C H A P T E R 13

Managing an L2VPN Service Request

This chapter covers the basic steps to provision an ERS (EVPL), EWS (EPL), ATM, or Frame Relay L2VPN service. It contains the following sections:

Introducing L2VPN Service Requests

An L2VPN service request consists of one or more end-to-end wires, connecting various sites in a point-to-point topology. When you create a service request, you enter several parameters, including the specific interfaces on the CE and PE routers. You can also associate Prime Fulfillment templates and data files with a service request. See Chapter 49, "Using Templates and Data Files with Policies and Service Requests," for more about using templates and data files in service requests.

To create a service request, a Service Policy must already be defined, as described in Chapter 12, "Creating an L2VPN Policy."

Based on the predefined L2VPN policy, an operator creates an L2VPN service request, with or without modifications to the L2VPN policy, and deploys the service. Service creation and deployment are normally performed by regular network technicians for daily operation of network provisioning.

> **Note** Not all of the attributes defined in an L2VPN policy might be applicable to a service request. For specific information, see L2VPN policy attribute descriptions in Chapter 12, "Creating an L2VPN Policy."

The following steps are involved in creating a service request for Layer 2 connectivity between customer sites:

- Choose a CE Topology for ERS (EVPL)/Frame Relay/ATM services.
- Choose the endpoints (CE and PE) that must be connected. For each end-to-end Layer 2 connection, Prime Fulfillment creates an end-to-end wire object in the repository for the service request.
- Choose a CE or PE interface.
- Choose a Named Physical Circuit (NPC) for the CE or PE.
- Edit the end-to-end connection.
- Edit the link attributes.
- (0ptional) Associate templates and data files to devices in the service request.

For sample configlets for L2VPN scenarios, see Chapter 18, "Sample Configlets."

Creating an L2VPN Service Request

To create an L2VPN service request, perform the following steps.

Step 1   Choose **Operate > Service Requests > Service Request Manager**.

The Service Request Manager window appears.

Step 2   Click **Create**.

Step 3   Choose **L2VPN** from the drop-down list.

L2VPN service requests must be associated with an L2VPN policy. You choose an L2VPN policy from the policies previously created (see Chapter 13, "Managing an L2VPN Service Request").

Step 4   Choose the L2VPN policy of choice.

If more than one L2VPN policy exists, a list of L2VPN policies appears.

Step 5   When you make the choice, click **OK**.

As soon as you make the choice, the new service request inherits all the properties of that L2VPN policy, such as all the editable and non-editable features and pre-set parameters.

To continue creating an L2VPN service request, go to one of the following sections:

- Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request with a CE, page 13-2.
- Creating an EWS (EPL) L2VPN Service Request with a CE, page 13-5.
- Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request without a CE, page 13-6.
- Creating an EWS (EPL) L2VPN Service Request without a CE, page 13-8.

Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request with a CE

This section includes detailed steps for creating an L2VPN service request with a CE present for ERS (EVPL), ATM, and Frame Relay policies. If you are creating an L2VPN service request for an EWS (EPL) policy, go to Creating an EWS (EPL) L2VPN Service Request with a CE, page 13-5.

After you choose an L2VPN policy, the L2VPN Service Request Editor window appears.

Perform the following steps.

Step 1 Choose a **Topology** from the drop-down list.

If you choose **Full Mesh**, each CE will have direct connections to every other CE.

If you choose **Hub and Spoke**, then only the Hub CE has connection to each Spoke CE and the Spoke CEs do not have direct connection to each other.

> **Note** The full mesh and the hub and spoke topologies make a difference only when you choose more than two endpoints. For example, with four endpoints, Prime Fulfillment automatically creates six links with full mesh topology. With hub and spoke topology, however, Prime Fulfillment creates only three links.

Step 2 Click **Add Link**.

You specify the CE endpoints using the Attachment Tunnel Editor.

> **Note** All the services that deploy point-to-point connections (ERS/EVPL, EWS/EPL, ATMoMPLS, and FRoMPLS) must have at least two CEs specified.

Step 3 Click **Select CE** in the CE column.

The Select CPE Device window appears.This window displays the list of currently defined CEs.

a. From the **Show CPEs with** drop-down list, you can display CEs by Customer Name, by Site, or by Device Name.

b. You can use the **Find** button to either search for a specific CE, or to refresh the display.

c. You can set the **Rows per page** to 5, 10, 20, 30, 40, or All.

Step 4 In the Select column, choose a CE for the L2VPN link.

Step 5 Click **Select**.

The Service Request Editor window appears displaying the name of the selected CE in the CE column.

Step 6 Choose the CE interface from the drop-down list.

