# AppleTalk Routing & Bridging

## AppleTalk Routing: Ethernet Configuration Dialog Box

To access this dialog box (Figure 4-1), select Ethernet/AppleTalk Routing in the Device View.

*Figure 4-1     AppleTalk Routing: Ethernet Configuration Dialog Box*

## AppleTalk Phase 1 Configuration

AppleTalk Phase 1 is an earlier version of the AppleTalk protocol which is still in use on some large legacy networks. Some older routers support this protocol, and "transitional routing" between it and AppleTalk Phase 2.

Although some older routers support AppleTalk Phase 1, we recommend that all new AppleTalk installations use AppleTalk Phase 2, which is much more capable.

In transitional routing installations, the same range of potential AppleTalk network numbers is shared by both Phase 1 and Phase 2. Care must be taken to avoid network number conflicts in these installations.

# Phase 1 Routing/Bridging/Off

This set of radio buttons controls how AppleTalk Phase 1 packets are handled for this interface.

- If set to **Phase 1 Routing**, then AppleTalk Phase 1 packets received on this interface are routed to the correct interface on the router.

- If set to **Phase 1 Bridging**, then any AppleTalk Phase 1 packets received on this interface are forwarded to the router's internal bridge. This setting makes this Ethernet interface a member of the "AppleTalk Phase 1 Bridge Group" for this router.

The Phase 1 Bridging radio button will be grayed out unless bridging has been turned on globally for the device using the Main Bridging Configuration dialog box (under Global/Bridging) and locally on this interface using the Bridging: Ethernet dialog box (under Ethernet/Bridging).

- If it is set to **Phase 1 Off**, then any AppleTalk Phase 1 packets received on this interface are discarded.

# Phase 1 Seed Status

One of the functions which routers perform in AppleTalk internetworking is setting the AppleTalk network number for each network segment. A router which sets the network number for a segment is said to have "seeded" the network.

- **Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment connected to this interface and use this number if it exists. If it doesn't discover a number in use, the router will use the configured **AppleTalk Phase 1 Net #** to set the Phase 1 network number for the segment. It will also assign the configured **Phase 1 Zone** name to the segment.

- **Non-Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment connected to this interface and use this number if it exists. If it doesn't discover a number in use, the router will wait indefinitely until a number is set by another router on the segment.

- **Auto-Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment connected to this interface and use this number if it exists. If it doesn't discover a number in use, the router will auto-generate a valid number using its routing tables.

# Phase 1 Net #

For Ethernet interfaces which you set to **Seed** Phase 1, you must provide a network number. This is a decimal number that uniquely identifies the network segment connected to this interface, for Phase 1. Acceptable values range from 1 to 65,279.

Accidental selection of an AppleTalk network number which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

# Phase 1 Zone

For Ethernet interfaces which you set to **Seed** Phase 1, you must provide a zone name. This is the name associated with the network number entered. Zone names may be up to 32 characters in length.

Typically a name is chosen which has some significance to the physical location or the corporate purpose of the network segment. An example would be "Accounting Department."

This name will appear in the Chooser program of computers which support AppleTalk.

# Phase 1 Node

You can provide a suggestion for the node number the router should use on this AppleTalk Phase 1 interface. The router will try to claim this number when it is powered up or restarted.

The AppleTalk protocol allows network nodes to dynamically claim node numbers when they start up. Assigning known AppleTalk node numbers to router interfaces can make it easier to diagnose network problems using a network packet monitor.

# NBP Lookup Filters (Filtering)

The parameters required for NBP Filtering are contained in a configuration screen brought up by the Filtering button. This screen is discussed in the "NBP Lookup Filters (Filtering)" section on page 4-3.

# AppleTalk Phase 2 Configuration

AppleTalk Phase 2 is an updated version of the AppleTalk protocol which allows for more than 256 nodes on an Ethernet segment, and reduces the overhead required by AppleTalk RTMP (Routing Table Maintenance Protocol). AppleTalk Phase 2 should be used for all new installations.

