Chapter 5

Configuring BGP Neighbors

This chapter describes how to create Border Gateway Protocol (BGP) neighbors and contains the following sections:

Overview

The NMC-RX application allows you to configure BGP neighbors. (Another term for BGP neighbor is BGP peer.) These are the only BGP objects that the NMC-RX application supports. To configure BGP fully, you must use the Juniper Networks command-line interface (CLI). See *JUNOSe BGP and MPLS Configuration Guide, Chapter 1, Configuring BGP Routing*.

A router that has been configured to run the BGP routing protocol is called a *BGP speaker*. Unlike some other routing protocols, BGP speakers do not automatically discover each other and begin exchanging information. Instead, each BGP speaker must be explicitly configured with a set of BGP neighbors with which it exchanges routing information. BGP neighbors do not have to be directly connected to each other to share a BGP session. A BGP neighbor group consists of two or more BGP neighbors that share a common set of update policies.

Configuration Tasks

Two tasks are common to every BGP configuration: You must enable the BGP routing process and you must configure BGP neighbors. All other configuration tasks are optional.

To configure BGP neighbors:

- Create BGP neighbors.
- Set route policies.
- Set BGP parameters.
- Set timer settings.

NOTE: The order of performing these tasks is arbitrary.

You can also perform the following optional tasks:

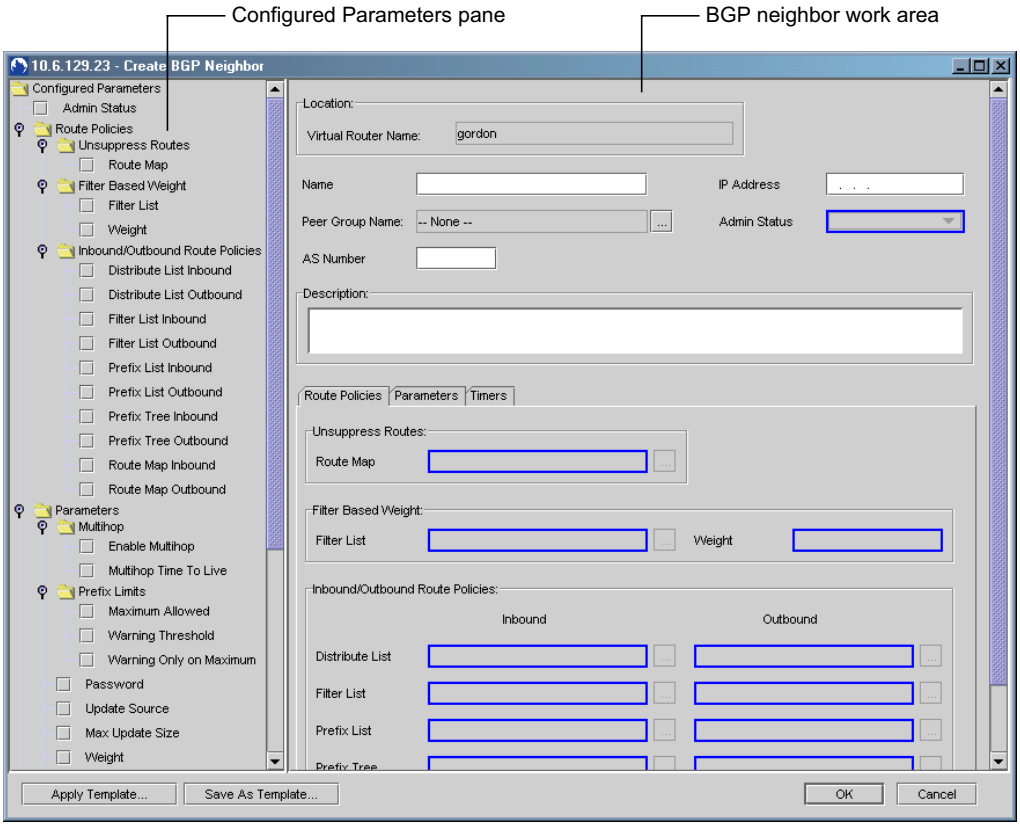
- Create access lists.
- Create BGP templates.

