CHAPTER 10

IPX Configuration Windows

This chapter describes the components of the IPX Configuration windows. The IPX-related windows are displayed as a result of clicking on IPX-related buttons in the Router Configuration window or viewing IPX parameters in the Interface Parameters window. As there are numerous IPX-related attributes, many windows can be displayed; each window is described in a separate section of this chapter. Where possible, a window that is displayed as a result of an action performed in another window, has its description follow in the subsequent section. The following IPX-related windows are described in this chapter:

- IPX Interface Parameters
  - Standard IPX Access List
  - Edit Standard IPX Access List
  - Extended IPX Access List
  - Edit Extended IPX Access List
- IPX Routing Table
  - IPX Suppress Entries
- IPX Routing Algorithms
  - RIP IPX Algorithm
  - Edit SAP Filter Interface List
  - IPX SAP Filter List
  - Edit IPX SAP Filter List
  - Edit IPX Network Filter List
  - IPX Standard Network Filter List
  - Edit IPX Standard Network Filter List
  - IPX Extended Network Filter List
  - Edit IPX Extended Network Filter List
- IPX Access List Summary

Note The Connectivity Baseliner allows router attributes to be viewed, *not* modified. The Connectivity Solver allows router attributes to be modified as well. Router attribute modification is only possible when using the last scenario in the Connectivity Tools window's Scenarios list. When using any other scenario, including the initial baseline scenario, the attributes may only be *viewed*. It is through the modification of router attributes that "what-if" simulations occur.

General Window Components

The **following** buttons are present in several windows. For brevity, they are described once here.

- **Context**

  The **Context** button is used as a mechanism for switching the context from one Router Configuration window to or from another. It allows navigation to and from subsequently invoked windows. For example, if you click on the **Routing Table** button in the Router Configuration window, the IPX Routing Table window is displayed. Clicking on the **Context** button at this point displays Router and IPX Routing Table menu options. Select the Router option to dismiss the IPX Routing Table window and display the Router Configuration window.

- **OK**

  Click on the **OK** button to apply the changes you have made in the current configuration window and dismiss the window.

- **Cancel**

  Click on the **Cancel** button to dismiss the window and cancel the actions that have taken place since the window was displayed or the **OK** button was clicked.

- **Help**

  Provided you have access to a Mosaic™ or Netscape™ HTML browser, clicking on the **Help** button displays documentation about the corresponding window. The HTML browser specified by the ECSP_HELPVIEWER environment variable is used for this purpose.

- **Apply**

  Click on the **Apply** button to apply the changes you have made in the current window. This button is not displayed when using the Connectivity Baseliner, when the initial baseline scenario is selected, or when a baseline scenario other than the last scenario in the Scenarios list in the Connectivity Tools window is selected.

- **Revert**

  Click on the **Revert** button to undo the changes made since you last clicked on the **Apply** button. This button is not displayed when using the Connectivity Baseliner, when the initial baseline scenario is selected, or when a baseline scenario other than the last scenario in the Scenarios list in the Connectivity Tools window is selected.

- **Close**

  Click on the **Close** button to dismiss the current window.

- **Add Before** Button

  Click on the **Add Before** button to display an associated Edit IPX List window. This window is used to add an entry one position prior to the currently selected entry in the list. If an entry in the list is not selected prior to clicking on this button, the new entry is added to the beginning of the

list. This button is not displayed when using the Connectivity Baseliner, when the initial baseline scenario is selected, or when a baseline scenario other than the last scenario in the Scenarios list in the Connectivity Tools window is selected.

- **Add After** Button

  Click on the **Add After** button to display an associated Edit IPX List window. This window is used to add an entry one position after the currently selected entry in the list. If an entry in the list is not selected prior to clicking on this button, the new entry is added to the bottom of the list. This button is not displayed when using the Connectivity Baseliner, when the initial baseline scenario is selected, or when a baseline scenario other than the last scenario in the Scenarios list in the Connectivity Tools window is selected.

- **Edit** Button

  Click on the **Edit** button to display an associated Edit IPX List window. This window is used to modify an existing IPX List entry. An existing IPX List entry must be selected prior to clicking on this button. This button is not displayed when using the Connectivity Baseliner, when the initial baseline scenario is selected, or when a baseline scenario other than the last scenario in the Scenarios list in the Connectivity Tools window is selected.

- **Delete**

  Click on the **Delete** button to delete a selected entry from a list or table.

IPX Interface Parameters Window

The IPX Interface Parameters window, shown in Figure 10-1, is displayed when you click on the **IPX** button in the Interface Parameters window's View Parameters pane. This window allows you to assign an IPX access list to the selected router interface.

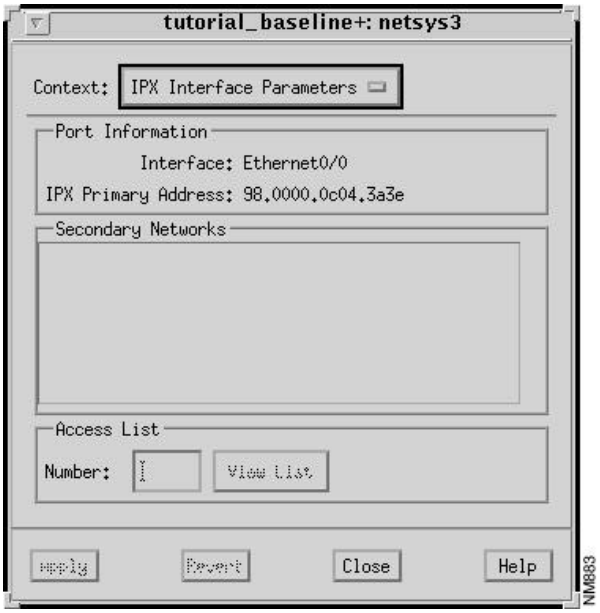

Figure 10-1 IPX Interface Parameters Window

IPX Interface Parameters Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Apply, Revert, Close**, and **Help** buttons.

Port Information - Interface

The router's symbolic interface name, as specified by the **ipx interface** command in the router configuration file, selected in the Interface Description list in the Router Configuration window, is displayed in this field.

Port Information - IPX Primary Address

The router interface's IPX primary address, as specified by the **ipx address** interface subcommand in the router configuration file, is displayed here. IPX primary addresses are specified as network numbers (32-bits in length written in hexadecimal) followed by a host address (48-bits in length written in hexadecimal) separated by dots. An example IPX primary address of `1b.0000.0a00.12ab` specifies a network number of `1b` and a host address of `0000.0a00.12ab`.

Secondary Networks

The secondary IPX network addresses of the router interface, as specified by the **ipx address secondary** interface subcommand in the router configuration file, are displayed here.

Access List - Number

Specify a standard or extended IPX access list number to be assigned to the selected IPX interface, then press **Return**. If already defined in the configuration, it is displayed automatically. Click on the **Apply** button to assign the access list number. At this point the View List button is activated. Valid standard IPX access list numbers range from 800 through 899. Valid extended IPX access list numbers range from 900 through 999.

Access List - View List Button

Click on this button to switch the context from the IPX Interface Parameters window to the IPX Access List window. A valid standard or extended IPX access list number must be selected and entered in the **Access List Number** field for the context switch to occur. If a standard IPX access list number is specified (800 through 899), see "Standard IPX Access List Window" for a detailed description of the Standard IPX Access List window components. If an extended IPX access list number is specified (900 through 999), see "Extended IPX Access List Window" for a detailed description of the Extended IPX Access List window components.

