

Managing Routers and Virtual Routers

This chapter describes how to manage objects for E-series routers and virtual routers (VRs) in the directory and how to connect to E-series routers so you can view or change the router's configuration.

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Overview

You must add to the directory E-series routers and VRs that are part of your SDX configuration. Names of routers and VRs that you add to the directory must match the names configured on the E-series router.



Note: Router names and VR names are case sensitive.

The E-series router objects define:

- Interface classification scripts, which determine the default policy that the router applies to a particular interface.
- Management address of the router.
- QoS profiles configured on the router.

The VR objects define:

- SNMP communities that the SAE uses to communicate with the VR.

- Scopes, which determine the availability of services for subscribers who connect to the VR.
- Local address pools on the E-series VR.
- CORBA reference for the SAE that manages this VR.

Adding Routers and VRs

You can detect and add all operative routers and configured VRs to the directory simultaneously. However, if you want to add inoperative routers or unconfigured VRs, you must add each one individually. Use SDX Admin to complete all of these operations.

Adding Operative E-Series Routers and Configured VRs

You can use SDX Admin to simultaneously add E-series routers and VRs that are currently operative and have an operating SNMP agent. To do so:

- 1 In the navigation pane, select *o=Network*, and right-click.
- 2 Select Discover Network.

The SDX Admin dialog box appears.

- 3 Enter the IP address and prefix of the network, and the SNMP community string.
- 4 Click OK.

Objects for the E-series routers and VRs that meet the criteria you specified appear under the Networks object in the navigation pane. You can then modify the properties configured for these objects. For information about the properties of these objects, see the following section, which describes how to add routers that are inoperative.

Adding Inoperative E-Series Routers

If an E-series router is inoperative, you can add that router to the SDX configuration individually. To do so:

- 1 In the navigation pane, highlight *o=Network*, and right-click.
- 2 Select New > EdgeDevice.

The New EdgeDevice dialog box appears.

- 3 In the New EdgeDevice dialog box, enter the name for the E-series router, and click OK.



Note: The name of the edge device must match the hostname configured on the E-series router.

The name of the new device appears in the navigation pane, and information about the router appears in the EdgeDevice pane.

- 4 Set the parameters in each tab of the EdgeDevice pane (see the following sections).
- 5 Click Save in the EdgeDevice pane.

Main Tab

Figure 4-1 shows the Main tab of the EdgeDevice pane. See Table 4-1 for information about each field.

