

Chapter 3

Configuring Virtual Routers

Your E-series device allows you to create multiple virtual routers in a single system. Each virtual router has its own separate set of IP interfaces, forwarding table, and instances of routing protocols.

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Overview

The E-series device supports multiple distinct routers within a single system. This support allows service providers to configure multiple separate and secure routers within a single chassis. These routers are identified as *virtual routers (VRs)*. Applications for this function include the creation of individual routers dedicated to wholesale customers, corporate virtual private network (VPN) users, or a specific traffic type. An E-series device supports up to 1000 VRs.

Default Virtual Router

When you first boot your system, it creates a default virtual router. The only difference between the default virtual router and any other virtual router is you cannot create or delete it. Just like other routers, the default virtual router gets its IP addresses when interfaces are configured on it.

References

For more information related to virtual routers, see the following resources:

Associating a Customer with an IP Interface in *NMC-RX User Guide, Vol. 1, Chapter 7, Configuring Customers*

Creating IP Interfaces on page 68—Information about associating IP interfaces with virtual routers

Creating User Domain Maps on page 94—Information about creating user domain map entries on top of virtual routers

Creating Local IP Address Pools on page 98—Information about creating local IP address pools on top of virtual routers

Creating Authentication and Accounting Servers on page 96

Creating DHCP Relay Servers on page 97

Configuration Tasks

To configure a virtual router:

1. Create a virtual router.
2. Create one or more management access entries.
3. Create one or more access list entries.
4. (Optional) Create one or more IP static routes.
5. (Optional) Create an IP address pool. See *Creating Local IP Address Pools* on page 98.
6. (Optional) Create a user domain map entry. See *Creating User Domain Maps* on page 94.
7. (Optional) Configure trap destinations and global trap parameters. See also *Chapter 1, Configuring SNMP Traps*.

Creating Management Access

Usually, a system administrator or network specialist determines who is permitted or denied access to certain network management functions. The NMC-RX application uses SNMP to provide security features for the purpose of safeguarding critical network information.

A proprietary SNMP Community Table governs access to an SNMP server by an SNMP client. This table identifies those communities that have different permission levels to the SNMP MIB stored on a particular server. When an SNMP server receives a request, the server extracts the client's IP address and the community name. The SNMP server's Community Table is searched for a matching community. The server's access list is then used to validate the IP address. Access is determined by validation of these criteria.

Creating Management Access Entries

After you create a management access entry, you can create access list entries and associate them with the newly created management access entry. The NMC-RX application propagates the access list entry number from the management access entry to the access list. One or more access list entries can be associated with a single management access entry.

To create a management access entry:

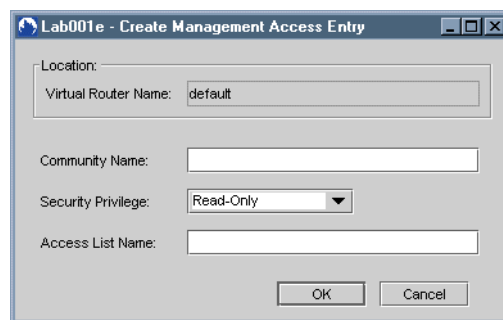
1. From the Device-wide Explorer, click Virtual Routers, right-click, and click List All.

The names of all the virtual routers created for this device appear in the list area. This list always includes a default virtual router preconfigured on your E-series device. It also includes any additional virtual routers that you have created.

Virtual Router Name	Type
default	DEFAULT
YAN_VR1	User Created

2. Click a virtual router in the list, right-click, select Create, and click Mgmt Access Entry.

The Create Management Access Entry dialog box appears.



3. Set the management access entry parameters. See Table 17.

Table 17: Management Access Entry Parameters

Parameter	Description
Virtual Router Name	Name of the virtual router for which you are creating the management access entry. Name is automatically propagated by the system from the name you previously selected.
Community Name	Name of the SNMP community. A text string of 1–31 characters. Community name acts as a password and is used to authenticate messages sent between an SNMP client and a router containing an SNMP server. Every packet between the client and the server contains the community string.
Security Privilege	Access level assigned to the community name: <ul style="list-style-type: none"> Read-Only—Allows read-only access to the entire MIB except for SNMP configuration objects Read-Write—Allows read-write access to the entire MIB except for SNMP configuration objects Admin—Allows read-write access to the entire MIB

Table 17: Management Access Entry Parameters (continued)

Parameter	Description
Access List Name	Name identifies the list. The IP access list identifies those IP addresses of SNMP clients permitted to use a given SNMP community.

4. Click OK.

The system saves the management access entry.