# Phase 2 Routing/Bridging/Off

This set of radio buttons controls how AppleTalk Phase 2 packets are handled for this interface.

- If set to **Phase 2 Routing**, then AppleTalk Phase 2 packets received on this interface are routed to the correct interface on the router.

- If set to **Phase 2 Bridging**, then any AppleTalk Phase 2 packets received on this interface are forwarded to the router's internal bridge. This setting makes this Ethernet interface a member of the "AppleTalk Phase 2 Bridge Group" for this router.

The Phase 1 Bridging radio button will be grayed out unless bridging has been turned on globally for the device using the Main Bridging Configuration dialog box (under Global/Bridging) and locally on this interface using the Bridging: Ethernet dialog box (under Ethernet/Bridging).

- If it is set to **Phase 2 Off**, then any AppleTalk Phase 2 packets received on this interface are discarded.

# Phase 2 Seed Status

One of the functions which routers perform in AppleTalk internetworking is setting the AppleTalk network number for each network segment. A router which sets the network number for a segment is said to have "seeded" the network.

- **Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment connected to this interface and use this range if it exists. If it doesn't discover a range in use, the router will use the configured **AppleTalk Phase 2 Net #** range to set the Phase 2 network number(s) for the segment. It will also assign the configured **Phase 2 Zone** list to the segment.

- **Non-Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment connected to this interface and use this range if it exists. If it doesn't discover a range in use, the router will wait indefinitely until a range is set by another router on the segment.

- **Auto-Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment connected to this interface and use this range if it exists. If it doesn't discover a range in use, the router will auto-generate a valid number (a range of size 1) using its routing tables.

# Phase 2 Net # Range

For Ethernet interfaces which you set to **Seed** Phase 2, you must provide a network number range. These two decimal numbers uniquely identify the range of AppleTalk network numbers for the network segment connected to this interface, for Phase 2. Acceptable values vary from 1 to 65,279. The value on the left must be smaller than the value on the right.

Each individual number in the range will support up to 253 node addresses.

Accidental selection of an AppleTalk network number (or range of numbers) which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

# Phase 2 Zones

For Ethernet interfaces which you set to **Seed** Phase 2, you must provide a network number range. These are the names associated with the network number range entered. You must specify at least one name, but it isn't necessary to specify a name for every number in the range. Zone names may be up to 32 characters in length.

Typically names are chosen which have some significance to the physical location or the corporate purpose of the network segment. Examples would be "Main Accounting," "Cost Accounting" and "Bookkeeping."

These names will appear in the Chooser program of computers which support AppleTalk. Using the Network Control Panel, Macintosh computers are able to pick the zone in which they are located.

# Phase 2 Default Zone

Use the Default button next to the Zone list to select which entry the router should designate as the default zone name for the segment. If you do not specify a default name, the router will designate the first name in the list.

## Phase 2 Node

You can provide a suggestion for the node number the router should use on this AppleTalk Phase 2 interface.

The AppleTalk protocol allows network nodes to dynamically claim node numbers when they start up. Assigning known AppleTalk node numbers to router interfaces can make it easier to diagnose network problems using a network packet monitor.

## NBP Lookup Filters (Filtering)

The parameters required for NBP Filtering are contained in a configuration screen brought up by the Filtering button. This screen is discussed in the "NBP Lookup Filters (Filtering)" section on page 4-3.

# AppleTalk Routing: WAN Configuration Dialog Box

To access this dialog box (Figure 4-2), select WAN/AppleTalk Routing in the Device View.

*Figure 4-2    AppleTalk Routing: WAN Configuration Dialog Box*



## AppleTalk On/Bridging/Off

This set of radio buttons controls how AppleTalk packets are handled for this interface.

- If set to **AppleTalk On**, then AppleTalk packets received on this interface are routed to the correct interface on the router.