Understanding BGP Neighbor Windows

The BGP neighbor windows contain two general areas—a Configured Parameters pane and a BGP neighbor work area.

The Configured Parameters pane contains a hierarchical view of all BGP-related parameters that you can use to configure a BGP neighbor. This pane controls how the BGP neighbor inherits information from peer groups or global settings. By selecting (checking) a parameter, you indicate that you want the configuration for that parameter to override any inherited value. If you do not select a parameter, the parameter inherits the configuration value from the peer group (if one exists) or from the router's global configuration.

When you select a parameter, a check mark appears in the check box, and the associated field or drop-down menu in the BGP neighbor work area becomes active. Once active, you can enter values for the parameters in the BGP neighbor work area.



Creating BGP Neighbors

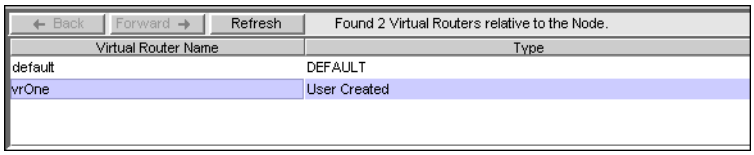
The NMC-RX application provides you with a simple way to add BGP neighbors to your device's BGP configuration. Typically, an ISP uses this feature to configure the way in which he or she sends and receives routing information to and from customers.

NOTE: You need to have BGP already enabled through the Juniper Networks CLI on the E-series device that you are configuring in order to create BGP neighbors on that device through the NMC-RX application.

To create a BGP neighbor:

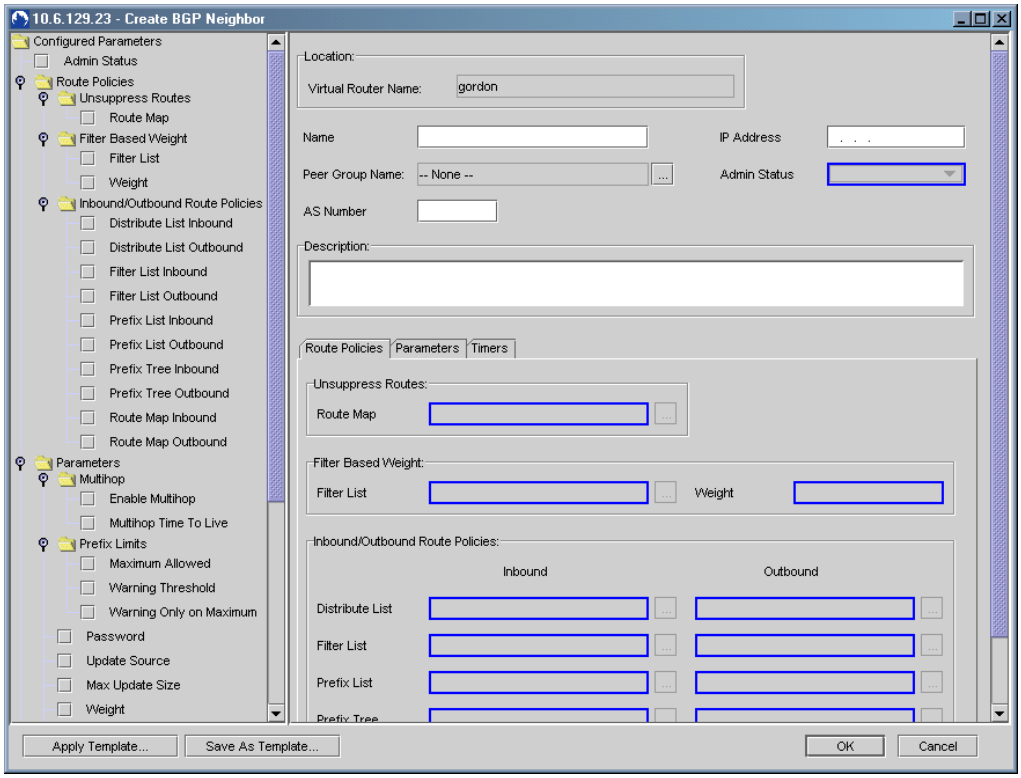
1. In the Device-wide Explorer, open the Virtual Routers folder.
2. Right-click, and click List All.