Standard IPX Access List Window

The Standard IPX Access List window, shown in Figure 10-2, is displayed when you specify an standard IPX access list number (800 through 899) in the **Number** field and then click on the View List button in the IPX Interface Parameters window. This window allows you to view, add, edit, and delete entries in the specified standard IPX access list. The window's components are described in the following sections.

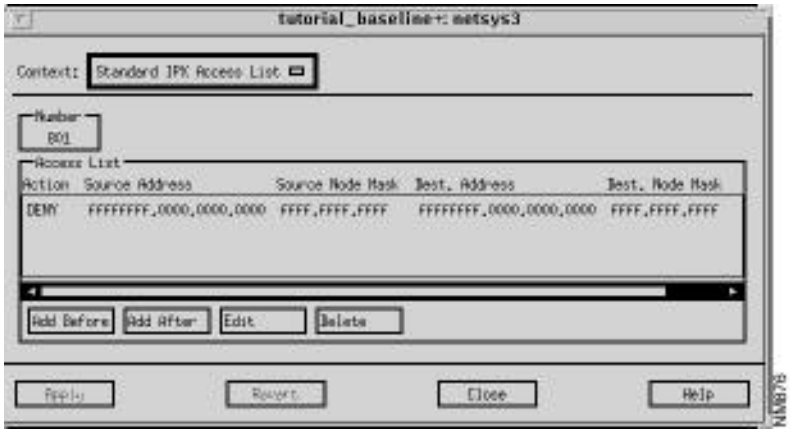

Figure 10-2 Standard IPX Access List **Window**

Standard IPX Access List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Add Before**, **Add After**, **Edit**, **Delete**, **Apply**, **Revert**, **Close**, and **Help** buttons. Clicking on the **Add Before**, **Add After**, and **Edit** buttons display the Edit Standard IPX Access List window. A specific entry in the access list can be selected prior to clicking on the **Add Before**, **Add After**, and **Edit** buttons. See "Edit Standard IPX Access List Window Components" for a detailed description of the window's components.

Number

The specified standard IPX access list number is displayed here. Valid standard IPX access list numbers range from 800 through 899.

Access List Entry Description

This pane lists the selected standard IPX Access List entry's values. An entry contains the Action (PERMIT/DENY) setting, the Source IPX Address and Source IPX Node Mask values, and the Destination IPX Address and Destination Node Mask values. These values are described in detail in "Edit Standard IPX Access List Window Components."

Edit Standard IPX Access List Window Components

The Edit Standard IPX Access List window, shown in Figure 10-3, is displayed when you click on the **Add Before**, **Add After**, or **Edit** buttons in the Standard IPX Access List window. This window allows you to add or modify a standard IPX access list entry. The window's components are described in the following sections.

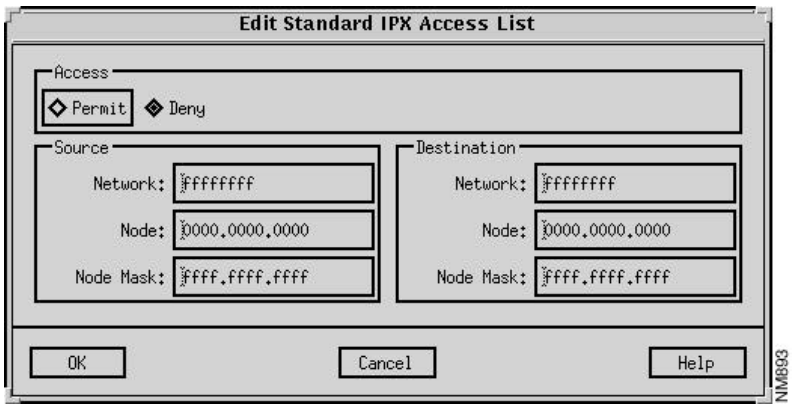

Figure 10-3 Edit Standard IPX Access List **Window**

See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

Access - Permit/**Deny** Buttons

Click on either the **Permit** or **Deny** toggle button to set the action mode, accordingly. Select the **Permit** button to permit access from the specified source address to the specified destination address. Select the **Deny** button to deny access from the specified source address to the specified destination address.

Source - Network

Specify the source IPX network number in this field. The network number is 32-bits in length written in hexadecimal. Network numbers must be unique throughout an IPX network.

Source - Node

Specify the source IPX node ID in this field. The node ID is a 48-bit number written in dotted triplets of four digit hexadecimal numbers (e.g. `0000.0a00.12ab`.)

Source - Node Mask

Specify the source IPX node mask, using dotted triplets of four digit hexadecimal numbers (signifying the bits in the source node to be ignored), in this field.

Destination - Network

Specify the destination IPX network number in this field. The network number is 32-bits in length written in hexadecimal. Network numbers must be unique throughout an IPX network.

Destination - Node

Specify the destination IPX node ID in this field. The node ID is a 48-bit number written in dotted triplets of four digit hexadecimal numbers (e.g. `0000.0a00.22ac`.)

Destination - Node Mask

Specify the destination IPX node mask, using dotted triplets of four digit hexadecimal numbers (signifying the bits in the destination node to be ignored), in this field.

Extended IPX Access List Window

The Extended IPX Access List window, partially shown in Figure 10-4, is displayed when you specify an extended IPX access list number (900 through 999) in the **Number** field and then click on the View List button in the IPX Interface Parameters window. This window allows you to view, add, edit, and delete entries in the specified extended IPX access list. The window's components are described in the following sections.

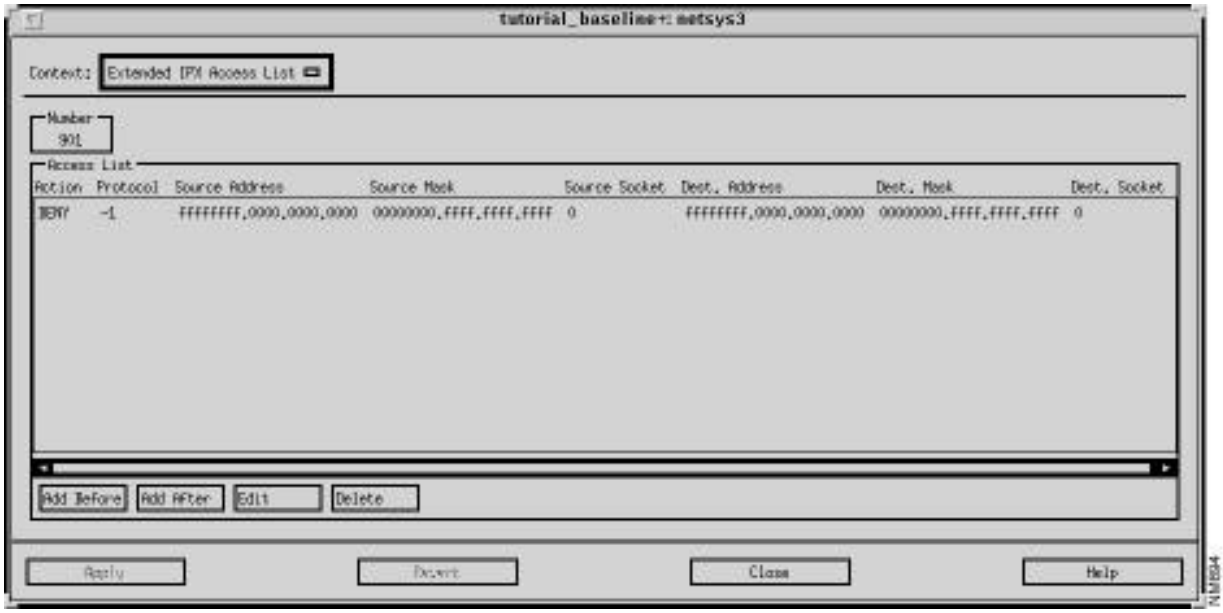

Figure 10-4 Extended IPX Access List Window

Extended IPX Access List Window Components

This window's components are described in the following sections. See "General Window Components"or a description of the **Context**, **Add Before**, **Add After**, **Edit**, **Delete**, **Apply**, **Revert**, **Close**, and **Help** buttons. Clicking on the **Add Before**, **Add After**, and **Edit** buttons display the Edit Extended IPX Access List window. A specific entry in the access list can be selected prior to clicking on the **Add Before, Add After**, and **Edit** buttons. See "Edit Extended IPX Access List Window Components" for a detailed description of the window's components.

