Utility.

   At this point, internet connectivity needs to be disrupted only for the time required to upgrade and start up Router 1.



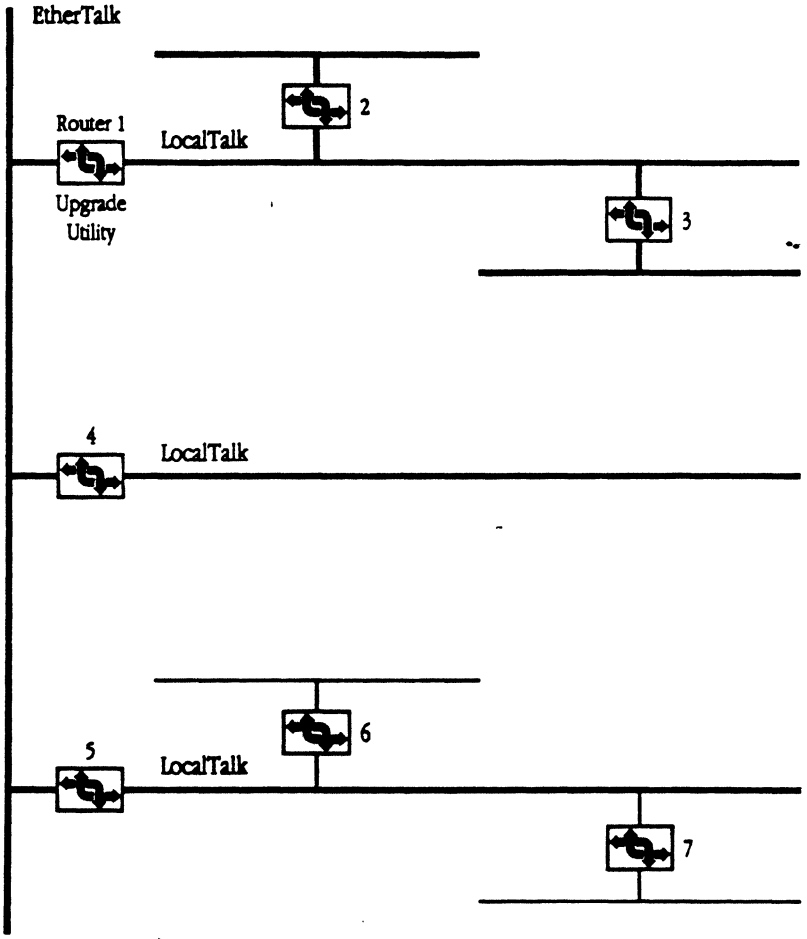
3. Once Router 1 has been upgraded and the Upgrade Utility installed, upgrade Router 2 and Router 3. Since routers 2 and 3 are connected to a LocalTalk network, they must either be upgraded at once or upgraded using the Upgrade Utility.

   Note that at this point, Router 1 (with the Upgrade Utility) is serving as the link between a portion of the internet that is fully upgraded to AppleTalk Phase 2, and a portion that is using only AppleTalk Phase 1 routing protocols. This is a valuable capability of the Upgrade Utility, which can be applied in most upgrade sequences.