   A list of virtual routers appears in the list area.



3. Select a virtual router, right-click, select Create, and click BGP Neighbors.

   The Create BGP Neighbor window appears.



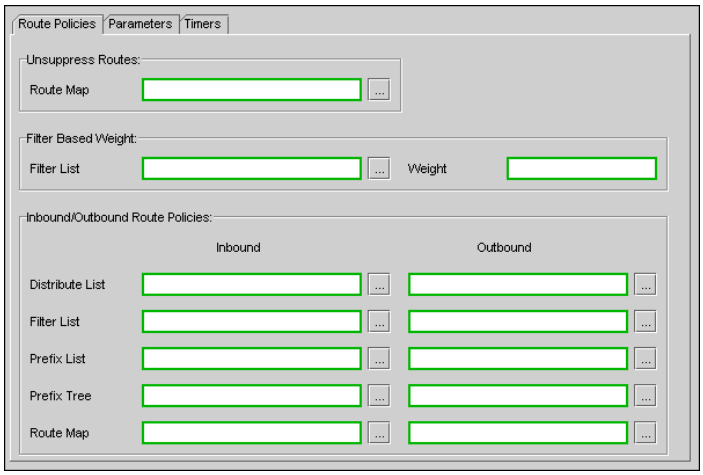
4. Set the identification parameters for a BGP neighbor (Table 32).

NOTE: To specify an administrative status, you must first activate the Admin Status parameter in the Configured Parameters pane.

Table 32: BGP Neighbors Parameters (General Settings)

Parameter	Description
Virtual Router Name	Virtual router containing this BGP neighbor
Name	Name that clearly identifies the BGP neighbor; 32 characters maximum
IP Address	BGP neighbor's IP address
Peer Group Name	Peer group that this neighbor is to join; 32 characters maximum
Admin Status	■ Enabled—BGP neighbor is up ■ Disabled—BGP neighbor is down
AS Number	Number of the autonomous system to which the neighbor belongs; range 1–4294967295
Description	Helpful information about the BGP neighbor; optional (for example, contact telephone number); 80 characters maximum

5. Click each tab in the BGP neighbor work area, activate any desired parameters in the Configured Parameters pane, and set the configurations as needed.



- Route Policies—Policies that govern the routing capability of the BGP neighbor you are creating
- Parameters—General parameters that configure the BGP neighbor
- Timers—Settings for the timers that control the BGP neighbor's activity

For information about configuring each tab's parameters, see the following sections.

6. When you finish creating BGP neighbors, click OK to save the settings.

Setting Route Policies

With the NMC-RX application, the only route policy you can create for the BGP neighbor is a Distribute List policy. For the other types of route policies, you can select existing policies that were created through the Juniper Networks CLI.

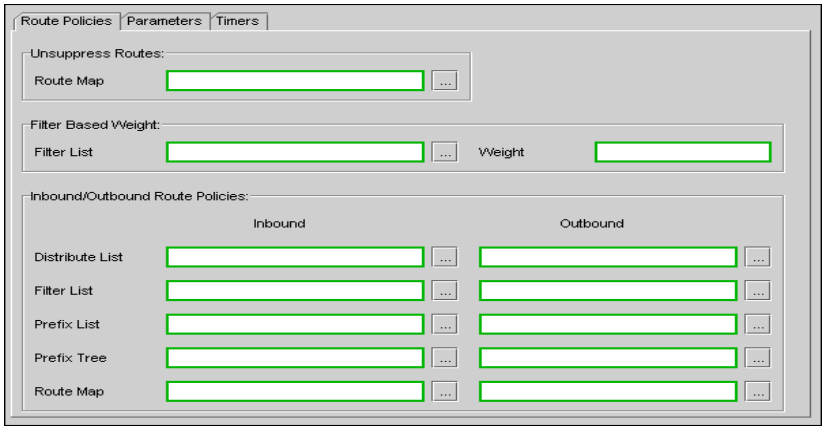
Before you configure a Distribute List policy for the BGP neighbor, you need to create at least one access list if none already exists. See *Creating Access Lists* on page 89.