Number

The specified extended IPX access list number is displayed here. Valid extended IPX access list numbers range from 900 through 999.

Access List Entry Description

This pane lists the selected extended IPX Access List entry's values. An entry contains the action (PERMIT/DENY access), protocol (packet) type, source IPX address, node mask, and socket number values, and the destination IPX address, node mask, and socket values. These values are described in detail in "Edit Standard IPX Access List Window Components."

Edit Extended IPX Access List Window Components

The Edit Extended IPX Access List window, shown in , is displayed when you click on the **Add Before**, **Add After**, or **Edit** buttons in the Extended IPX Access List window. This window allows you to add or modify an extended IPX access list entry. The window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

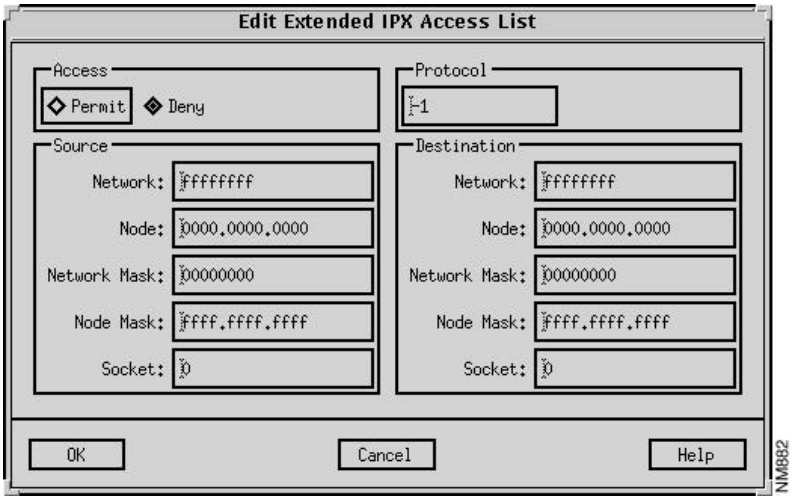

Figure 10-5 Edit Extended IPX Access List Window

Access - Permit/**Deny** Buttons

Select the **Permit** button to permit access from the source IPX network and node addresses via the source socket number specified to the destination IPX network and network node addresses through the destination socket number specified. Select the **Deny** button to deny access from the source IPX network and node addresses via the source socket number specified to the specified destination IPX network and network node addresses through the destination socket number specified. Deny access is the default.

Protocol

Specify the decimal number of an IPX protocol type (also referred to as a packet type) in this field. In IOS Versions 9.21 through 10.2, a value of zero specifies any protocol over the specified socket number. In IOS Version 10.3, the default value is minus one (any packet type.) A value of one specifies RIP. A value of four specifies SAP.

Source - Network

Specify a valid IPX source network in this field.

Source - Node

Specify a valid IPX source node address, in dotted-triplet format, in this field.

Source - Network Mask

Specify a valid IPX network mask signifying the bits in the source network to be ignored, in this field.

Source - Node Mask

Specify a valid IPX source node mask signifying the bits in the source address to be ignored, in dotted-triplet format, in this field.

Source - Socket

Specify a valid IPX source socket number in this field.

Destination - Network

Specify a valid IPX destination network in this field.

Destination - Node

Specify a valid IPX destination node address, in dotted-triplet format, in this field.

Destination - Network Mask

Specify a valid IPX network mask signifying the bits in the source network to be ignored, in this field.

Destination - Node Mask

Specify a valid IPX node mask signifying the bits in the destination address to be ignored, in dotted-triplet format, in this field.

Destination - Socket

Specify a valid IPX destination socket number in this field.

IPX Routing Table Window

The IPX Routing Table window is displayed when you click on the IPX Routing Table button in the Router Configuration window. The IPX Routing Table window shown in Figure 10-6, displays the IPX Routing Table entries known to the netsys3 router. This table is constructed from the information contained in the baseline router configuration files. Routing Table entries may not be edited from this window. Double-clicking on a Routing Table entry highlights the next hop router in the Topology window.

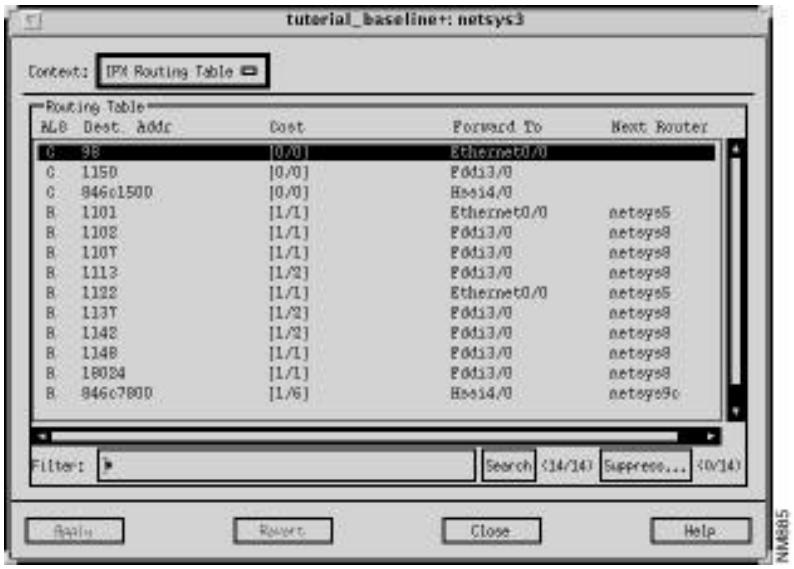

Figure 10-6 IPX Routing Table Window

IPX Routing Table Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Apply**, **Revert**, **Close**, and **Help** buttons.

Routing Table

The IPX Routing Table pane displays a particular router's Routing Table entries. An IPX Routing Table entry contains the routing algorithm, destination network address, cost factor, interface used to send packets to the next router along the path to the destination network, and the next router in the path to the destination network values.

Clicking on an IPX Routing Table pane column header automatically sorts the information displayed in that column within the Routing Table pane accordingly. For example, when you click on the **Forward to** column header, the information displayed in the IPX Routing Table pane is alphabetically sorted by the router's interface names.

Routing Table - ALG

The protocol algorithm from which the IPX Routing Table entry is derived is displayed in this column. The possible values are:

- R - RIP derived
- C - Directly connected
- S - Static
- * - candidate default route
- ? - unknown derivation

Routing Table - Dest Addr

The IPX network address of the destination network is displayed in this column.

Routing Table - Cost

The first number displayed within the bracket is the administrative distance (trustworthiness) of the routing information source. Administrative distance values range from 0 through 255. The general rule is the higher the value, the lower the trust rating. An administrative distance value of 255 signifies that the routing information source should not be trusted. The second number is the hop count.

Routing Table - Forward to

This router's interface used to send information to the next router along the path to the destination network, is displayed in this column.

Routing Table - Next Router

The next router in the path to the destination network is displayed in this column. Double-clicking on an IPX Routing Table entry highlights the next hop router in the Topology window.