4. Upgrade Router 4.

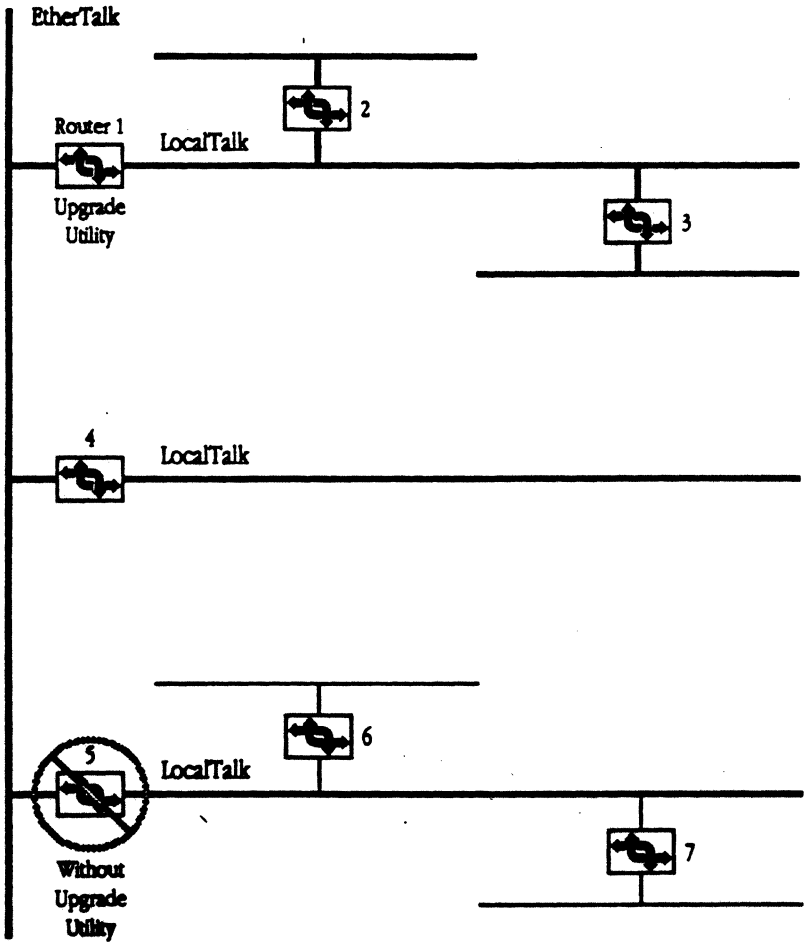
   Note that no Upgrade Utility is required, since the EtherTalk network has one connected router already using the Upgrade Utility and the LocalTalk network has no other routers connected.



5. At this point, you must install the Upgrade Utility on the next router that will be upgraded.

   If you were to upgrade Router 5 without the Upgrade Utility, this router would become a barrier between the AppleTalk Phase 1 and Phase 2 portions of the internet. Routing information from the AppleTalk Phase 2 portion of the internet would be transmitted *untranslated* through Router 5, and on to the AppleTalk Phase 1 portion, where it would be incomprehensible to Routers 6 and 7.

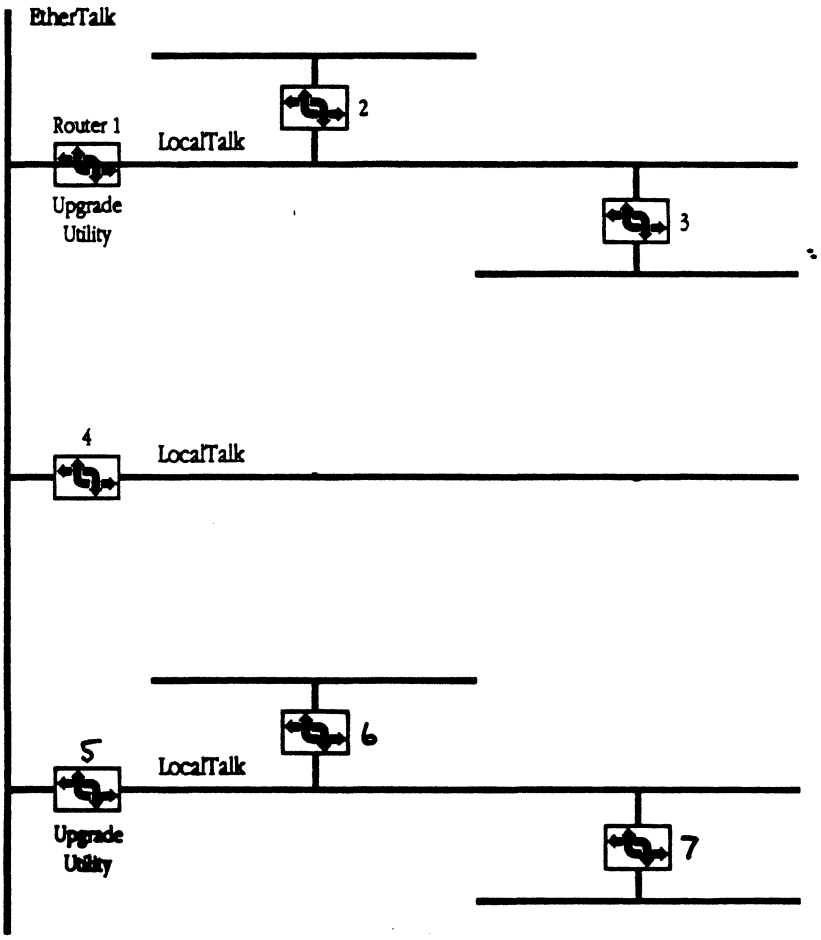
   Routers 5 and 6 do not have access to the Upgrade Utility on Router 1, since they are not connected to the same network.