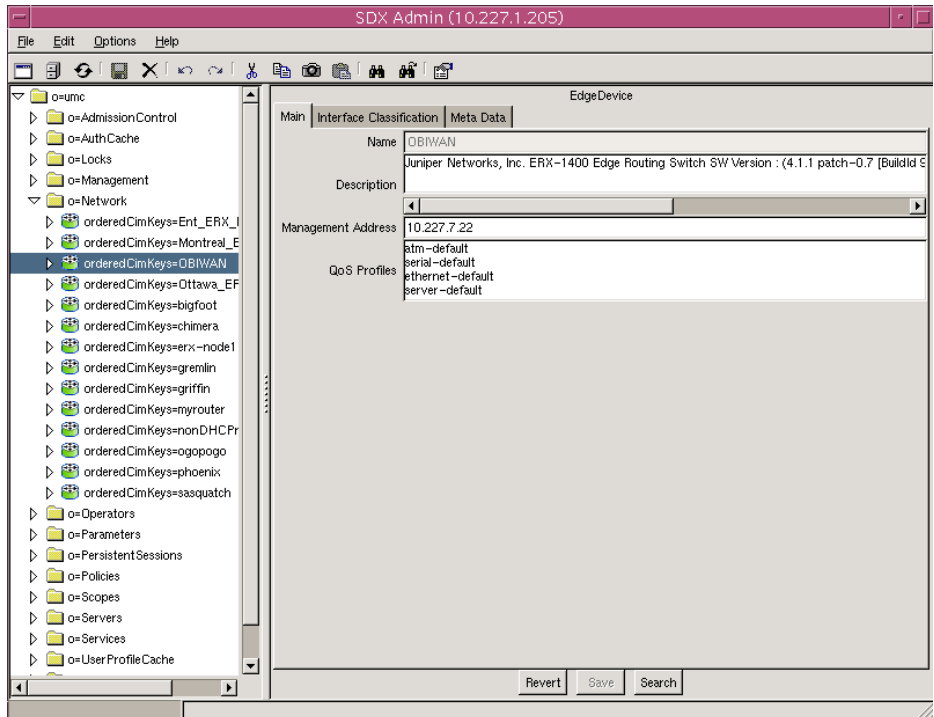


Figure 4-1 Main tab of EdgeDevice pane

Table 4-1 Main tab of EdgeDevice pane

Parameter	Description
Name	Name of E-series router – must match hostname configured on the router
Description	Information about this E-series router; keywords that the SDX find utility uses
Management Address	IP address of the router. If you add the router using the discover network feature, the software automatically adds the IP address of the first SNMP agent on the router to respond to the discover request.
QoS Profiles	QoS profiles that are configured on the router. To update this list, see <i>Updating QoS Profiles for E-Series Routers</i> later in this chapter.

Interface Classification Tab

For information on creating interface classification scripts see *Chapter 5, SAE Advanced Configuration*.

Meta Data Tab

Administrative information associated with this object is stored in the pane for this tab (see *Chapter 1, Using SDX Admin*).

Adding VRs That Are Not Configured

If a VR is not configured, you can add it to the SDX configuration individually. To do so:

- 1 In the navigation pane, highlight the E-series router that supports the VR, and right-click.
- 2 Select **New > VirtualRouter**.
The New VirtualRouter dialog box appears.
- 3 Enter the name of the VR, and click **OK**.



Note: The name of the VR must match the name of the VR configured on the E-series router.

The name of the new VR appears in the navigation pane, and the VirtualRouter information appears in the pane.

- 4 Set the parameters in each tab of the VirtualRouter pane (see the following sections).
- 5 Click **Save** in the VirtualRouter pane.

Main Tab

Figure 4-2 shows the Main tab of the VirtualRouter pane. See Table 4-2 for information about each field.

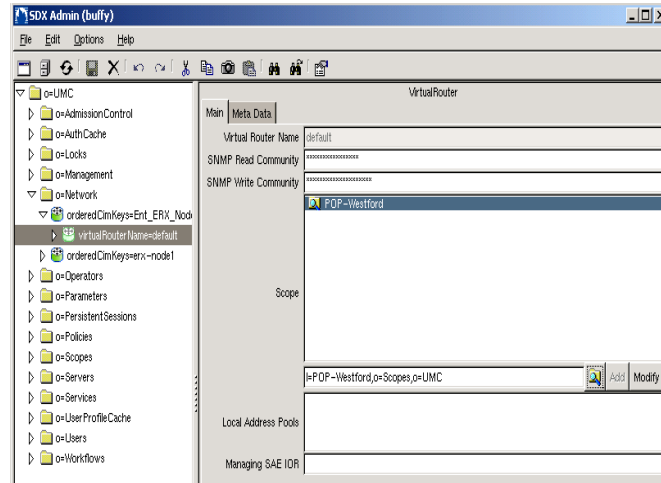


Figure 4-2 Main tab of VirtualRouter pane

Table 4-2 Main tab of VirtualRouter pane

Parameter	Description
Virtual Router Name	Name of VR exactly as configured on E-series router
SNMP Read Community	SNMP community name associated with SNMP read-only operations for this VR
SNMP Write Community	SNMP community name associated with SNMP write operations for this VR
Scope	Service scopes assigned to this VR – see <i>Restricting and Customizing Services for Subscribers</i> in Chapter 2, <i>Managing Services</i>
Local Address Pools	List of IP address pools currently managed by this VR (see <i>IP Pool Syntax</i> in <i>SDX Installation and Configuration Guide, Chapter 6, Configuring and Starting the NIC.</i>) To update this list when the router configuration changes, see <i>Updating Local IP Address Pools for VRs</i> later in this chapter.
Managing SAE IOR	CORBA reference for the SAE managing this VR (see <i>SDX Installation and Configuration Guide, Chapter 6, Configuring and Starting the NIC.</i>)
Tracking Plugin	Comma-separated list of plug-in instances and/or NIC SAE plug-in agents that track interfaces on this virtual router.

