Chapter 4
Configuring VLANs

This chapter provides information for configuring virtual LANs (VLANs). The NMC-RX application supports VLANs on the following modules:

FE-2, FE-8

GE

Overview

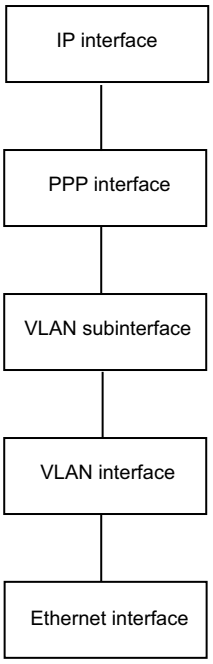
A VLAN is a logical group of network devices that appear to be on the same LAN, regardless of their physical location. They are configured so that they can communicate as if they were attached to the same physical connection, when in fact they are located on a number of different LAN segments. VLANs can be configured with management software, such as the NMC-RX application, and are extremely flexible because they are based on logical, rather than physical, connections.

With the NMC-RX application, you create VLANs and then associate them with Ethernet interfaces.

A VLAN permits multiplexing multiple IP and/or PPPoE interfaces over a single physical Ethernet port. This multiplexing is accomplished through VLAN subinterfaces.

When you create a VLAN, you create a network-wide object with a logical name and a VLAN ID. You can then associate this VLAN with Ethernet interfaces. When you make this association, a major interface (if one does not already exist) and a subinterface with this VLAN's ID are created automatically.

The following figure illustrates a basic VLAN protocol stack.



Configuration Tasks

To configure a VLAN, complete the following tasks in this sequence:

1. Create a VLAN.
2. Associate an FE-2, FE-8, or GE-1 interface with the VLAN.
3. Create an IP interface or a PPPoE interface over the VLAN subinterface.
4. (Optional) Create a VLAN interface.

Creating VLANs

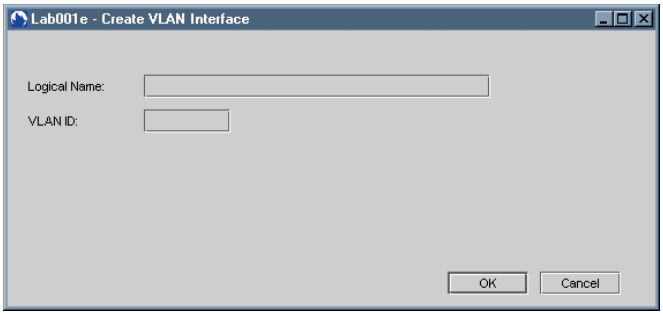
VLANs can be created in either the Network Workshop or the Device Workshop.

VLANs are not created on specific devices, but instead are available network-wide. Once created, a network-wide VLAN can be associated with an Ethernet port on the network, in turn creating an actual VLAN. Nothing is created on any device when a network-wide VLAN is created. A VLAN is actually created only when it is associated with an Ethernet port.

To create a VLAN:

1. On the Configuration menu, select Create, and click Virtual LAN.

   The Create VLAN Interface dialog box appears.

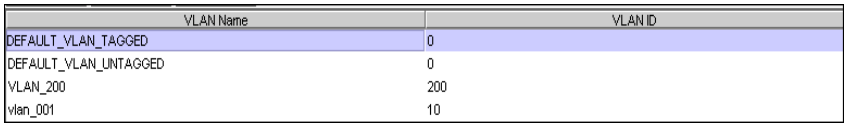


2. Set the VLAN parameters. See Table 25.

Table 25: VLAN parameters

Field	Description	Range / Length
Logical Name	Name of the VLAN	32 alphanumeric characters (maximum); spaces allowed in logical names
VLAN ID	Integer designation for the VLAN	1–4095 Must be unique across network VLAN 0 is predefined: tagged or untagged All other VLANs default to tagged

3. Click OK. The VLAN is added to the VLAN Name list.



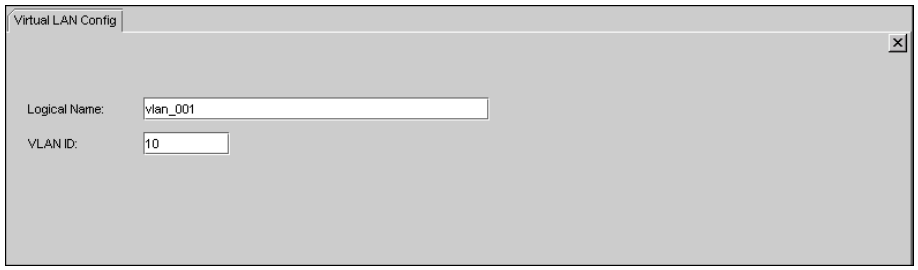
VLAN Name	VLAN ID
DEFAULT_VLAN_TAGGED	0
DEFAULT_VLAN_UNTAGGED	0
VLAN_200	200
vlan_001	10

Configuring a VLAN

You can view and configure a VLAN by choosing from the Configuration menu or the pop-up menu that is displayed by right-clicking an object.

You can change a VLAN ID or delete the VLAN if no upper bindings have been configured on any of its associated ports.

Modifying the VLAN ID changes the VLAN ID for every subinterface across all devices that have this VLAN associated with them. Deleting a VLAN removes all subinterfaces with the VLAN ID of the VLAN, provided no upper bindings exist on any of its associations.