Routing Table - Filter

You are able to use the **Filter** field to specify a specific algorithm, destination address, cost factor, or device to search for within the IPX Routing Table. Pressing **Return** or clicking on the **Search** button initiates the search using the filter you have specified. The IPX Routing Table entries matching the search pattern are then displayed in the Routing Table pane. For example, if you wish to find all routes with a cost factor of `0/0`, you would specify `*\[0\/0\]*` in the **Filter** field and then press **Return** or click on the **Search** button. Only the IPX Routing Table entries containing routes with a cost factor of `0/0` are then displayed in the Routing Table pane.

Special search characters are available for your use. The backslash character is used as a means to escape special characters. A wild card character (asterisk) is used to match any character. When the **Filter** field contains only an asterisk (the default search mode) all IPX Routing Table entries are displayed in the Routing Table pane.

The question mark is used to denote any one character. For example, if you specify `*netsys?*` in the **Filter** field, all IPX Routing Table entries containing the string `netsys` and ending with any character are displayed in the Routing Table pane.

The negation operator (tilde) is used to denote the characters *not* to match on within the IPX Routing Table. It is only allowed as the first character in the **Filter** field. For example, if you specify `~*132.*` in the **Filter** field and then press **Return** or click on the **Search** button, all entries not containing the string `132.` are displayed in the Routing Table pane.

Compound searches are also permitted. For example, if you wanted to display all IPX Routing Table entries with forward to interface value of `Fddi` and whose next hop router is `netsys8`, you would enter `*Fddi*netsys8*` in the **Filter** field and then press **Return** or click on the **Search** button.

Routing Table - **Search** Button

Click on this button to initiate the search of the IPX Routing Table using the filter you have specified in the **Filter** field.

Routing Table - **Suppress** Button

Click on this button to remove specified types of entries from the IPX Routing Table. See "IPX Suppress Entries Window Components" for detailed information about the Suppress Entries window components. The number of IPX Routing Table entries being suppressed and a total of all IPX Routing Table entries are displayed within parentheses next to the **Suppress** button.

IPX Suppress Entries Window Components

The IPX Suppress Entries window, shown in Figure 10-7, is displayed when you click on the **Suppress** button in the IPX Routing Table window. This window allows you to specify the information you wish to keep from being included in the IPX Routing Table being displayed. For

example, you can specify to have all directly connected (C) related entries suppressed from the IPX Routing Table by selecting the **Add Suppression ALG** button, specifying `C` in the **ALG** field, deselecting all other **Add Suppression** buttons, and then clicking on the **Add** button.

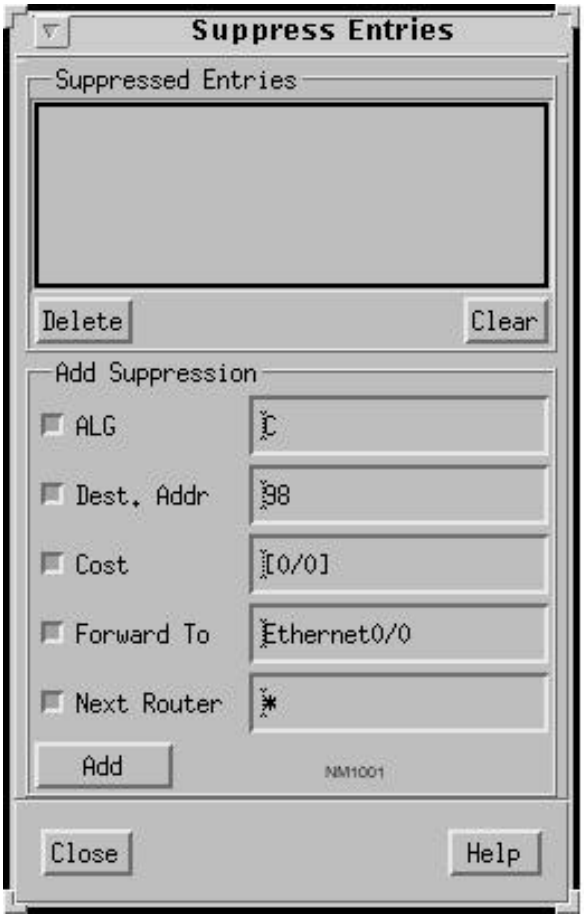

Figure 10-7 IPX Suppress Entries Window (IPX)

This window's components are described in the following sections. See "General Window Components" for a description of the **Close** and **Help** buttons. When you click on the **Close** button, the suppression parameters currently in effect are saved. When you subsequently invoke the IPX Suppress Entries window, the suppression parameters that were in effect when the window was last closed remain in effect.

Suppressed Entries

A list of the suppression entries currently in effect are displayed in this pane. When an entry is added to this list, the IPX Routing Table entries that match the suppression parameters are no longer displayed in the IPX Routing Table. Initially suppression is not in effect, therefore the Suppressed Entries list is empty.

Suppressed Entries - Delete Button

Select an entry from the Suppressed Entries list then click on this button to remove that entry from the list. This action results in the IPX Routing Table entries that were suppressed due to the suppression parameters associated with this entry being displayed again and also removes the entry's suppression parameters from existence.

Suppressed Entries - **Clear** Button

Click on this button to remove all of the entries used to suppress IPX Routing Table entries from the Suppressed Entries list. This action results in the IPX Routing Table entries that were suppressed due to the suppression parameters associated with all of the entries being displayed again and also removes *all* suppression parameters from existence.

Add Suppression

The Add Suppression pane contains buttons related to the columns in the IPX Routing Table window's Routing Table pane. Deselecting a button removes that category from suppression consideration. Select a buttonen specify a value that when found within that column in an IPX Routing Table entry, will cause that entry to be suppressed from the table. For example, if you want to suppress IPX Routing Table entries that use the `Ethernet0/0` interface to forward packets on to the next router, select the **Forward To** button, specify `Ethernet0/0` in the button's text field, deselect the other **Add Suppression** buttons, then click on the **Add** button. All entries that contained `Ethernet0/0` in the **Forward To** column are no longer shown in the IPX Routing Table. The suppression number within the parentheses next to the **Suppression** button is updated to reflect the number of IPX Routing Table entries currently being suppressed.

When you initially click on the **Suppress** button or create a suppression entry and add it to the Suppressed Entries list, all of the **Add Suppression** buttons in the Suppress Entries window are selected and their corresponding text fields contain the values associated with the selected entry in the IPX Routing Table window. Clicking on the **Add** button at this point removes that entry from the IPX Routing Table.

You can use the wild card character (an asterisk) to match any or all characters. When **a** field contains only an asterisk it is equivalent to specifying all items within that category. For example, specifying an asterisk in the **ALG** field, deselecting all other **Add Suppression** buttons, and then clicking on the **Add** button results in an empty IPX Routing Table as the suppression mode was set to suppress entries for *all* protocol algorithms.

Add Suppression - ALG

Select the **ALG** button and then specify the protocol algorithm(s) whose entries you do not want included in the IPX Routing Table, in the **ALG** field.

Add Suppression - Dest. Addr

Select the **Dest. Addr** button and then specify the IPX network address of the destination network whose entries you do not want included in the IPX Routing Table, in the **Dest. Addr** field.

Add Suppression - Cost

Select the **Cost** button and then specify the administrative distance and hop count cost values whose entries you do not want included in the IPX Routing Table, in the **Cost** field.

Add Suppression - Forward To

Select the **Forward To** button and then specify the symbolic name of this router's interface that is used to send information to the next router along the path to the destination network whose entries you do not want included in the IPX Routing Table, in the **Forward To** field.

