Defining VPNs and CERCs

During service deployment, ISC generates the Cisco IOS commands to configure the logical VPN relationships.

At the beginning of the provisioning process, before creating a Service Policy, a VPN must be defined within ISC. The first element in a VPN definition is the name of the VPN.

This chapter describes how to define MPLS VPNs, IP Multicast VPNs, and CE Routing Communities (CERCs).

This chapter contain the following major sections:

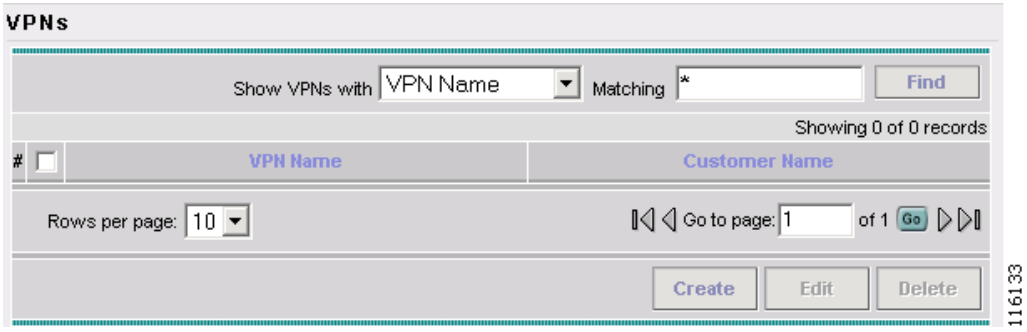
Creating MPLS VPN

Step 1 Log into ISC.

Step 2 Go to **Service Inventory > Inventory and Connection Manager > VPNs**.

The VPN window appears, as shown in Figure 4-1.

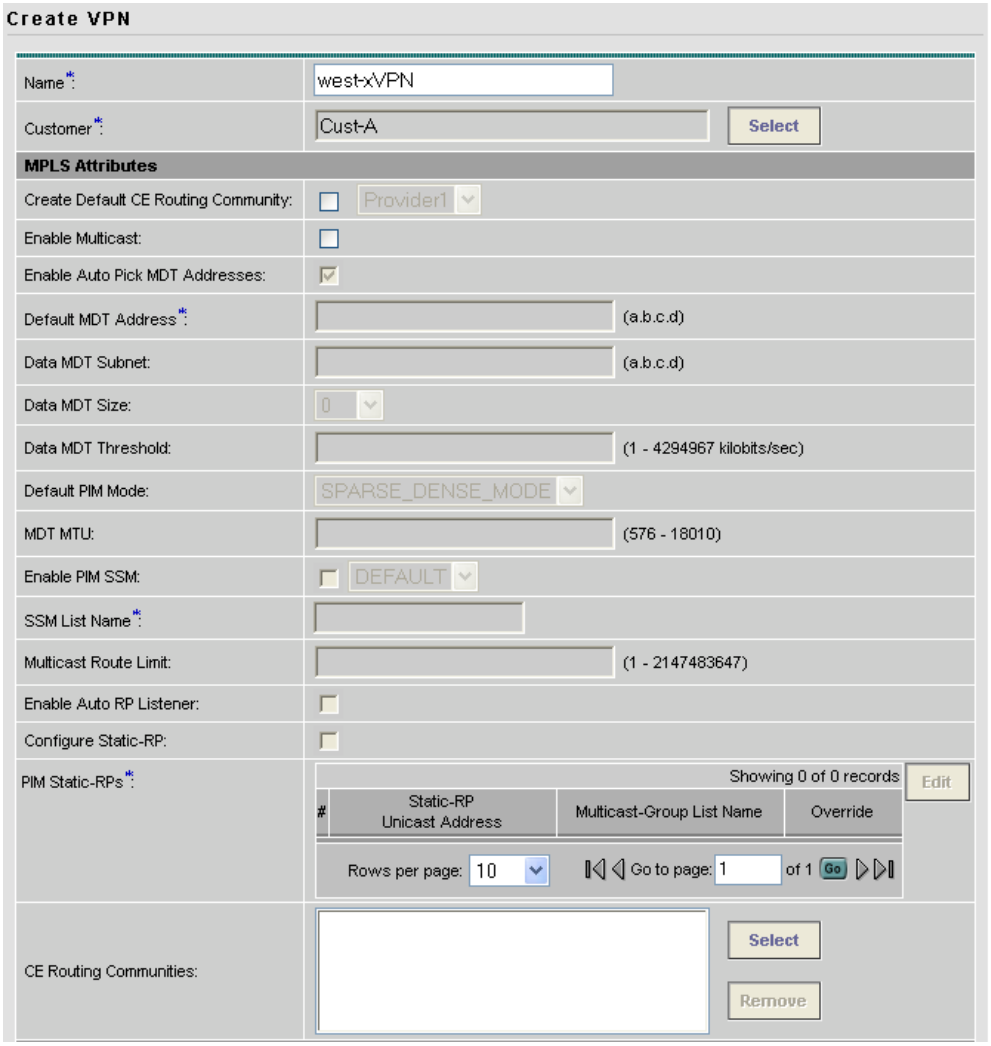
Figure 4-1 VPNs



Step 3 Click **Create** to create a VPN.