- If set to **AppleTalk Bridging**, then any AppleTalk packets received on this interface are forwarded to the router's internal bridge. This setting makes this Ethernet interface a member of the "AppleTalk Phase 2 Bridge Group" for this router.

The AppleTalk Bridging radio button will be grayed out unless bridging has been turned on globally for the device using the Main Bridging Configuration dialog box (under Global/Bridging) and locally on this interface using the Bridging: WAN dialog box (under WAN/Bridging).

- If it is set to **AppleTalk Off**, then any AppleTalk packets received on this interface are discarded.

# Numbered Interface

This check box determines whether the Wide Area Network connected to this interface will have an AppleTalk network number associated with it.

Many WAN connections are simple point-to-point links. These links do not generally require a network number because there are only two devices on the link. All traffic sent from one end is, by definition, destined for the other end. You generally do not need a numbered WAN interface if you are using the PPP transport protocol.

In contrast, Frame Relay networks may have a number of participating routers connected through a single physical interface. Because of this, use of the Frame Relay transport protocol requires a numbered WAN interface.

- If **checked**, then you must set an AppleTalk Network Number and Zone for this WAN interface. The default is unchecked.

# Network Number

If you have set this interface to be a numbered interface, you must provide a network number to identify the WAN link. This number creates a "non-extended" AppleTalk network on the WAN link. Acceptable values vary from 1 to 65,279.

Accidental selection of an AppleTalk network number which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

# Zone

If you have set this interface to be a numbered interface, you must provide a zone name which will be associated with the network number. Zone names may be up to 32 characters in length.

Typically a name is chosen which has some significance to the physical locations connected by the WAN link. An example would be "NYC - Chicago WAN."

This name will appear in the Chooser program of computers which support AppleTalk, but there will be no selectable AppleTalk devices in the zone.

# Node

If you have set this interface to be a numbered interface, you must provide an AppleTalk node number in this field which is unique for the network number entered.

The routers require the assignment of a unique AppleTalk node number for numbered WAN interfaces. On Frame Relay networks in particular, you should keep a list of node number assignments to avoid conflicts.

# Update Method

WAN interfaces which are configured to provide "dial-on-demand" service will bring a connection up (i.e. dial the other end) when there are network packets which must be transferred over the link. Once a dial-on-demand connection is up, network traffic passing across the link causes the inactivity timer for the link to be reset, keeping the connection up.

The AppleTalk RTMP protocol periodically sends out update information across a link. These periodic update packets will cause a WAN interface set for dial-on-demand operation to either stay up indefinitely or to continuously dial, connect, and then drop the connection.

- If **Triggered** is selected with this pull-down menu, the router will modify the standard AppleTalk RTMP behavior for this interface to send AppleTalk RTMP packets only when there has been an update to its routing table information, or when it has detected a change in the accessibility of the next hop router.

- If **Periodic** is selected with this pull-down menu, the router will use the standard AppleTalk RTMP protocol, which sends RTMP packets over the link every 10 seconds.

# Optional Remote End-Node Network Number

Besides defining a method for router-to-router communication, the PPP protocol defines a method for individual client machines to dial in to a router interface. Once a client machine has connected to a router interface in this fashion, the router provides proxy services which allow the client machine to participate as a node on one of the router's local networks.

If remote end-node operation is desired, you must set the **AppleTalk Numbered Interface** checkbox on, and then set this network number field to the same value as you set in the **AppleTalk Network Number** field.

# Optional Remote End-Node Node Number

After setting the **Remote End-Node Network Number**, select an unused node number for this field.

Do not use the same value you set in the **AppleTalk Node** field.

# Optional Remote End-Node Proxy

This checkbox sets the device to dynamically reserve an AppleTalk address on Ethernet for the WAN interface. This option can only be used on an unnumbered interface. If you wish to seed the proxy address to a specific network or node number, you must set the **AppleTalk Network Number** and the **AppleTalk Node** fields instead.