Add Suppression - Next Router

Select the **Next Router** button and then specify the name of the next router along the path to the destination whose entries you do not want included in the IPX Routing Table, in the **Next Router** field.

Add Suppression - **Add** Button

Once you have selected the IPX Routing Table category button(s) and specified the associated text in the button's text field(s), clicking on the **Add** button adds the suppression parameters to the Suppressed Entries list and initiates the suppression of the corresponding entries from the IPX Routing Table. The number of entries currently being suppressed (displayed within parentheses next to the **Suppression** button in the IPX Routing Table window) is updated accordingly.

When you click on the **Close** button, the suppression parameters currently in effect are saved. When you subsequently invoke the Suppress Entries window, the suppression parameters that were in effect when the window was last closed remain in effect.

IPX Routing Algorithms Window

The IPX Routing Algorithms window, shown in Figure 10-8, is displayed when you click on the IPX **Algorithms** button in the Router Configuration window. This window allows you to view and modify the IPX routing algorithm configured for the router. The Routing Information Protocol (RIP) is the only IPX routing algorithm currently supported by the Connectivity Tools.

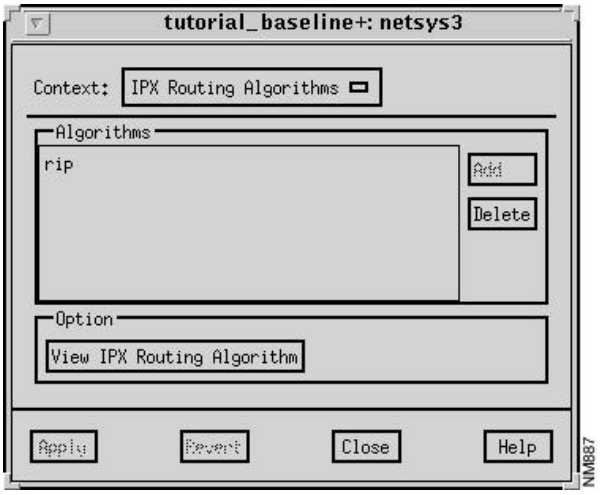

Figure 10-8 IPX Routing Algorithms Window

IPX Routing Algorithms Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Apply**, **Revert**, **Close**, and **Help** buttons.

Algorithms

This pane displays a list of the IPX Routing Algorithms supported by the current router. As RIP is the only IPX routing algorithm supported in this release of the Connectivity Solver, select the **rip** entry from the list then click on the **View IPX Routing Algorithm** button. The RIP Algorithm window, described in detail in "RIP IPX Algorithm Window" is displayed.

Option - View IPX Routing Algorithm Button

Select the RIP IPX algorithms entry in the Algorithms list, then click on this button to switch the context from the IPX Routing Algorithms window to the RIP IPX Algorithm window. The RIP Algorithm window, described in detail in "RIP IPX Algorithm Window" is displayed. Information about the RIP routing protocol attributes are displayed in this window. New attributes can be added and existing attributes can be modified or deleted from within this window.

RIP IPX Algorithm Window

The RIP IPX Algorithm window, shown in Figure 10-9, is displayed when you select the **rip** routing protocol entry in the Algorithms list in the IPX Routing Algorithms window, and then click on the **View Routing Algorithm** button. This window allows you to view and modify the RIP IPX routing protocol algorithm attributes being used in the current router configuration.

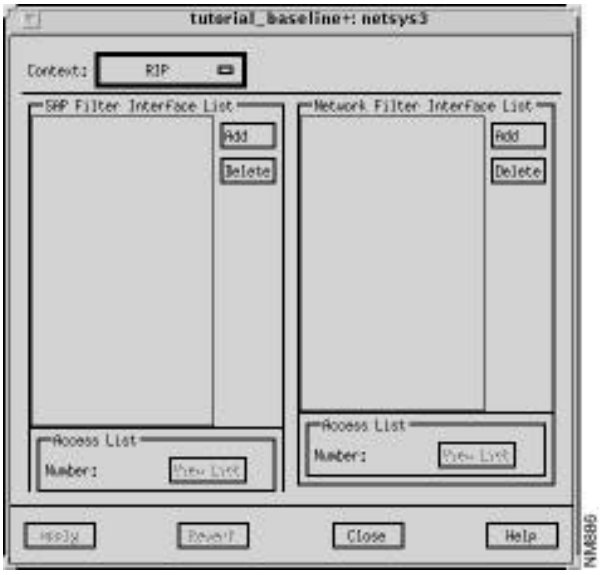

Figure 10-9 RIP IPX Routing Algorithm Window

RIP IPX Algorithm Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Delete**, **Apply**, **Revert**, **Close**, and **Help** buttons.

SAP Filter Interface List

This pane lists the router's interfaces and IPX SAP (Service Advertisement Protocol) filters applied to the routing protocol. SAP input filters are used to control which services are added to the router's SAP table, as specified by the **ipx input-sap-filter** *access-list-number* interface configuration command. SAP output filters are used to control which services are added in the SAP updates sent by the router, as specified by the **ipx output-sap-filter** *access-list-number* interface configuration command.

- **Add** Button

  Click on this button to add a router interface/IPX SAP filter pair to the SAP Filter Interface List. The Edit IPX SAP Filter Interface List window is displayed. See "Edit SAP Filter Interface List Window" for a detailed description of the Edit SAP Filter Interface List window components. Click on the **Apply** button to add the router interface to the SAP Filter Interface List pane.

Network Filter Interface List

This pane lists the router's interfaces and IPX Network filters applied to the routing protocol. Network input filters are used to control which networks are added to the router's routing table, as specified by the **ipx input-network-filter** *access-list-number* interface configuration command. Network output filters are used to control the list of networks included in routing updates sent out an interface, as specified by the
ipx output-network-filter *access-list-number* interface configuration command.

- **Add** Button

  Click on this button to add a router interface to the IPX Network Filter List. The Edit IPX Network Filter List window is displayed. See "Edit IPX Network Filter List Window" for a detailed description of the Edit IPX Network Filter List window components. Click on the **Apply** button to add the router interface to the IPX Network Filter Interface List.

Access List - Number

When an entry in either the SAP or Network Filter Interface List is selected, the standard IPX access list number associated with the selected entry is displayed in this field. The View List button is then activated. Valid access list numbers range from 800 through 899 for IPX Network filters. Valid access list numbers range from 1000 through 1099 for IPX SAP filters.

Access List - View List Button

Click on this button to switch context to the corresponding Filter Interface List window (SAP or Network.) An IPX access list number must be displayed, via the selection of one of the Filter Interface List entries, for the context switch to occur. See "IPX SAP Filter List Window" for a detailed description of the IPX SAP Filter List window components. See "IPX Standard Network Filter List Window" for a detailed description of the IPX Network Filter List window components.

Edit SAP Filter Interface List Window

The Edit SAP Filter Interface List window, shown in Figure 10-12, is displayed when you click on the **Add** button in the SAP Filter Interface List pane in the RIP IPX Algorithm window. This window allows you to create a SAP filter which is then added to the SAP Filter Interface List pane.