Meta Data Tab

Administrative information associated with this object is stored in the content panes for this tab (see *Chapter 1, Using SDX Admin*).

Updating Local IP Address Pools for VRs

When you reconfigure local IP addresses pools on an E-series VR, you must update in the directory the local IP addresses that the VR provides. To do so, you can use either SDX Admin or a program called `poolRepublish`. With SDX Admin, you can update one VR at a time. With `poolRepublish`, you can update simultaneously any number of VRs in the same directory.

Prerequisites

To use these features, the following prerequisites apply:

- The E-series router and VR must appear in the directory.
- The VR must have an operating SNMP agent for the SDX software to update the local IP address pools in the directory.
- The host that supports SDX Admin must be able to communicate with the VR via SNMP to allow updates of IP address pools via SDX Admin.
- The host that supports the SAE must be able to communicate with the VR via SNMP to allow updates of IP address pools via the `poolRepublish`.
- You must have write permissions for the `o=Network` subtree.

Using SDX Admin

To update local IP address pools for a VR in the directory with SDX Admin:

- 1 In the navigation pane, expand the object `o=Network`.
- 2 In the navigation pane, expand the object for the router on which the VR is configured.
- 3 Highlight the object for the VR in the navigation pane, and right-click.
- 4 Select Update IP Pools.

The SDX Admin dialog box appears.

- 5 Enter the IP address for the VR, enter the SNMP community if the default value is incorrect, and click OK.

SDX Admin updates the local IP addresses for the VR in the directory and displays the information in the Local IP Address field of the Main tab in the Virtual Router pane.

Using poolRepublish

After you have installed the SAE on a host, you can use the **poolRepublish** command to update local IP address pools. For information about installing the SAE, see *SDX Installation and Configuration Guide, Chapter 1, Installing the SDX-300 Software*.

When you execute the command **poolRepublish**, you can specify multiple VRs that use the same SNMP read community. For each VR you must specify the name of the VR, the name of the E-series router on which it is configured, and the VR's corresponding IP address. You must also specify the directory connection. The syntax for the command is:

```
poolRepublish { { -v <vrName>@<routerName> -i <ipAddress>}*
-h <host> -b <baseDn> -D <bindDN> -w <password>
-c <readCommunity> } | -H }
```

Table 4-3 describes the variables you must specify.

Table 4-3 Variables for poolRepublish and qosProfilePublish

Variable	<vrName>
Description	Name of VR
Value	Text string (value is case sensitive and must match name in E-series configuration)
Example	vr-boston
Variable	<routerName>
Description	For poolRepublish, name of E-series router on which VR is configured For qosProfilePublish, name of E-series router from which you want to update QoS profiles
Value	Text string (value is case sensitive and must match name in E-series configuration)
Example	erx1
Variable	<ipAddress>
Description	For poolRepublish, VR's IP address For qosProfilePublish, E-series router IP address
Value	IP address or text string
Example	192.0.2.1
Variable	<host>
Description	IP address or name of the host that supports the directory
Value	IP address or text string
Example	192.0.2.2 or ottawa

Table 4-3 Variables for poolRepublish and qosProfilePublish (continued)

Variable	<baseDn>
Description	DN of the root of the tree in the directory
Value	DN
Example	<i>o=Network,o=umc</i>
Variable	<bindDn>
Description	DN of username for authentication with directory server
Value	DN
Example	<i>cn=umcAdmin,o=umc</i>
Variable	<password>
Description	Password for authentication with directory server
Value	Text string
Example	admin123
Variable	<readCommunity>
	<i>Note: If the SNMP read community for a VR is defined in the directory, you do not need to specify this value.</i>
Description	Name of SNMP read community for VR
Value	Text string
Example	public
Keyword	-H
Function	Displays help for this tool

To update local IP addresses using the **poolRepublish** command:

- 1 On the SAE host, access the folder /opt/UMC/ssp/etc.

```
cd /opt/UMC/ssp/etc
```