The Create VPN window appears, as shown in Figure 4-2.

Figure 4-2 Create VPN

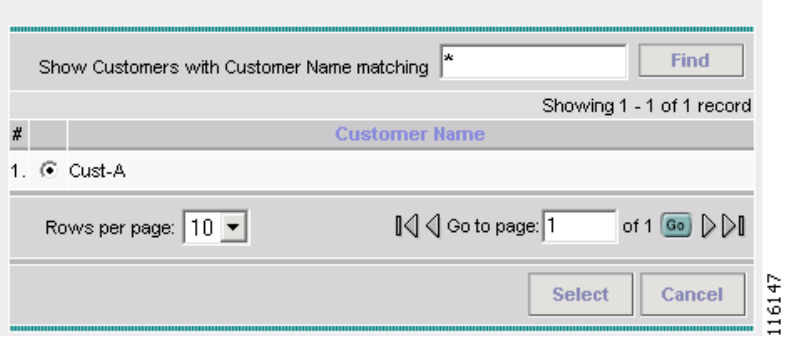


Step 4 Enter the *VPN Name*. (**west-xVPN**)

Step 5 For the Customer field, click **Select**.

The Choose Customer window appears, as shown in Figure 4-3.

Figure 4-3 Choose Customer



Step 6 Choose a Customer and then click **Select.** (**Cust-A**)

The VPNs window reappears.

Step 7 To associate the VPN with a Provider, you have two options:

- Go to **Create Default CE Routing Community**, then choose a **Provider**.
- Choose a CE Routing Community, if one is already set up.

Note To enable multicast for the VPN, see "Creating IP Multicast VPN".

Step 8 To save these changes, at the bottom of the window, click **Save**.

The VPN Name (**west-xVPN**) is associated with the Customer (**Cust-A**) in this new VPN definition.