Associating VLANs with Ethernet Interfaces

After creating a VLAN, you can associate it with an Ethernet interface that either does not have anything stacked on it or has a VLAN major interface stacked on it. When a VLAN is associated with an Ethernet port, a VLAN major interface (if one does not already exist) and VLAN subinterface are created on that port.

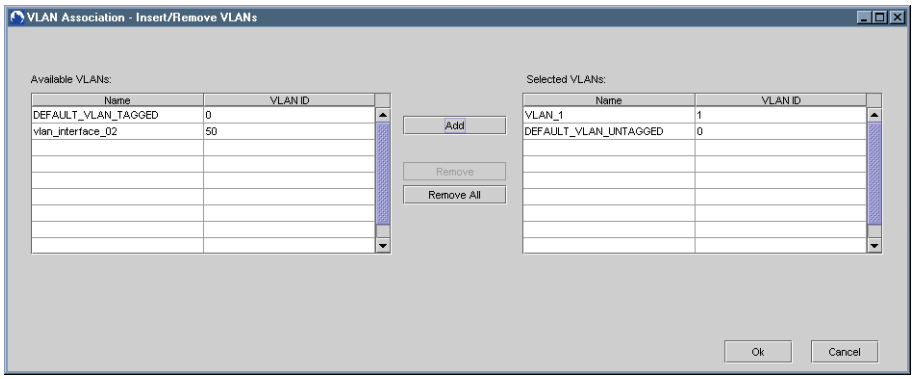
To associate a VLAN with an Ethernet interface:

1. In the Instance Explorer, select the interface you want to associate with the VLAN.

2. Right-click, and click Associate VLANs.

   If Associate VLANs does not appear in the pop-up menu, there is probably an object other than a VLAN already created on the interface you selected. Double-click the interface to display any objects created on it. Also, if the object is not a VLAN major interface, then no VLANs can be associated.

   The VLAN Association - Insert/Remove VLANs dialog box appears.



   Available VLANs – The VLANs that are available for association with the Ethernet port

   Selected VLANs – The VLANs already associated with the Ethernet port

3. Select or remove VLANs:

a. To associate one or more VLANs with the interface, select the VLAN(s) from the Available VLANs list, and click Add. The VLAN(s) are added to the Selected VLANs list.

   You can select multiple VLANs simultaneously.

   If you want to associate the interface with a VLAN that is not listed in the Available VLANs list, you must create the VLAN first. See *Creating VLANs* earlier in this chapter.

b. To disassociate one or more VLANs from the interface, select the VLAN(s) from the Selected VLANs list, and click Remove. The VLAN(s) are moved to the Available VLANs list.

4. Click OK when you are done.

   VLANs are associated with or disassociated from the Ethernet port. If you remove all associations, the VLAN major interface is removed.

Creating VLAN Interfaces

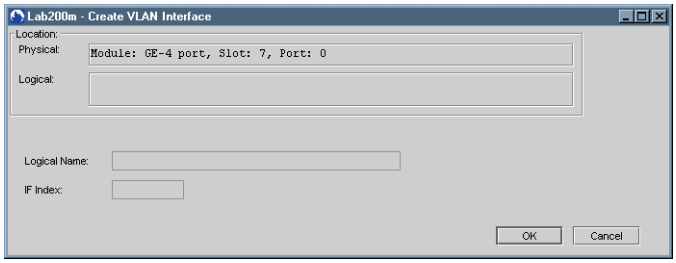
You can create a VLAN major interface manually. If you do this, when you associate a VLAN with the Ethernet interface, no major interface is created. Instead, the VLAN subinterfaces are stacked on the manually created VLAN major interface.

To create a VLAN major interface manually:

1. Select an Ethernet interface.

2. Right-click, select Create, and click VLAN Interface.

   The Create VLAN Interface dialog box appears.



3. Click OK.

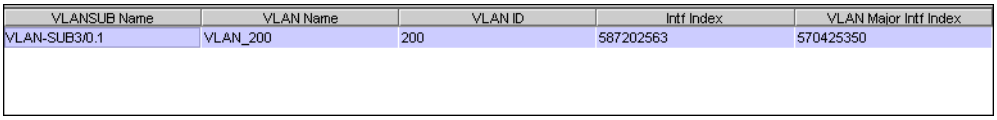
Creating Interfaces on VLAN Subinterfaces

After you use the Associate VLANs dialog box to create a VLAN subinterface, you can create interfaces over the VLAN subinterface.

To create an upper-level interface:

1. In the Instance Explorer, select the line interface, right-click, select List All, and click Associated VLANs.

   The VLANs associated with the selected interface are displayed in the list area, together with the subinterfaces.



VLANSUB Name	VLAN Name	VLAN ID	Intf Index	VLAN Major Intf Index
VLAN-SUB3/0.1	VLAN_200	200	587202563	570425350

2. Select the VLAN in the list, right-click, select Create, and click the interface you want to create from the pop-up menu.

   You have the following options:

   IP Address

   See *Creating IP Addresses* in *Chapter 6, Configuring IP* .

   PPPoE Interface

   See *Creating a PPPoE Interface* in *NMC-RX User Guide , Vol. 1, Chapter 27, Configuring PPP o ver Ethernet* .