# AppleTalk Routing: VPN Configuration Dialog Box

VPN (Virtual Private Network) ports must first be added to the edit area of a device before they can be configured. For more information about adding and deleting VPN ports, see Chapter 6, "VPN Ports and LAN-to-LAN Tunnels."

Once you have created a VPN port, you may access the AppleTalk Routing: VPN Configuration dialog box (Figure 4-3) by clicking AppleTalk Routing under the VPN port's icon.

*Figure 4-3    AppleTalk Routing: VPN Configuration Dialog Box*



A VPN port is a virtual port which handles tunneled traffic. Tunnels are virtual point-to-point connections through a public network such as the Internet. All packets sent through a VPN tunnel are IP-encapsulated packets, including AppleTalk, IPX and even IP packets. This encapsulation is added or removed, depending on the direction, by "Tunnel Peer" routers. Once a packet reaches the remote Tunnel Peer, the TCP/IP encapsulation is stripped off, leaving the original protocol. The unencapsulated packet is then handled according to the VPN port's protocol configuration settings. Networks connected via a tunnel will communicate as if they were on the same network, even though they are separated by the Internet.

You must set up both ends of every tunnel. Therefore, you must repeat this setup with the remote router.

# AppleTalk On/Bridging/Off

This set of radio buttons controls how AppleTalk packets are handled for this interface.

- If set to **AppleTalk On**, then AppleTalk packets received on this interface are routed to the correct interface on the router.

- If set to **AppleTalk Bridging**, then any AppleTalk packets received on this interface are forwarded to the router's internal bridge. This setting makes this Ethernet interface a member of the "AppleTalk Phase 2 Bridge Group" for this router.

The AppleTalk Bridging radio button will be grayed out unless bridging has been turned on globally for the device using the Main Bridging Configuration dialog box (under Global/Bridging) and locally on this interface using the Bridging: VPN dialog box (under VPN/Bridging).

- If it is set to **AppleTalk Off**, then any AppleTalk packets received on this interface are discarded.

# Network Number

If you have set this interface to be a numbered interface, you must provide a network number to identify the VPN port. This number creates a "non-extended" AppleTalk network on the VPN port. Acceptable values vary from 1 to 65,279.

Accidental selection of an AppleTalk network number which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

## AppleTalk Zone

If you have set this interface to be a numbered interface, you must provide a zone name which will be associated with the network number. Zone names may be up to 32 characters in length.

Typically a name is chosen which has some significance to the physical locations connected by the VPN link. An example would be "NYC - Chicago VPN."

This name will appear in the Chooser program of computers which support AppleTalk, but there will be no selectable AppleTalk devices in the zone.

## Node

If you have set this interface to be a numbered interface, you must provide an AppleTalk node number in this field which is unique for the network number entered.

The routers require the assignment of a unique AppleTalk node number for numbered interfaces.

## Update Method

VPN links which are configured to provide "dial-on-demand" service will bring a connection up (i.e. dial the other end) when there are network packets which must be transferred over the link. Once a dial-on-demand connection is up, network traffic passing across the link causes the inactivity timer for the link to be reset, keeping the connection up.

The AppleTalk RTMP protocol periodically sends out update information across a link. These periodic update packets will cause a VPN link set for dial-on-demand operation to either stay up indefinitely or to continuously dial, connect, and then drop the connection.

- If **Triggered** is selected with this pull-down menu, the router will modify the standard AppleTalk RTMP behavior for this interface to send AppleTalk RTMP packets only when there has been an update to its routing table information, or when it has detected a change in the accessibility of the next hop router.

- If **Periodic** is selected with this pull-down menu, the router will use the standard AppleTalk RTMP protocol, which sends RTMP packets over the link every 10 seconds.

# AppleTalk Routing: Bridge Configuration Dialog Box

Bridging operates on physical network addresses (such as Ethernet addresses), rather than logical addresses (such as AppleTalk Phase 2 addresses). From the standpoint of AppleTalk networking, router interfaces which are set to bridge AppleTalk Phase 2 between themselves appear as a single logical entity.