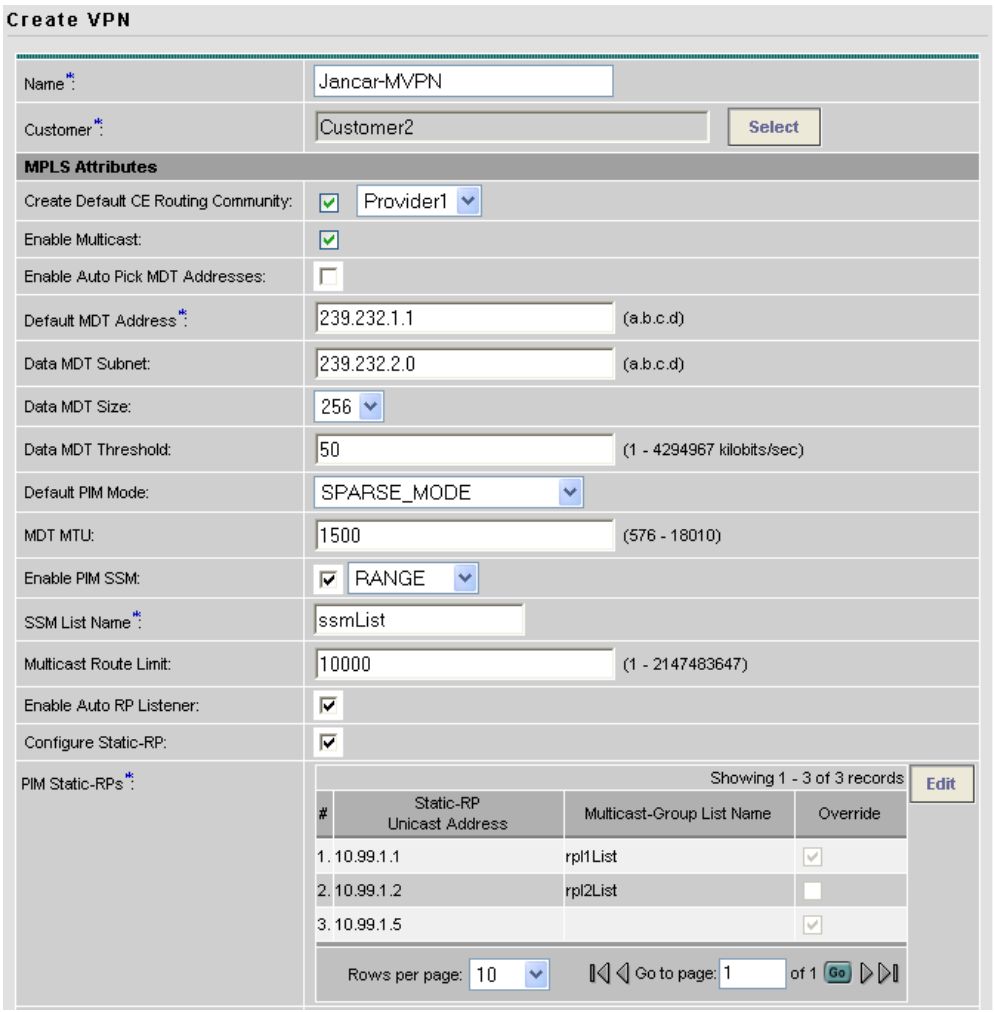
Creating IP Multicast VPN

Step 1 To create an IP Multicast VPN, follow the procedure described in "Creating MPLS VPN" section on page 4-1 to the place where you can enable multicast for the VPN.

Step 2 To enable multicast for the VPN, check **Enable Multicast**.

The current window will refresh with additional fields becoming active (see Figure 4-4).

Figure 4-4 Creating Multicast VPN



Step 3 For MDT (Multicast Distribution Tree) addresses, either accept the default (check box already checked) to enable the auto pick function, or uncheck the auto pick check box, then enter values in the next two fields:

Default MDT Address

Data MDT Subnet

Step 4 From the drop-down list, choose a value for Data MDT Size.

Step 5 In the next field, enter a valid value for Data MDT Threshold (1 - 4294967 kilobits/sec).

Step 6 For Default PIM (Protocol Independent Multicast) Mode, choose a mode from the drop-down list:

SPARSE_MODE

SPARSE_DENSE_MODE

Tip Multicast routing architecture allows the addition of IP multicast routing on existing IP networks. PIM is an independent unicast routing protocol. It can be operated in two modes: dense and sparse.

Step 7 In the next field, enter a valid value for MDT MTU (Maximum Transmission Unit).

Step 8 To enable PIM SSM (Source Specific Multicast), check the associated check box.

When you check the check box:

a. The associated drop-down list goes active with the DEFAULT enumeration populated as the SSM default. This will create the following CLI: **ip pim vrf <vrfName> ssm default**.

b. If you would like to associate an access-list number, or a named access-list, with SSM configuration, choose the RANGE enumeration from the SSM drop-down list instead of DEFAULT. This will create the following CLI: **ip pim vrf <vrfName> ssm range {ACL# | named-ACL-name}**.

Step 9 If you choose RANGE in the previous step, then the next field goes active for you to enter Access-list number or Access-list name.

Step 10 In the next field enter a valid value for the Multicast Route Limit (1 - 2147483647).

Step 11 To enable the auto RP (Rendezvous Point) listener function, check the associated check box.

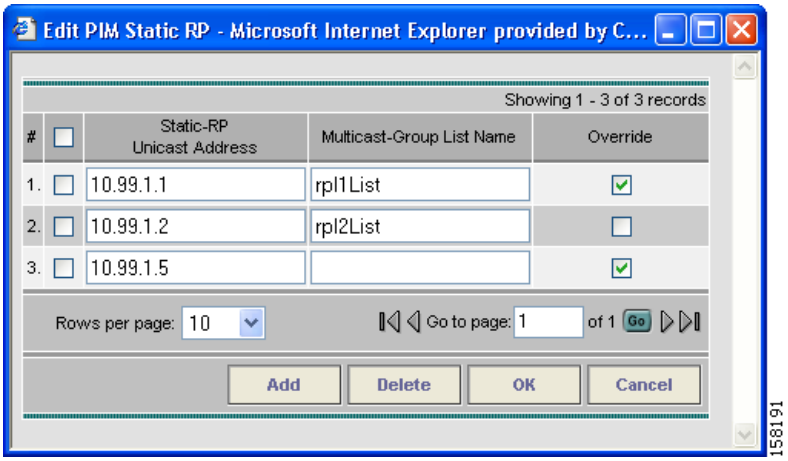
Step 12 To configure Static-RPs, check the associated check box.

When you check this, the Edit option for PIM Static-RPs goes active.

Step 13 To edit, or add, PIM Static RPs (Rendezvous Points), click **Edit**.

The Edit PIM Static RPs window appears, see Figure 4-5).

Figure 4-5 Edit PIM Static RPs



Step 14 Complete all applicable fields in the Edit PIM Static RP window, then click **OK**.

These data now appear in the main Create VPN window (see Figure 4-4).

Step 15 To save your changes and add this Multicast VPN to you system, at the bottom of the window, click **Save**.