NOTE: Distribute lists are also known as access lists.

To use a distribute list:

1. Click the Route Policies tab.

   A list of the policy types you can use for both inbound and outbound routing by the BGP neighbor appears.



2. Activate the desired policies in the Configured Parameters pane. Table 33 defines the BGP neighbor route policy types.

Table 33: Route Policy Parameters

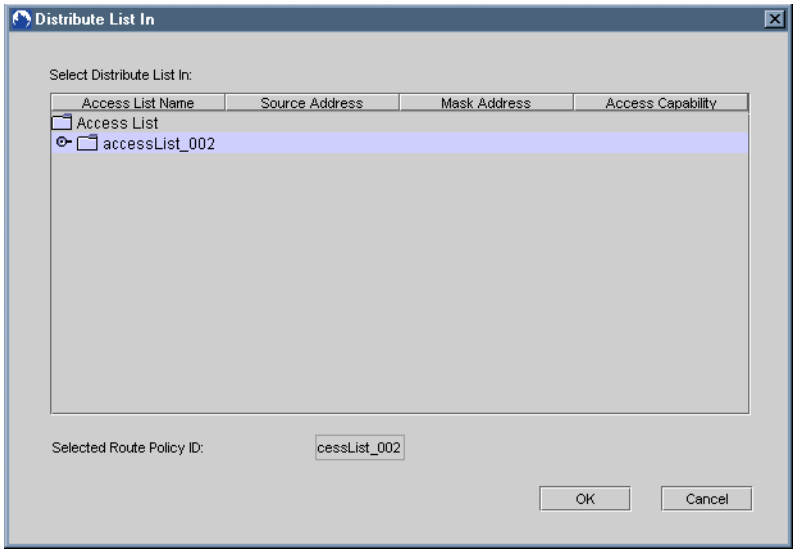
Parameter	Description
Unsuppress Routes	
Route Map	Name of the route map to determine which routes to unsuppress; 32 characters maximum
Filter Based Weight	
Filter List	Name of the filter list used to determine the weight of an AS path; 32 characters maximum
Weight	Weight to apply on filter list matches; range 0–4294967295

Table 33: Route Policy Parameters (continued)

Parameter	Description
Inbound/Outbound Route Policies	
Distribute List	Name of the access list used to determine the condition for accepting (inbound) or advertising (outbound) BGP routes; 32 characters maximum. Also known as access list: a sequential collection of permit and deny conditions that you can use to filter inbound or outbound routes. You can use different kinds of access lists to filter routes based on either the prefix or the AS path.
Filter List	Name of the filter list used to determine the condition for accepting (inbound) or advertising (outbound) BGP routes; 32 characters maximum. Currently, can be created only through the CLI. List that filters incoming and outgoing routes based on the value of the AS path attribute.
Prefix List	Name of the prefix list used to determine the condition for accepting (inbound) or advertising (outbound) BGP routes; 32 characters maximum. Currently, can be created only through the CLI.
Prefix Tree	Name of the prefix tree used to determine the condition for accepting (inbound) or advertising (outbound) BGP routes; 32 characters maximum. Currently, can be created only through the CLI.
Route Map	Name of the route map used to determine the condition for accepting (inbound) or advertising (outbound) BGP routes; 32 characters maximum. Currently, can be created only through the CLI.

3. Click  to the right of the Distribute List text box in the Inbound list.

   The Distribute List In dialog box appears.