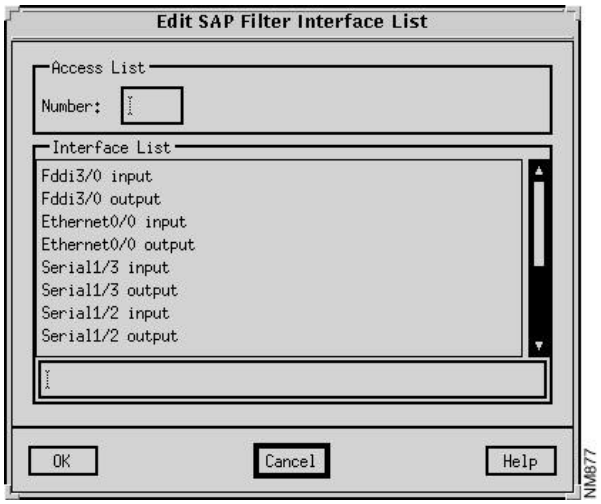

Figure 10-10 Edit SAP Filter Interface List Window

Edit SAP Filter Interface List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

Access List - Number

Specify an IPX SAP Filter access list number in this field. Valid IPX SAP Filter access list numbers range from 1000 through 1099.

Interface List

Select an interface and direction the IPX SAP (Service Advertisement Protocol) filters are to be applied to from the interfaces provided in this list. When the direction is set to input, all incoming service advertisements are filtered by the entries in the access list specified above. When the direction is set to output, all outgoing service advertisements are filtered by the entries in the access list specified above.

IPX SAP Filter List Window

The IPX SAP Filter List window, shown in Figure 10-11, is displayed when you select a SAP Filter Interface List entry and then click on the View List button in the RIP IPX Algorithm window. This window allows you to create a SAP filter and then add it to the IPX SAP Filter List.

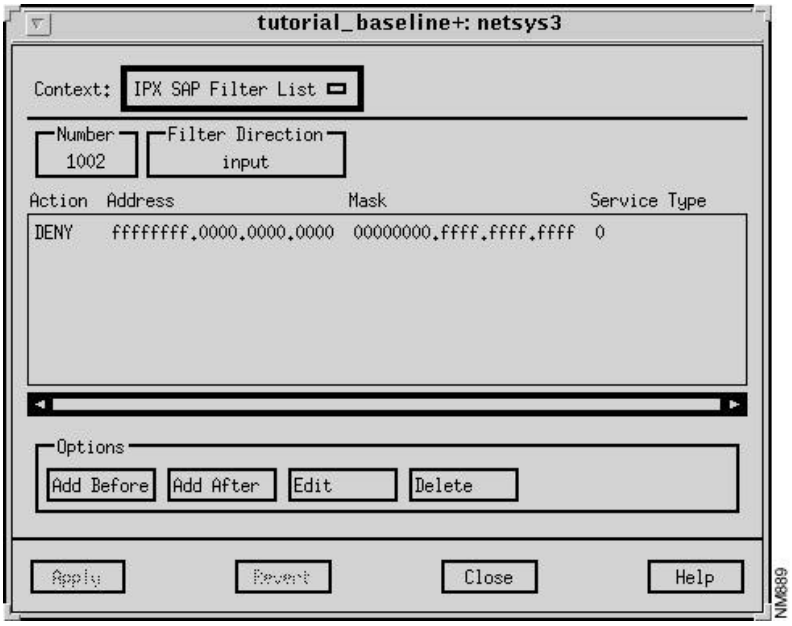

Figure 10-11 IPX SAP Filter List **Window**

IPX SAP Filter List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context, Add Before, Add After, Edit, Delete, Apply, Revert, Close,** and **Help** buttons. Clicking on the **Add Before**, **Add After**, and **Edit** buttons displays the Edit IPX SAP Filter List window. A specific entry in the IPX SAP Filter List can be selected prior to clicking on the **Add Before, Add After**, and **Edit** buttons. See "Edit IPX SAP Filter List Window Components" for a detailed description of the window's components.

Number

The IPX SAP Filter access list number is displayed here. Values range from 1000 through 1099.

Filter Direction

The filter direction of this access list is displayed in this field (`input` or `output`).

Access List Entry Description

This pane lists the selected standard IPX SAP Filter List entry values. An entry contains the action (`PERMIT`/`DENY`) setting, the IPX address, IPX mask values, and the IPX SAP service type values. These values are described in detail in "Edit IPX SAP Filter List Window"

- Action

The **Action** column is set to either PERMIT or DENY. PERMIT allows forwarding of service advertisements from the specified address(es). DENY blocks service advertisements from the specified address(es).

- Address

  The **Address** column displays the IPX network number (first 32-bits written in hexadecimal) and the IPX node ID (48-bit number written in dotted triplets).

- Mask

  The **Mask** column displays the IPX network and node ID mask.

- Service Type

  The **Service Type** column displays the IPX SAP service type. Table 10-1 lists sample SAP service type values.

Edit IPX SAP Filter List Window

The Edit IPX SAP Filter List window, shown in Figure 10-12, is displayed when you click on the **Add Before, Add After**, or **Edit** buttons in the IPX SAP Filter List window. This window allows you to create a SAP filter which is then added to the IPX SAP Filter List in the IPX Routing Algorithms window.

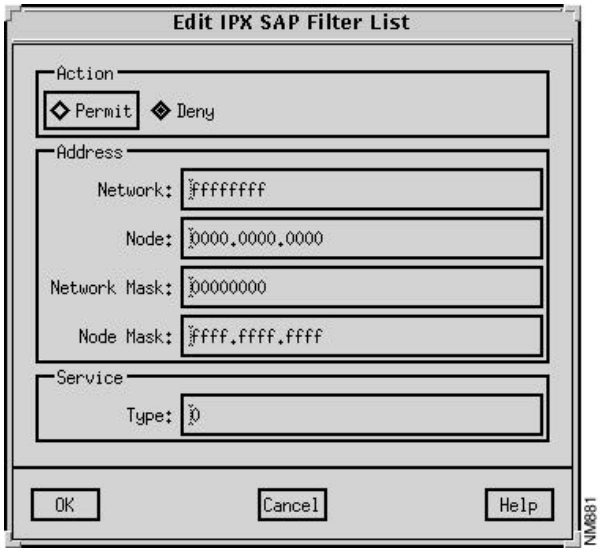

Figure 10-12 Edit IPX SAP Filter List **Window**

Edit IPX SAP Filter List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

Action - Permit/Deny Buttons

Select the **Permit** button to permit advertisement of the specified SAP service from the specified address. Select the **Deny** button to deny advertisement of the specified SAP service from the specified address.

Address - Network

Specify the IPX network number in this field. The network number is 32-bits in length written in hexadecimal.

Address - Node

Specify the IPX node ID in this field. The node ID is a 48-bit number written in dotted triplets of four digit hexadecimal numbers (e.g. `0000.0a00.12ab`.)

Address - Network Mask

Specify the IPX network mask in this field. The network mask is 32-bits in length written in hexadecimal.

Address - Node Mask

Specify the IPX node mask, using dotted triplets of four digit hexadecimal numbers (signifying the bits in the destination address to be ignored), in this field.

Service - Type

Specify the IPX SAP service type on which to filter in this field. Sample SAP service types are listed in Table 10-1.

Table 10-1 SAP Service Type Values

SAP Service Types	Description of the SAP Service Types
0	Unknown
1	User
2	User Group
3	Print Queue
4	File Server
5	Job Server
6	Gateway
7	Print Server
8	Archive Queue
9	Archive Server
A	Job Queue
B	Administration
24	Remote Bridge Server
47	Advertising Printer Server

Edit IPX Network Filter List Window

The Edit IPX Network Filter List window, shown in Figure 10-13, is displayed when you click on the **Add** button in the Network Filter Interface List pane in the RIP IPX Algorithm window. This window allows you to specify the interface, network filter direction, and IPX access list number to apply to this network filter. Network input filters are used to control which networks are added to the router's Routing Table. Network output filters are used to control the list of networks included in routing updates sent out an interface.

Click on the **OK** button to add the interface name and filter direction pair to the Network Filter Interface List in the IPX RIP Algorithms window.