Thus, a router's "AppleTalk Phase 2 Bridge Group" is made up of all of the physical network interfaces in a router which have been set to bridge AppleTalk Phase 2. This setting can be found in the AppleTalk configuration dialog box for each individual physical interface. For example, see the AppleTalk Phase 2 Routing/Bridging/Off radio buttons in the AppleTalk Routing: Ethernet Configuration dialog box.

Logically, the AppleTalk Phase 2 Bridge Group is treated by the router as an interface (Bridge 0). The settings in the AppleTalk Routing: Bridge 0 Configuration dialog box determine the AppleTalk Phase 2 parameters for all of the physical network interfaces which make up the AppleTalk Phase 2 Bridge Group. This is shown schematically in Figure 4-4.

AppleTalk Phase 1 is generally treated as a distinct protocol for bridging and routing purposes, and thus will have its own "bridge group" should you decide to have a router bridge it.

*Figure 4-4    Bridge Logical Diagram*



To access the AppleTalk Routing: Bridge dialog box (Figure 4-5), select Bridge 0/AppleTalk Routing in the Device View.

*Figure 4-5    AppleTalk Routing: Bridge 0 Configuration Dialog Box*



# AppleTalk Phase 1 Configuration

AppleTalk Phase 1 is an earlier version of the AppleTalk protocol which is still in use on some large legacy networks. Some older routers support this protocol, and "transitional routing" between it and AppleTalk Phase 2.

Although some older routers support AppleTalk Phase 1, we recommend that all new AppleTalk installations use AppleTalk Phase 2, which is much more capable.

In transitional routing installations, the same range of possible AppleTalk network numbers is used by both Phase 1 and Phase 2. Care must be taken to avoid network number conflicts in these installations.

## Phase 1 Routing/Off

These radio buttons control whether AppleTalk Phase 1 packets received by a member interface of the AppleTalk Phase 1 Bridge Group are passed on for AppleTalk routing.

- If set to **Phase 1 Routing**, then AppleTalk Phase 1 packets received on a member interface of the AppleTalk Phase 1 Bridge Group which cannot simply be bridged to another member interface of the group are passed on for AppleTalk routing.

- If set to **Phase 1 Off**, then AppleTalk Phase 1 packets received on a member interface of the AppleTalk Phase 1 Bridge Group which cannot be bridged to another member interface of the group are dropped. This setting means that further AppleTalk configuration information is not required for the AppleTalk Phase 1 Bridge Group.

## Phase 1 Seed Status

One of the functions which routers perform in AppleTalk internetworking is setting the AppleTalk network number for each network segment. A router which sets the network number for a segment is said to have "seeded" the network.

- **Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment(s) which are members of the AppleTalk Phase 1 Bridge Group and use this number if it exists. If it doesn't discover a number in use, the router will use the configured **AppleTalk Phase 1 Net #** to set the Phase 1 network number for the segment(s). It will also assign the configured **Phase 1 Zone** name to the segment(s).

- **Non-Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment(s) which are members of the AppleTalk Phase 1 Bridge Group and use this number if it exists. If it doesn't discover a number in use, the router will wait indefinitely until a number is set by another router on the segment(s).

- **Auto-Seed** means the router will listen for an AppleTalk Phase 1 network number being set by another router on the segment(s) which are members of the AppleTalk Phase 1 Bridge Group and use this number if it exists. If it doesn't discover a number in use, the router will auto-generate a valid number using its routing tables.

## Phase 1 Net #

For an AppleTalk Phase 1 Bridge Group which you set to **Seed** Phase 1, you must provide a network number. This is a decimal number that uniquely identifies the network segment(s) which are part of the group, for Phase 1. Acceptable values range from 1 to 65,279.

Accidental selection of an AppleTalk network number which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

## Phase 1 Zone

For an AppleTalk Phase 1 Bridge Group which you set to **Seed** Phase 1, you must provide a zone name. This is the name associated with the network number entered. Zone names may be up to 32 characters in length.