4. Select the access list you want to assign.

5. Repeat Steps 2–4 for the Outbound list.

6. When you have selected the distribute list policies you want, click OK in the Create BGP Neighbor window.

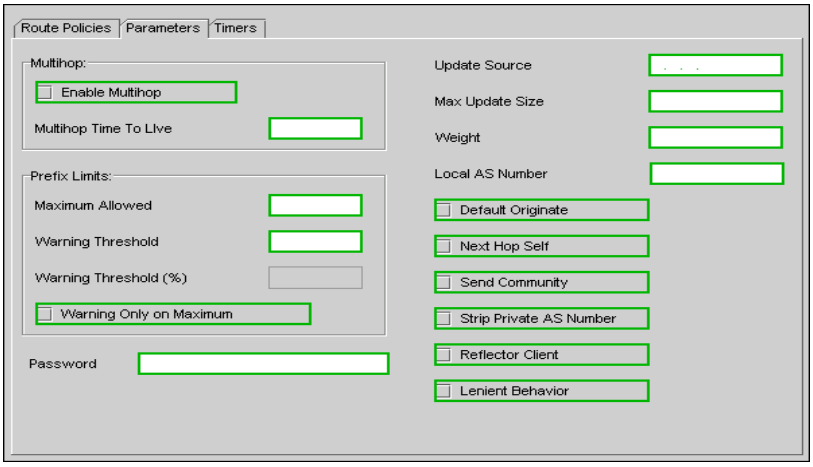
Setting BGP Parameters

The NMC-RX application allows you to configure the parameters for BGP neighbors.

To set the parameters for a BGP neighbor:

1. Click the Parameters tab in the Create BGP Neighbor window.

   The Parameters tab moves to the front of the display.



2. In the Configured Parameters pane, activate the parameters that you want to configure.

3. Set each BGP neighbor parameter (Table 34).

Table 34: BGP Neighbor Parameters (Specific Settings)

Parameter	Description
Multihop	
Enable Multihop	Select to enable a multihop connection to the neighbor. Clear to disable; default: clear.
Multihop Time To Live	Maximum number of hops to the neighbor; referenced only when multihop is enabled (selected); range 1–255.
Prefix Limits	
Maximum Allowed	Maximum number of routes that are accepted from this neighbor; range 1–4294967295.
Warning Threshold	Limit for path count. Application logs a warning if the path count exceeds the value you set. Range 1–100%.
Warning Threshold (%)	A warning is logged if the path count exceeds this percentage; range 0–100%.
Warning Only on Maximum	Select to log a warning rather than reset the connection when the maximum number of routes is reached,
Update Source	Source IP address that the router uses when sending update messages to this neighbor. By default, BGP uses the IP address of the outgoing interface toward the peer as the source IP address for the TCP connection over which the BGP session runs.
Max Update Size	Maximum size in bytes of update messages transmitted to this neighbor; range 1–4294967295; default 4096.
Weight	Relative importance assigned to incoming routes matching AS paths; priority of routes advertised from this neighbor; activated only when it is not None; range 0–4294967295; default 0.
Local AS Number	Local AS number to report to this neighbor; range 0–4294967295.
Default Originate	Select to enable advertising a default route to this neighbor, if one exists. Clear to disable; default: unselected.
Next Hop Self	Select to enable advertising this router as the next hop. Clear to disable; default: checked.
Send Community	Select to enable sending community atttribute(s) in updates. Clear to disable; default: checked.
Strip Private AS Number	Select to enable removal of private AS numbers from AS paths. Clear to disable; default: unselected.
Reflector Client	Select to enable this neighbor as a reflector client; enable only for internal BGP (IBGP). Clear to disable; default: unselected.
Lenient Behavior	Select to enable lenient behavior for this neighbor. Lenient behavior allows the neighbor to be more tolerant to certain types of errors. Clear to disable; default: unselected.
Password	Password for MD5 authentication; 1–32 characters.

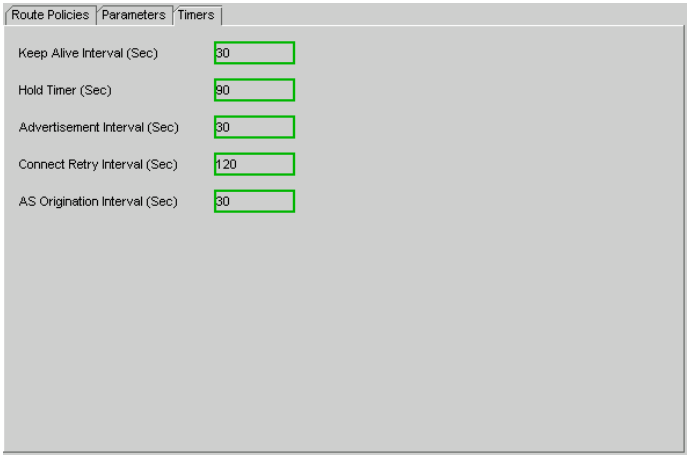
Setting Timers

The NMC-RX application allows you to configure the timer settings for BGP neighbors.