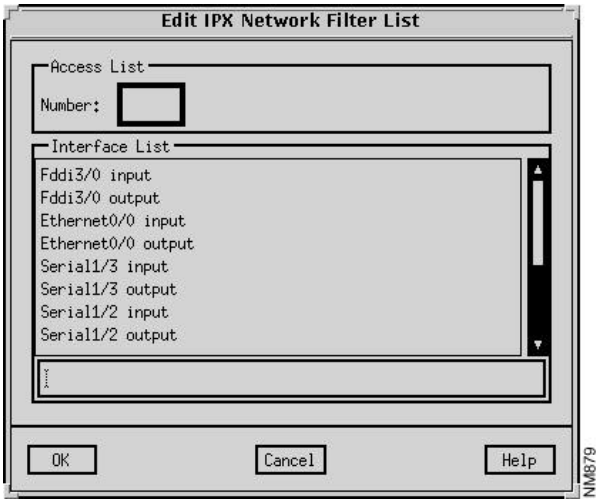

Figure 10-13 Edit IPX Network Filter List Window

Edit IPX Network Filter List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

Access List - Number

Specify a standard or extended IPX access list number to be assigned to the selected IPX network filter. Valid standard IPX access list numbers range from 800 through 899. Valid extended IPX access list numbers range from 900 through 999.

Interface List

A list of the router's available interfaces and filter directions are displayed in this list. Select an interface and the desired filter direction, then click on the **OK** button. The selected entry is added to the Network Filter Interface List in the RIP IPX Algorithm window. Upon returning to the RIP IPX Algorithm window, click on the **Apply** button to have the specified network filter take effect in the current router configuration and to activate the View List button.

IPX Standard Network Filter List Window

The IPX Standard Network Filter List window, shown in Figure 10-14, is displayed when you select a standard IPX Network Filter Interface List entry and then click on the View List button in the RIP IPX Algorithm window. This window allows you to add, modify, or delete a standard IPX network filter list entry.

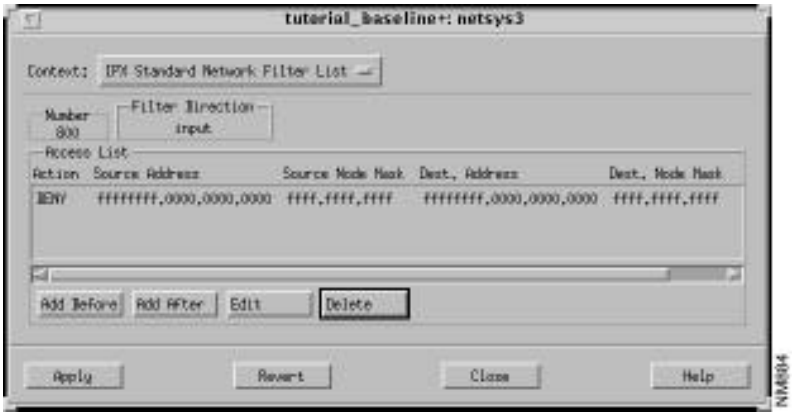

Figure 10-14 IPX Standard Network Filter List Window

IPX Standard Network Filter List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Add Before**, **Add After**, **Edit**, **Delete**, **Apply**, **Revert**, **Close**, and **Help** buttons. Clicking on the **Add Before**, **Add After**, and **Edit** buttons displays the Edit IPX Standard Network Filter List window. A specific entry in the IPX Network Filter List can be selected prior to clicking on the **Add Before, Add After**, and **Edit** buttons. See "Edit IPX Standard Network Filter List Window Components" for a detailed description of the window's components.

Number

The standard access list number assigned to the IPX network filter is displayed in this field. Standard IPX access list values range from 800 through 899.

Filter Direction

The network filter direction is displayed in this field (`input` or `output`). When the filter direction is set to input, all incoming packets are filtered by entries in the access list specified above. When the filter direction is set to output, all outgoing packets are filtered by entries in the access list specified above.

Access List Entry Description

This pane lists the selected standard IPX Network Filter List entry values. An entry contains the action (`PERMIT`/`DENY`) setting, the source IPX address and source IPX node mask values, and the destination IPX address and destination node mask values. These values are described in detail in "Edit IPX Standard Network Filter List Window."

Edit IPX Standard Network Filter List Window

The Edit IPX Standard Network Filter List window, shown in Figure 10-15, is displayed when you click on the **Add Before**, **Add After**, or **Edit** buttons in the IPX Standard Network Filter List window. This window allows you to define an IPX network filter extended access list entry and add it to the selected access list.

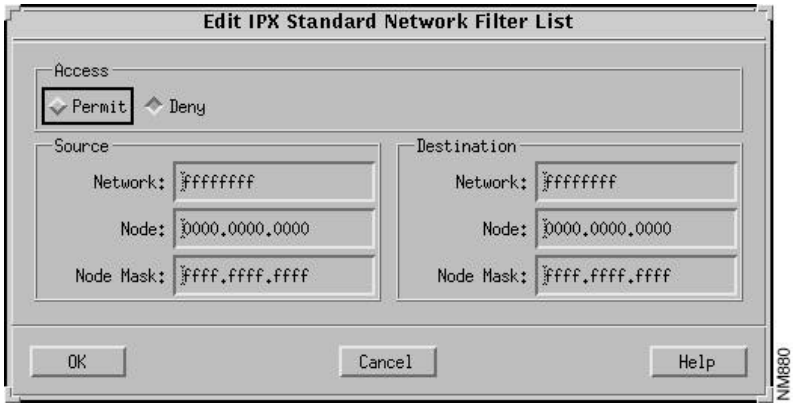

Figure 10-15 Edit IPX Standard Network Filter List Window

Edit IPX Standard Network Filter List Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

Action - Permit/Deny Buttons

Select the **Permit** button to allow distribution of routing updates between the specified networks/devices. Select the **Deny** button to block distribution of routing updates between the specified networks/devices. `Deny` is the default.

Source - Network

Specify the source IPX network number in this field. The network number is 32-bits in length written in hexadecimal. Network numbers must be unique throughout an IPX network.

Source - Node

Specify the source IPX node ID in this field. The node ID is a 48-bit number written in dotted triplets of four digit hexadecimal numbers (e.g. `0000.0a00.12ab`.)

Source - Node Mask

Specify the source IPX node mask, using dotted triplets of four digit hexadecimal numbers (signifying the bits in the source address to be ignored), in this field.

Destination - Network

Specify the destination IPX network number in this field. The network number is 32-bits in length written in hexadecimal.

Destination - Node

Specify the destination IPX node ID in this field. The node ID is a 48-bit number written in dotted triplets of four digit hexadecimal numbers (e.g. `0000.0a00.22ac`.)

Destination - Node Mask

Specify the destination IPX node mask, using dotted triplets of four digit hexadecimal numbers (signifying the bits in the destination address to be ignored), in this field.

IPX Extended Network Filter List Window

The IPX Extended Network Filter List window, partially shown in Figure 10-16, is displayed when you select an extended IPX Network Filter Interface List entry and then click on the View List button in the IPX RIP Algorithm window. This window allows you to add, modify, or delete an extended IPX network filter list entry.