Typically a name is chosen which has some significance to the physical location or the corporate purpose of the network segment(s). An example would be "Accounting Department."

This name will appear in the Chooser program of computers which support AppleTalk.

## Phase 1 Node

You can provide a suggestion for the node number the router should use on this AppleTalk Phase 1 Bridge Group. The router will try to claim this number when it is powered up or restarted.

The AppleTalk protocol allows network nodes to dynamically claim node numbers when they start up. Assigning known AppleTalk node numbers to router interfaces can make it easier to diagnose network problems using a network packet monitor.

# NBP Lookup Filters (Filtering)

The parameters required for NBP Filtering are contained in a configuration screen brought up by the "Filtering" button. This screen is discussed later in this chapter.

# AppleTalk Phase 2 Configuration

AppleTalk Phase 2 is an updated version of the AppleTalk protocol which allows for more than 256 nodes on an Ethernet segment, and reduces the overhead required by AppleTalk RTMP (Routing Table Maintenance Protocol). AppleTalk Phase 2 should be used for all new installations.

## Phase 2 Routing/Off

These radio buttons control whether AppleTalk Phase 2 packets received by a member interface of the AppleTalk Phase 2 Bridge Group are passed on for AppleTalk routing.

- If set to **Phase 2 Routing**, then AppleTalk Phase 2 packets received on a member interface of the AppleTalk Phase 2 Bridge Group which cannot simply be bridged to another member interface of the group are passed on for AppleTalk routing.

- If set to **Phase 2 Off**, then AppleTalk Phase 2 packets received on a member interface of the AppleTalk Phase 2 Bridge Group which cannot be bridged to another member interface of the group are dropped. This setting means that further AppleTalk configuration information is not required for the AppleTalk Phase 2 Bridge Group.

## Phase 2 Seed Status

One of the functions which routers perform in AppleTalk internetworking is setting the AppleTalk network number for each network segment. A router which sets the network number for a segment is said to have "seeded" the network.

- **Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment(s) which are members of the AppleTalk Phase 2 Bridge Group and use this range if it exists. If it doesn't discover a range in use, the router will use the configured **AppleTalk Phase 2 Net #** range to set the Phase 2 network number(s) for the segment(s). It will also assign the configured **Phase 2 Zone** list to the segment(s).

- **Non-Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment(s) which are members of the AppleTalk Phase 2 Bridge Group and use this range if it exists. If it doesn't discover a range in use, the router will wait indefinitely until a range is set by another router on the segment(s).

- **Auto-Seed** means the router will listen for an AppleTalk Phase 2 network range being set by another router on the segment(s) which are members of the AppleTalk Phase 2 Bridge Group and use this range if it exists. If it doesn't discover a range in use, the router will auto-generate a valid number (a range of size 1) using its routing tables.

## Phase 2 Net # Range

For an AppleTalk Phase 2 Bridge Group which you set to **Seed** Phase 2, you must provide a network number range. These two decimal numbers uniquely identify the range of AppleTalk network numbers for the network segment(s) connected to this interface, for Phase 2. Acceptable values vary from 1 to 65,279. The value on the left must be smaller than the value on the right.

Each individual number in the range will support up to 253 node addresses.

Accidental selection of an AppleTalk network number (or range of numbers) which is already in use on another network segment may cause hard-to-diagnose problems. You should carefully track which AppleTalk network numbers are in use, and where they are used.

## Phase 2 Zones

For an AppleTalk Phase 2 Bridge Group which you set to **Seed** Phase 2, you must provide a network number range. These are the names associated with the network number range. You must specify at least one name, but it isn't necessary to specify a name for every number in the range. Zone names may be up to 32 characters in length.

Typically names are chosen which have some significance to the physical location or the corporate purpose of the network segment(s). Examples would be "Main Accounting," "Cost Accounting" and "Bookkeeping."