To set the timers:

1. Click the Timers tab in the Create BGP Neighbor window.

   The Timers tab moves to the front of the display.



2. In the Configured Parameters pane, activate the timers that you want to configure.

3. Set each BGP timer parameter (Table 35).

Table 35: BGP Timer Parameters

Parameter	Description
Keep Alive Interval (sec)	Time interval in seconds for the keepalive timer established with this neighbor. If the value is zero, no periodic keepalive messages are sent to this neighbor after the BGP connection has been established; range 0–21845; default 30.
Hold Timer (sec)	Time interval in seconds for the hold time established with this neighbor. The hold time is the maximum time allowed between received messages. If it is not zero, this interval must not be less than 3 seconds; range 0–65535; default 90.
Advertisement Interval (sec)	Minimum time interval in seconds between router advertisements; range: 1–65535; default 30.
Connect Retry Interval (sec)	Amount of time in seconds to wait before the router attempts to reconnect to the BGP neighbor after failing to connect; range 1–65535; default 120.
AS Origination Interval (sec)	Minimum time between advertisement of changes within the speaker's AS; range 1–65535; default 10.

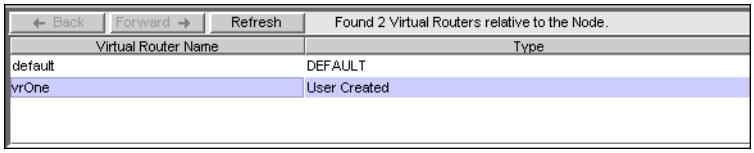
Creating Access Lists

If none exists, you must create an access list before configuring a BGP neighbor.

To create an access list:

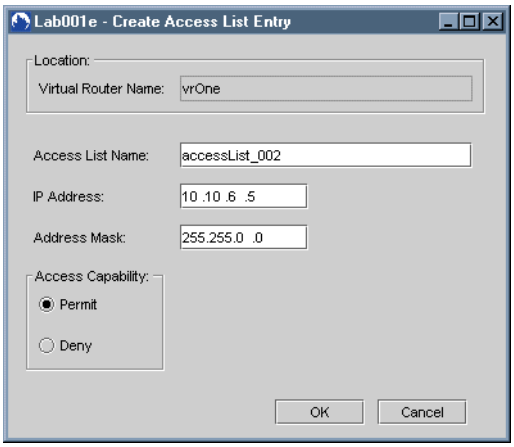
1. In the Device-wide Explorer, select Virtual Routers, right-click, and click List All.

   The list of virtual routers appears in the list area.



2. In the list area, select a virtual router, right-click, select Create, and click Access List.

   The Create Access List Entry dialog box appears.



3. Set each parameter (Table 36).

Table 36: Access List Parameters

Parameter	Description
Access List Name	Name you assign to the access list
IP Address	Address for the access list
Address Mask	Address mask for the access list
Access Capability	■ Permit—Device is allowed to receive or send data ■ Deny—Device is not allowed to receive or send data