Creating CE Routing Communities

When you create a VPN, the ISC software creates one default CE routing community (CERC) for you. But if your network topology and configuration require customized CERC definitions, you can define CERCs customized for your network.

Tip Customized CERCs should be defined only in consultation with the VPN network administrator.

To build complex topologies, it is necessary to break down the required connectivity between CEs into groups, where each group is either fully meshed, or has a hub-and-spoke pattern. A CE can be in more than one group at a time, so long as each group has one of the two basic configuration patterns.

Each subgroup in the VPN needs its own CERC. Any CE that is only in one group just joins the corresponding CERC (as a spoke if necessary). If a CE is in more than one group, then you can use the Advanced Setup choice during provisioning to add the CE to all the relevant groups in one service request. Given this information, ISC does the rest, assigning route target values and VRF tables to arrange the precise connectivity the customer requires.

To define a new CERC:

Step 1 Click the **Service Inventory** tab.

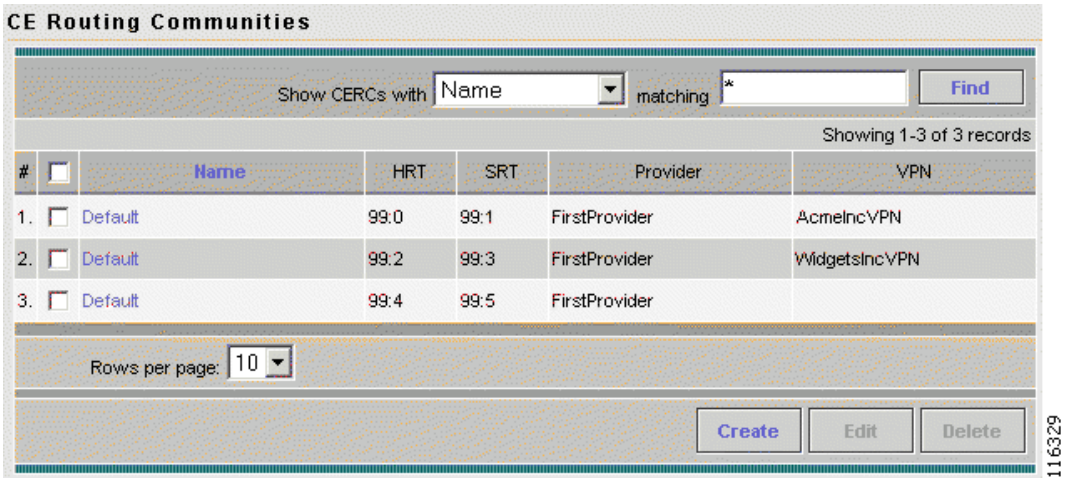
Step 2 Go to **Inventory and Connection Manager**.

The Inventory and Connection Manager window appears.

Step 3 Go to **CE Routing Communities**.

The CE Routing Communities dialog box appears (see Figure 4-6).

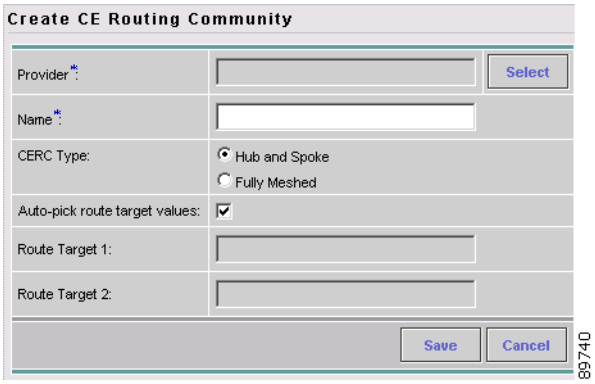
Figure 4-6 CE Routing Communities Defined for This VPN



Step 4 From the CE Routing Communities dialog box, click **Create**.

The Create CE Routing Community dialog box appears (see Figure 4-7).

Figure 4-7 Defining a New CE Routing Community



Step 5 Complete the CERC fields as required for the VPN:

c. *Provider:* To specify the service provider associated with this CERC, click **Select**.

The Choose Provider dialog box appears.

d. Choose the name of the service provider, then click **Select**.

e. *Name*: Enter the name of the CERC.

f. *CERC Type*: Specify the CERC type: *Hub and Spoke* or *Fully Meshed*.

g. *Auto-Pick Route Target Values*: Choose to either let ISC automatically set the route target (RT) values or set the RT values manually.

By default, the **Auto-pick route target values** check box is checked. If you uncheck the check box, you can enter the Route Target values manually.

Caution If you choose to bypass the **Auto-pick route target values** option and set the route target (RT) values manually, note that the RT values cannot be edited after they have been defined in the Cisco IP Solution Center software.

Step 6 When you have finished entering the information in the Create CE Routing Community dialog box, click **Save**.