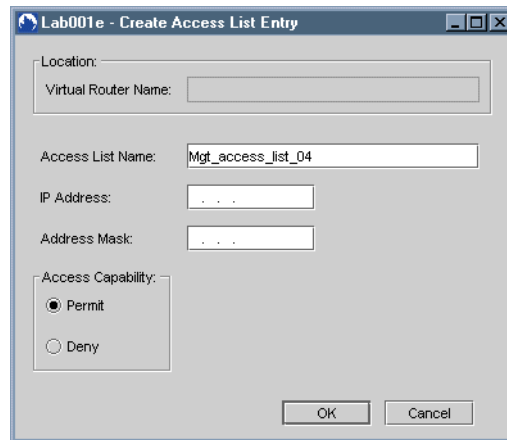
Creating Access List Entries

Before you can create access list entries from the management access entry, you must list the available management access entries. When you create an access list entry for a management access entry, you establish an association.

To create an access list entry:

1. From the Device-wide Explorer, open the Virtual Routers folder.
2. Click Mgmt Access Entries, right-click, and click List All.
3. In the list area, select the management access entry for which you want to create an access list, right-click, select Create, and click Access List Entry.

The Create Access List Entry dialog box appears.



4. Set the access list entry parameters. See Table 18.

Table 18: Access List Entry Parameters

Parameter	Description
Access List Name	Name identifies the list. The IP access list identifies those IP addresses of SNMP clients permitted to use a given SNMP community.
IP Address	IP address of the management station communicating through SNMP to a device

Table 18: Access List Entry Parameters (continued)

Parameter	Description
Address Mask	IP mask of the management station communicating through SNMP to a device
Access Capability	Access permission: Permit—Access is allowed Deny—Access is not allowed

5. Click OK.

The new access list entry is created.

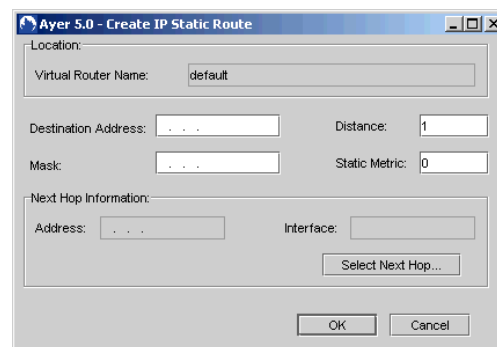
Creating IP Static Routes

You can create IP static routes for your virtual routers. An IP static route allows you to receive and send traffic by assigning a fixed route through the network.

To create an IP static route on a virtual router:

1. In the Device-wide Explorer, right-click Virtual Routers, and click List All.
2. From the list of virtual routers in the list area, click the router for which you want to configure an IP static route.
3. Right-click, select Create, and click IP Static Route.

The Create IP Static Route dialog box appears.



4. Set the first four parameters. See Table 19.

Table 19: IP Static Route Parameters

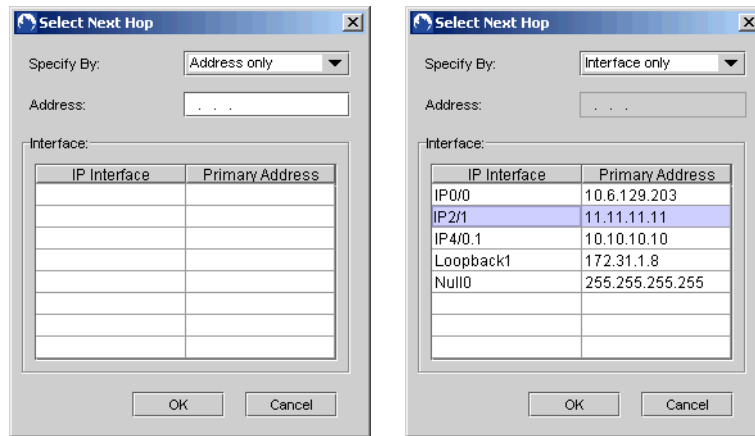
Parameter	Description
Destination Address	IP address for the device at the other end of the connection from the virtual router
Mask	IP address mask for the destination address
Distance	Administrative distance or weight assigned to the route

Table 19: IP Static Route Parameters (continued)

Parameter	Description
Static Metric	Hop count
Next Hop Information	
Address	IP address of the next hop
Interface	Interface of the next hop

- Click Select Next Hop.

The Select Next Hop dialog box appears.



- From the Specify By drop-down list, select how you want to specify the next hop:

Address only—Enables the Address field.

Interface only—Dims the Address field and displays all IP interfaces defined on the same virtual router as the IP static route.

Address and Interface—Enables the Address field and lists unnumbered IP interfaces defined on the same virtual router as the IP static route.

- Depending on your selection, enter an address, select an interface, or do both, and click OK.

Your selections are entered in the corresponding fields in the Create IP Static Route dialog box. If an address does not exist on the virtual router, Unresolved appears in the Interface field.

- Click OK to save the settings.