- 2 Execute the command.

```
./poolRepublish -v vr1@erx1 -i 192.0.2.1 -v vr2@erx2 -i  
192.0.2.3 -h 192.0.2.5 -w admin123 -D cn=umcAdmin,o=umc -b  
o=Network,o=umc -c public
```

The software updates and displays the local IP address pools for each VR you specified.

```
vr1@erx1 pools: ([10.227.11.242 10.227.11.250][10.227.11.226  
10.227.11.239]){10.227.11.208/255.255.255.240}{10.227.11.24  
0/255.255.255.240}{10.227.11.224/255.255.255.240})  
  
vr2@erx2: ([10.227.12.242 10.227.12.250][10.227.12.226  
10.227.12.239]){10.227.12.208/255.255.255.240}{10.227.12.24  
0/255.255.255.240}{10.227.12.224/255.255.255.240})
```

For information about the syntax for IP pools, see *Specifying a Router Initialization Script* in *SDX Installation and Configuration Guide, Chapter 6, Configuring and Starting the NIC*.

Troubleshooting

You must specify the correct arguments for the **poolRepublish** command. In addition, the specified router and directory must be available for the command to complete. If you do not meet these requirements and the prerequisites (see *Prerequisites*, earlier in this chapter), poolRepublish does not complete and displays an error message.

For example, if no SNMP read community is configured in the directory for the VR and you do not specify this value when you run poolRepublish, you will see the following error message:

```
Could not perform ip pools update due to No
'snmpReadCommunity' attribute is provided for virtual
router: vrl@bigfoot
```

If you run poolRepublish again and supply this SNMP read community, poolRepublish should run correctly.

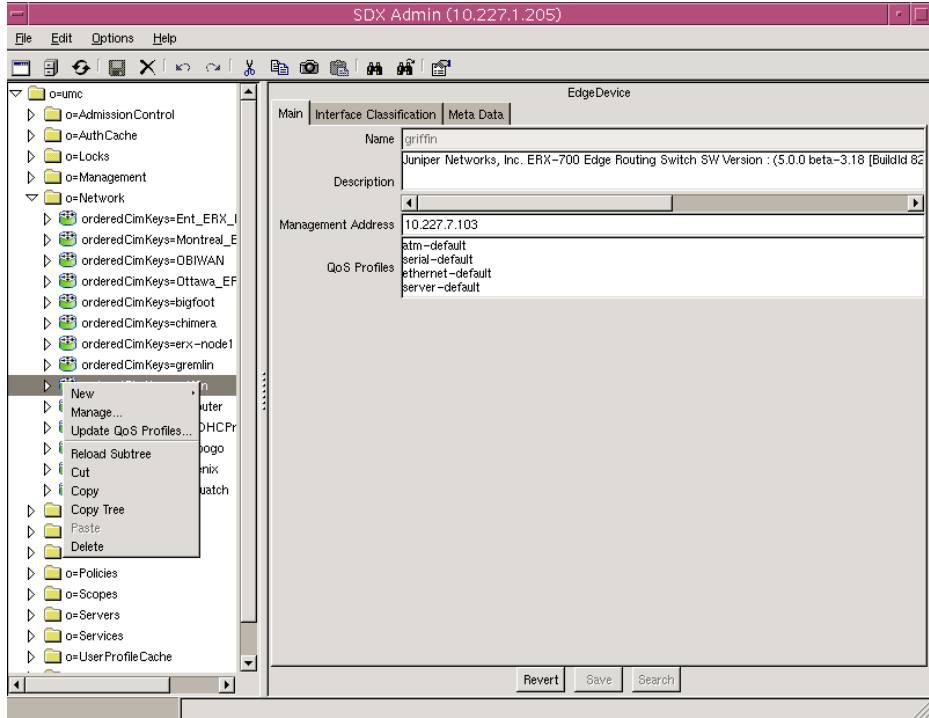
Updating QoS Profiles for E-Series Routers

You can update the directory and SDX Admin with a list of QoS profiles that are currently configured on an E-series router. You can do so by using either SDX Admin or a program called qosProfilePublish.