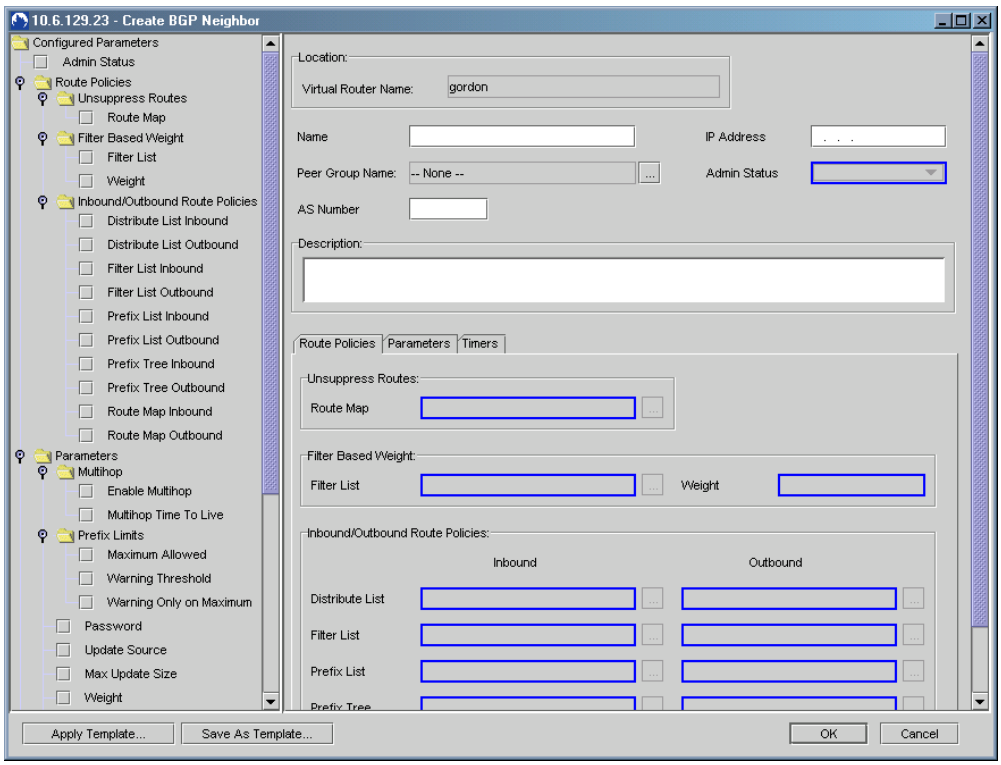
4. Click OK.

Creating BGP Templates

When you create BGP neighbors for a particular router, the neighbors are likely to have the same parameter settings. To facilitate creating multiple BGP neighbors with identical configurations, the NMC-RX application provides the option of either applying an existing BGP template to the BGP neighbors you configure, or saving your BGP configuration as a template and then applying this template. You can set a template as the default BGP template when you create or configure a device.

To perform the template actions related to BGP neighbors:

1. Navigate to the Create BGP Neighbor window.



   At the bottom of this window are the Apply Template and Save As Template buttons. These buttons allow you to access all the actions you can perform to create a BGP template.

2. Select either the Apply Template or the Save As Template button.

See *NMC-RX User Guide, Vol. 1, Chapter 10, Using Templates*, for instructions about the template-related actions you can perform for BGP neighbors.

Applying a BGP Template

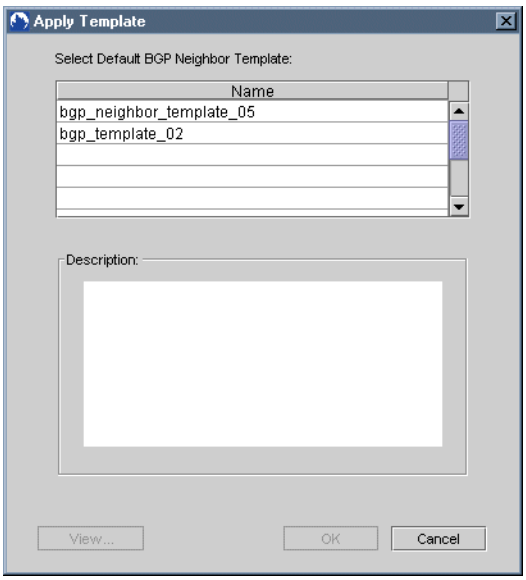
When you initialize BGP neighbors, the template with which the BGP neighbor interfaces initialize is set by a parameter on the System Info tab in the System Configuration work area.

1. Select System in the Device-wide Explorer, right-click, and click Configure.

   The System Info tab appears in the work area.

2. Click ... to the right of the Default BGP Template text box on the System Info tab.

   The Apply Template dialog box appears.



3. Select a template from the list, and click OK.

   The template's name appears in the Default BGP Template text box in the System Info tab.