These names will appear in the Chooser program of computers which support AppleTalk. using the Network Control Panel, Macintosh computers are able to pick the zone in which they are located.

## Phase 2 Default Zone

Use the Default button next to the Zone list to select which entry the router should designate as the default zone name for the segment(s) which are part of the group. If you do not specify a default name, the router will designate the first name in the list.

## Phase 2 Node

You can provide a suggestion for the node number the router should use on this AppleTalk Phase 2 Bridge Group.

The AppleTalk protocol allows network nodes to dynamically claim node numbers when they start up. Assigning known AppleTalk node numbers to router interfaces can make it easier to diagnose network problems using a network packet monitor.

# NBP Filtering

The parameters required for NBP Filtering are contained in a configuration screen brought up by the Filtering button.

The filtering functions discussed here are much less flexible than those discussed in the AppleTalk Filtering section of this manual. We suggest you read that section before choosing to use the filters discussed here.

The NBP (Name Binding Protocol) Filtering dialog box (Figure 4-6) is accessed by clicking the Filtering button in any Ethernet or Bridge port's AppleTalk Configuration menu. NBP is a part of the AppleTalk protocols (both Phase 1 and Phase 2) which is used to discover the AppleTalk network number and node address of a named device on a network segment.

*Figure 4-6    NBP Filtering Dialog Box*



When the AppleTalk Chooser is opened on a computer, it causes NBP "lookup" packets for a specified device type in a selected AppleTalk zone to be sent. AppleTalk routers usually forward these NBP lookups onto any physical segments which are seeded with the selected AppleTalk zone name, and then forward any NBP replies back to the requesting computer.

NBP filters cause a router to selectively change the way it treats NBP lookup packets and NBP replies.

These filter options can be used regardless of whether or not this router is acting as a seed router.

# Network Filters

Network filters are applied to the physical network segment connected to this interface. You may choose none, one or both of these options, depending upon how you wish to secure your network.

- Setting **Lockout** causes the router to drop any NBP lookups which are destined for this physical segment (or AppleTalk Bridge Group). This will protect devices on the segment from access by users on other segments.

- If you choose to **Lockin** lookups, the users on this network segment (or AppleTalk Bridge Group) will not have access through the router to network devices on other segments.

# Zone Filters

Zone filters are applied based on logical AppleTalk zones rather than on physical segments. You may choose any or all combinations, depending on your network security requirements.

On AppleTalk Phase 1 networks and LocalTalk networks, zone filters are applied for the AppleTalk zone configured for the network segment. On AppleTalk Phase 2 networks, they are applied to the AppleTalk default zone configured for the network segment. For more information about creating a zone name on this port's network segment, see the AppleTalk Routing configuration screen for this interface.

- **Stay In Zone** means the router will not forward NBP lookups which are directed from the AppleTalk zone configured for this port's network segment to any other zone.

- The **LaserWriter** filter protects all LaserWriters in the AppleTalk zone configured for this port's network segment from NBP lookup by computers in other AppleTalk zones.

- The **Tilde** filter protects all devices in the AppleTalk zone configured for this port's network segment whose names end with a tilde (~) character from NBP lookup by computers in other AppleTalk zones.

In order for Zone Name filters to work, the NBP lookup packets must pass through the router. This means that lookups between AppleTalk Phase 2 zones which are on the same network segment cannot be filtered in this fashion.

# AppleTalk Options Configuration Dialog Box

To access this dialog box (Figure 4-7), select Options/AppleTalk Routing from the Device View.

*Figure 4-7    AppleTalk Options Configuration Dialog Box*



# Phase 2 AARP Probe Time

This field allows the timeout for the AARP (Apple Address Resolution Protocol) address claim probes made at router startup time to be lengthened from the standard 2 seconds.

This may be necessary on AppleTalk networks which include WAN bridges. On these networks, it may take longer than 2 seconds for a node on the far side of a WAN bridge connection (logically still on the same AppleTalk network) to respond to an AARP address claim made by the router.