Using SDX Admin

To update the directory with SDX Admin:

- 1 In the navigation pane, expand the object *o=Network*.
- 2 Select the router for which you want to update QoS profiles, and right-click.



- 3 Select Update QoS Profiles.

The SDX Admin dialog box appears.

- 4 Enter the IP address for the router, enter the SNMP community if the default value is incorrect, and click OK.

SDX Admin updates the QoS profiles for the router in the directory and displays the information in the QoS Profiles field of the Main tab in the EdgeDevice pane.

Using `qosProfilePublish`

The program `qosProfilePublish` is installed in the folder `/opt/UMC/ssp/etc` when you install the SAE. For information about installing the SAE, see *SDX Installation and Configuration Guide, Chapter 1, Installing the SDX-300 Software*.



Note: Because QoS profiles are part of the global configuration of E-series routers, when a QoS profile is configured on the router, all VRs can use that profile. Therefore, you update QoS profiles per router, not VR as you do with IP pools. However, when you run `qosProfilePublish`, you still must define a VR using the `-v` option.

The syntax for qosProfilePublish is:

```
qosProfilePublish { { -v <vrName>@<routerName> -i <ipAddress>}*  
-h <host> -b <baseDn> -D <bindDN> -w <password>  
-c <readCommunity> ] | -H }
```

Table 4-3 describes these variables.

To update QoS profiles with qosProfilePublish:

- 1 Access the folder in which qosProfilePublish is installed.

```
cd /opt/UMC/ssp/etc
```

- 2 Run qosProfilePublish.

The program accesses QoS profiles for the router that you specify and updates the information in the specified directory.

```
# ./qosProfilePublish -v default@erx1 -i 10.10.7.28 -h  
10.10.227.7 -w admin123 -D cn=umcAdmin,o=umc -b  
o=Network,o=umc -c public  
  
erx1 profiles are: ['atm-default', 'serial-default',  
'ethernet-default', 'server-default']
```

Connecting to E-Series Routers

You can access the CLI of E-series routers from Policy Editor and from SDX Admin through a Telnet or SSH connection. This access allows you to display and change the configuration of the E-series router.

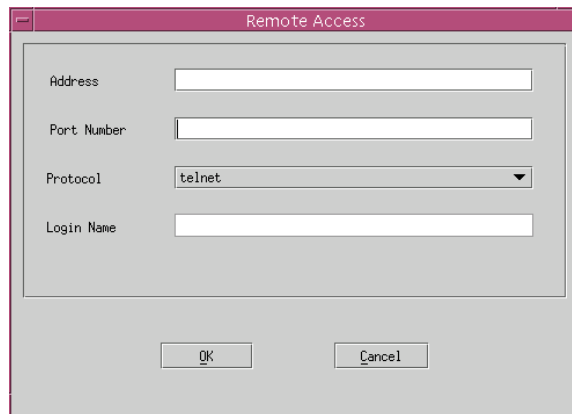
You must have the Telnet or SSH applications installed and available to Policy Editor or SDX Admin. You can open multiple Telnet or SSH sessions.

Using Policy Editor

To access a router from Policy Editor:

- 1 In the Policy Editor window, click Tools in the menu bar; then click Manage.

The Remote Access dialog box appears.



- 2 Fill in the fields (see Table 4-4), and click OK.

A Telnet or SSH window with an E-series CLI prompt appears.

Table 4-4 Remote access fields

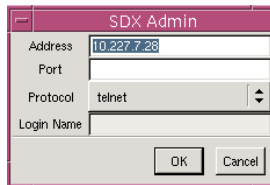
Field	Description
Address	IP address or hostname of the E-series router.
Port Number	Port over which you want to connect to the router.
Protocol	Telnet or SSH connection.
Login Name	Login name for SSH connections.

Using SDX Admin

To access a router from SDX Admin:

- 1 In the navigation pane, expand the object *o=Network*.
- 2 Select the router to which you want to connect, and right-click.
- 3 Select Manage.

The Remote Access dialog box appears.



- 4 Fill in the fields (see Table 4-4), and click OK.

A Telnet or SSH window with an E-series CLI prompt appears.