6. Next, upgrade Router 4 and install the Upgrade Utility.

   You can then either upgrade routers 6 and 7 at once, or separately if you use the Upgrade Utility.

   The internet upgrade is now complete.



Performing a router upgrade with the Upgrade Utility

To upgrade your internet incrementally with the Upgrade Utility, begin by carefully planning the sequence in which to upgrade routers. Remember that on any EtherTalk network, AppleTalk Phase 1 and Phase 2 routers can coexist *only* if the Upgrade Utility is installed on at least one directly connected router.

Once you have determined the most effective upgrade sequence for your internet, follow the procedure below for each router in which the AppleTalk Phase 2 Upgrade Utility is to be installed. (Install other routers normally as instructed in the administrator's guide).

1. **Follow the instructions for router installation in Chapter 5 of the *AppleTalk Internet Router Administrator's Guide.***

2. **When the router installation is completed, insert the AppleTalk Internet Router Utilities disk into the drive of the router Macintosh.**

3. **Double-click on the Utilities disk icon to open the directory window.**

   If you are using a Macintosh computer with no hard disk and only one floppy disk drive, follow the instructions for disk swapping in the Macintosh owner's guide.

4. **Drag the Upgrade Utility file into the System Folder of the Macintosh.**

   Note that the Upgrade Utility file cannot be opened. The Upgrade Utility has no display screens and requires no separate setup.

5. **Proceed to set up the router as instructed in Chapter 6 of the *AppleTalk Internet Router Administrator's Guide.***

   Do not use extended addressing or multiple-zone networks anywhere in the internet while the Upgrade Utility is in use. Be sure that no network range contains more than one network number (for example, network range 3-3 is valid; network range 3–4 is not), and that no zone list contains more than one zone name.

6. **Save the setup information and restart the router as instructed in the administrator's guide.**

   During the startup process, the Upgrade Utility icon is briefly displayed. The router and Upgrade Utility are now both operational.

7. **Repeat steps 1 through 6 for each router in which the Upgrade Utility must be installed. Install other routers normally as instructed in the administrator's guide.**

8. **Once the internet upgrade has been completed and all routers have been upgraded to AppleTalk Phase 2, remove the Upgrade Utility from each router in which it was installed.**

   Open the System Folder and drag the Upgrade Utility file to the Trash. Then restart the router Macintosh.

Once the Upgrade Utility ceases to detect AppleTalk Phase 1 routers on the internet, it automatically shuts itself off and is of no further value. However, since the utility does occupy memory and may minimally affect router performance, it is recommended that you remove it from all routers once the upgrade is completed.

Error conditions while using the Upgrade Utility

While using the Upgrade Utility, there are three potential error conditions about which the Upgrade Utility will alert you by displaying an error message in the router Macintosh. Until the error condition is corrected, the message will reappear at regular intervals.

The three messages are listed below, followed by a brief interpretation of the situation that must be corrected. If necessary, consult Chapter 7 of the *AppleTalk Internet Router Administrator's Guide* for help in making changes to router setup information.

The Upgrade Utility detected a network range 111 to 222. This network will not be visible to AppleTalk Phase 1 routers. Network ranges are limited to one network number while the Utility is active.

While the Upgrade Utility is installed and active on a router, the router receives information about a network somewhere on the internet that is identified by a network range greater than one network number (for example, network range 3–4 rather than 3–3).

You must locate this network and correct its setup information in all connected seed routers or upgrade all AppleTalk Phase 1 routers to Phase 2.

The Upgrade Utility detected a zone list with more than one entry for network 111. Devices on this network may not be visible to some users. Zone lists are limited to one entry while the Utility is active.

While the Upgrade Utility is installed and active on a router, the router receives information about a network somewhere on the internet whose zone list contains more than one zone name.

You must locate this network and correct its setup information in all connected seed routers.