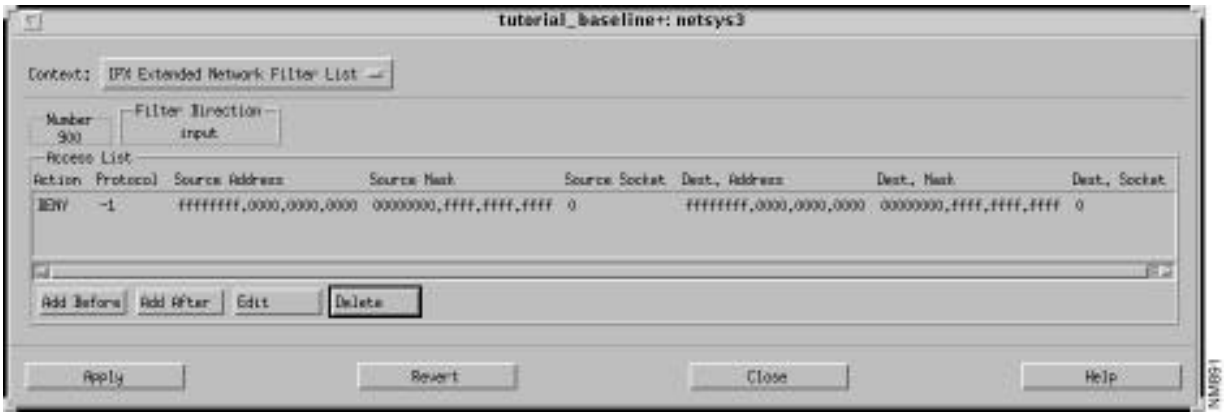

Figure 10-16 IPX Extended Network Filter List **Window**

IPX Extended Network Filter List WindoW Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Context**, **Add Before**, **Add After**, **Edit**, **Delete**, **Apply**, **Revert**, **Close**, and **Help** buttons. Clicking on the **Add Before**, **Add After**, and **Edit** buttons displays the Edit IPX Extended Network Filter List window. A specific entry in the IPX Network Filter List can be selected prior to clicking on the **Add Before**, **Add After**, and **Edit** buttons. See "Edit IPX Extended Network Filter List Window Components" for a detailed description of the window's components.

Number

The entry's extended IPX network filter access list number is displayed here. Values range from 900 through 999.

Filter Direction

The filter direction is displayed in this field (`input` or `output`). When the filter direction is set to input, all incoming packets are filtered by entries in the access list specified above. When the filter direction is set to output, all outgoing packets are filtered by entries in the access list specified above.

Access List Entry Description

This pane lists the selected extended IPX Network Filter List entry values. An entry contains the action (`PERMIT`/`DENY` access) setting, the source IPX address, node mask, and socket number values, and the destination IPX address, node mask, and socket number values. These values are described in detail in "Edit IPX Extended Network Filter List Window Components."

Edit IPX Extended Network Filter List Window Components

The Edit IPX Extended Network Filter List window, shown in Figure 10-17, is displayed when you click on the **Add Before**, **Add After**, or **Edit** buttons in the IPX Extended Network Filter List window. This window allows you to add or modify an extended IPX network filter access list entry. The window's components are described in the following sections. See "General Window Components" for a description of the **OK**, **Cancel**, and **Help** buttons.

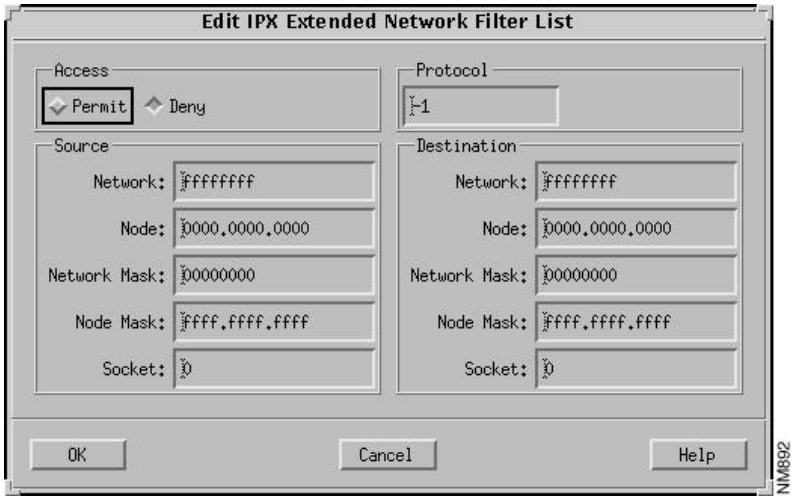

Figure 10-17 Edit IPX Extended Network Filter List Window

Access - Permit/Deny Buttons

Select the **Permit** button to permit access from the source IPX network and node addresses via the source socket number specified to the destination IPX network and network node addresses through the destination socket number specified. Select the **Deny** button to deny access from the source IPX network and node addresses via the source socket number specified to the specified destination IPX network and network node addresses through the destination socket number specified. Deny access is the default.

Protocol

Specify the decimal number of an IPX protocol type (also referred to as a packet type) in this field. In IOS Versions 9.21 through 10.2, a value of zero specifies any protocol over the specified socket number. In IOS Version 10.3, the default value is minus one (any packet type.) A value of one specifies RIP. A value of four specifies SAP.

Source - Network

Specify a valid IPX source network in this field.

Source - Node

Specify a valid IPX source node address, in dotted-triplet format, in this field.

Source - Network Mask

Specify a valid IPX network mask signifying the bits in the source network to be ignored, in this field.

Source - Node Mask

Specify a valid IPX source node mask signifying the bits in the source address to be ignored, in dotted-triplet format, in this field.

Source - Socket

Specify a valid IPX source socket number in this field.

Destination - Network

Specify a valid IPX destination network in this field.

Destination - Node

Specify a valid IPX destination node address, in dotted-triplet format, in this field.

Destination - Network Mask

Specify a valid IPX network mask signifying the bits in the source network to be ignored, in this field.

Destination - Node Mask

Specify a valid IPX node mask signifying the bits in the destination address to be ignored, in dotted-triplet format, in this field.

Destination - Socket

Specify a valid IPX destination socket number in this fieldIPX Access List Summary Window

IPX Access List Summary Window

The IPX Access List Summary window, shown in Figure 10-18, is displayed when you click on the IPX Access List button in the Router Configuration window. This window allows you to view the interfaces and/or routing algorithms applied to existing IPX access list numbers.

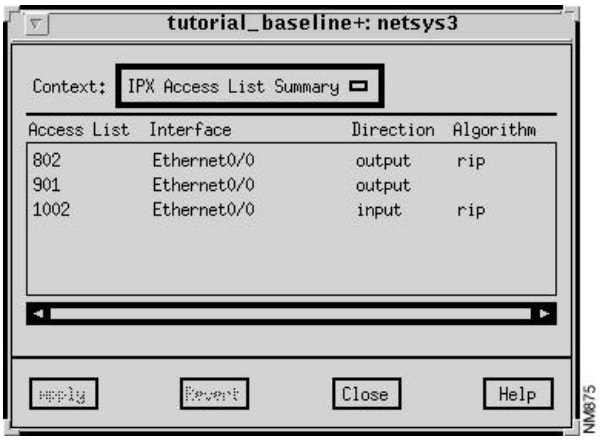

Figure 10-18 IPX Access List Summary Window

The first entry in Figure 10-18 represents a network output filter. The second entry represents an output access list applied to an interface. The third entry represents a SAP input filter.

IPX Access List Summary Window Components

This window's components are described in the following sections. See "General Window Components" for a description of the **Close** and **Help** buttons.

Access List

The existing IPX access list numbers are displayed in this column.

Interface

The router interfaces and/or IPX routing algorithms the IPX access list numbers are applied to are displayed in this column.

Direction

The filter direction (`Input`, `Output`, `Both`) the IPX access list number is applied to is displayed in this column.

Algorithm

The IPX routing algorithm, if any, the access list umber is applied to is displayed in this column. RIP is the only IPX routing algorithm supported in this release of the Connectivity Solver.