The Upgrade Utility detected an AppleTalk Phase 1 router on network 111 but the Utility is no longer active. Some networks may not be visible to AppleTalk Phase 1 routers.

Once all routers on an internet have been upgraded to AppleTalk Phase 2, the Upgrade Utility automatically becomes inactive. However, the utility is still capable of detecting the presence of AppleTalk Phase 1 routers.

Once the Upgrade Utility is inactive, if an AppleTalk Phase 1 router is started up on the network in which the Utility is installed, this message will be displayed on any connected router containing the Upgrade Utility. The Phase 1 router must be upgraded or removed from the network.

The Upgrade Utility and router statistics

The presence of an active Upgrade Utility changes one of the error reporting conditions in the AppleTalk Internet Router.

When the Upgrade Utility is running, the Router Version Mismatch statistic in the router's Port Statistics window *does* increment as it should each time an AppleTalk Phase 1 routing packet is received. However, the network activity meters in the Port Statistics and Newtwork Informations windows do *not* record any error activity, because the Phase 1 packet is a normal operating condition when the Upgrade Utility is in use.

CHAPTER 3

Running Different Versions of EtherTalk on the Same Network

MACINTOSH COMPUTERS CONNECTED TO ETHERTALK NETWORKS MUST BE upgraded to EtherTalk 2.0, the new version of the EtherTalk driver, in order to take advantage of the extended addressing features of AppleTalk Phase 2.

Although all nodes on an EtherTalk network should be upgraded at relatively the same time, there will be a period of time—especially on larger networks—during which some nodes on a network have been upgraded to EtherTalk 2.0 and other nodes have not.

This chapter describes how connectivity can be maintained between network nodes running different versions of EtherTalk software.

Using the AppleTalk Internet Router to route between different versions of EtherTalk

Under normal circumstances, when a node on an EtherTalk network is upgraded to EtherTalk version 2.0, this node ceases to be able to communicate with network nodes that are running prior versions of EtherTalk . The nodes running different versions of EtherTalk are, in effect, unable to decipher each other's transmissions on the network.

When the AppleTalk Internet Router is connected to such a network, *if both versions of the EtherTalk driver are installed in the router,* the incompatible EtherTalk nodes are now able to communicate with each other, using the router as interpreter.

Installing two versions of EtherTalk drivers on a router in this way is recommended only for the time required to upgrade all nodes. Using the router as the means of communication between nodes impairs network performance; it is a temporary solution to maintain connectivity while upgrading network software only.

Once the process of upgrading EtherTalk nodes has been completed, old versions of EtherTalk drivers should be removed from all routers.

△ **Important** Running multiple versions of EtherTalk on the same network is not a necessary part of the upgrade process. Unless you have a large number of EtherTalk nodes, the loss of connectivity experienced (until all nodes have been upgraded) may be brief, and therefore acceptable. △

Installing two versions of EtherTalk in the router Macintosh

To enable network nodes running EtherTalk 2.0 and nodes running earlier EtherTalk versions to communicate with each other, you must install *both* EtherTalk driver versions 2.0 and 1.2 in at least one AppleTalk Internet Router connected to the network. EtherTalk version 1.2 is provided on the EtherTalk 2.0 Installer disk.

The installation sequence

To install two versions of EtherTalk in the router Macintosh, follow the installation sequence below:

1. **Use the Installer to install EtherTalk 2.0.**

   Follow the instructions in the *Apple EtherTalk NB User's Guide*. Complete the EtherTalk 2.0 installation before proceeding to the next step.

2. **Open the folder called Previous Version in the EtherTalk 2.0 Installer disk directory window. This folder contains EtherTalk version 1.2.**

   Do *not* use the Installer to install the EtherTalk 1.2 driver. The installation procedure would overwrite (and thereby delete) EtherTalk 2.0.

3. **Drag the EtherTalk 1.2 driver into the System Folder of the router Macintosh.**

   The EtherTalk installation is completed.

4. **Restart the Macintosh from the AppleTalk Internet Router Installation disk and use the Installer to install the AppleTalk Internet Router.**

   Follow the installation instructions in Chapter 5 of the *AppleTalk Internet Router Administrator's Guide*.

If EtherTalk driver version 2.0 *only* is used, no special installation sequence is required. EtherTalk 2.0 can be installed before or after the AppleTalk Internet Router is installed.

Effects of running dual versions of EtherTalk on the router

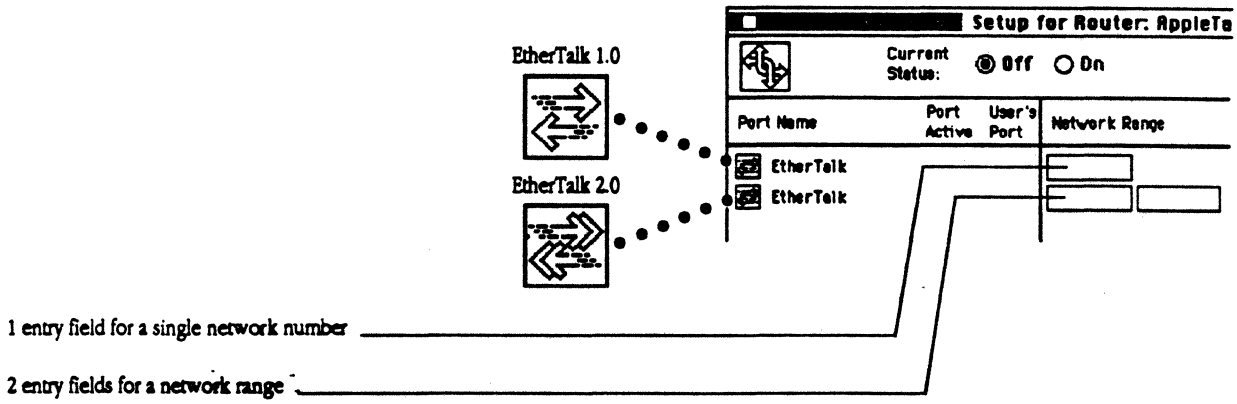
When both EtherTalk driver versions are installed in the router Macintosh, *two* router ports will be displayed in the Router Setup window for each EtherTalk interface card installed in the Macintosh (see Figure 3-1).

The one physical network connected to this interface card is seen by the router as two separate AppleTalk networks:

- The EtherTalk 1.2 driver causes the router to recognize an EtherTalk 1.2 network connected to the same port.
- The EtherTalk 2.0 driver causes the router to recognize an EtherTalk 2.0 network connected to this port.

As a result, network nodes running different versions of EtherTalk are seen by the AppleTalk Internet Router as being on different networks, and the router routes packets between their network addresses as if they were independent physical networks.

Figure 3-1 Dual EtherTalk versions in the Router Setup window



Setting up dual EtherTalk connections for one physical network

In the Router Setup window, you must set up the two ports listed for the two EtherTalk driver versions as if they were different networks. The router cannot recognize these two ports as a single network, and would consider it a setup error if you attempted to enter the same network information for both ports.

In the Router Setup window, note that the entry fields presented for the EtherTalk 1.2 port do not support extended addressing or multiple zones.

To set up dual EtherTalk port listings for one network:

- **Enter a network number, zone name, and port description for the EtherTalk 1.2 port.**
- **Enter a network range, zone list, and port description for the EtherTalk 2.0 port.**

You may wish to enter different descriptions for the two ports in their Port Description fields. The Port Description makes it easier to recognize networks in the router's display listings. The EtherTalk network's dual ports both start out with "EtherTalk" as their port description, and if you leave these default entries unchanged, it may later be difficult to distinguish the ports in router listings. It's helpful to append the appropriate version number to the end of each of these port descriptions.

For explicit setup instructions, refer to Chapter 6 of the *AppleTalk Internet Router Administrator's Guide*.

Changing the router setup after upgrading

Once all EtherTalk nodes on a network have been upgraded to EtherTalk version 2.0, you should remove the EtherTalk 1.2 driver from the router Macintosh. To do so, repeat these steps for each affected router:

1. **Set the Restart Status to Off in the Router Setup window and restart the router Macintosh.**
2. **Drag the EtherTalk 1.2 driver from the System Folder to the Trash.**
3. **Open the Router desk accessory and make any necessary changes in the router's setup.**
4. **Set the Restart Status to On and close the Router desk accessory.**
5. **Restart the router Macintosh.**

   When the router starts up, the Router Setup window will list only the EtherTalk 2.0 port for the EtherTalk network.