> **Note** When you provision an L2VPN ERS (EVPL) service, when you choose a UNI for a particular device, Prime Fulfillment determines if there are other services using the same UNI. If so, a warning message is displayed. If you ignore the message and save the service request, all of the underlying service requests relying on the same UNI are synchronized with the modified shared attributes of the latest service request. In addition, the state of the existing service requests is changed to the Requested state.

> **Note** Prime Fulfillment only displays the available interfaces for the service, based on the configuration of the underlying interfaces, existing service requests that might be using the interface, and the customer associated with the service request. You can click the **Details** button to display a pop-up window with information on the available interfaces, such as interface name, customer name, VPN name and service request ID, service request type, VLAN translation type, and VLAN ID information.

Step 7   If only one NPC exists for the Chosen CE and CE interface, that NPC is autopopulated in the Circuit Selection column and you need not choose it explicitly. If more then one NPC is available, click **Select one circuit** in the Circuit Selection column.

The Select NPC window appears, enabling you to choose the appropriate NPC.

Step 8   Click **OK**.

Each time you choose a CE and its interface, the NPC that was precreated from this CE and interface is automatically displayed under **Circuit Selection**. This means that you do not have to further specify the PE to complete the link.

If you want to review the details of this NPC, click **Circuit Details** in the Circuit Details column. The NPC Details window appears and lists the circuit details for this NPC.

Step 9   Continue to specify additional CEs, as in previous steps.

Prime Fulfillment creates the links between CEs based on the Topology that you chose.

Step 10   Click **OK**.

For ERS (EVPL), ATM, and Frame Relay, the EndToEndWire window appears.

Step 11   The VPN for this service request appears in the **VPN** field.

If there is more than one VPN, click **Select VPN** to choose a VPN. The Select VPN window appears.

Step 12   Choose a **VPN Name** and click **Select**.

The L2VPN Service Request Editor window appears with the VPN name displayed.

Step 13   If necessary, click **Add AC** in the Attachment Circuit2 (AC2) column, and repeat Steps 3 to 10 for AC2.

The EndToEndWire window displays the complete end-to-end wire.

Step 14   Specify remaining items in the EndToEndWire window as necessary for your configuration:

- You can choose any of the blue highlighted values to edit the end-to-end wire.

- You can edit the AC link attributes to change the default policy settings. After you edit these fields, the blue link changes from Default to Changed. For more information, see the section Modifying the L2VPN Service Request, page 13-10.

- You can enter a description for the service request in the first **Description** field. The description will show up in this window and also in the Description column of the Service Requests window. The maximum length for this field is 256 characters.

- You can enter a description for each end-to-end wire in the **Description** field provided for each wire. The description shows up only in this window. The data in this field is not pushed to the device(s). The maximum length for this field is 256 characters.

- The ID number is system-generated identification number for the circuit.

- The Circuit ID is created automatically, based on the service. For example, for Ethernet, it is based on the VLAN number; for Frame Relay, it is based on the DLCI; for ATM, it is based on the VPI/VCI.

- If the policy was set up for you to define a VC ID manually, enter it into the empty **VC ID** field. If policy was set to "auto pick" the VC ID, Prime Fulfillment will supply a VC ID, and this field will not be editable. In the case where you supply the VC ID manually, if the entered value is in the provider's range, Prime Fulfillment validates if the entered value is available or allocated. If the entered value has been already allocated, Prime Fulfillment generates an error message saying that the entered value is not available and prompts you to re-enter the value. If the entered value is in the provider's range, and if it is available, then it is allocated and is removed from the VC ID pool. If the entered value is outside the provider's range, Prime Fulfillment displays a warning saying that no validation could be performed to verify if it is available or allocated.

- You can also click **Add Link** to add an end-to-end wire.
- You can click **Delete Link** to delete an end-to-end wire.

Step 15   When you are finished editing the end-to-end wires, click **Save**.

The service request is created and saved into Prime Fulfillment.

Creating an EWS (EPL) L2VPN Service Request with a CE

This section includes detailed steps for creating an L2VPN service request with a CE present for EWS (EPL). If you are creating an L2VPN service request for an ERS (EVPL), ATM, or Frame Relay policy, go to Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request with a CE, page 13-2.

Perform the following steps.

Step 1   Create the L2VPN service request for EWS (EPL) with CE.

The L2VPN Service Request Editor window appears.

Step 2   Click **Select VPN** to choose a VPN for use with this CE.

The Select VPN window appears with the VPNs defined in the system.

Step 3   Choose a **VPN Name** in the Select column.

Step 4   Click **Select**.

The L2VPN Service Request Editor window appears with the VPN name displayed.

Step 5   Click **Add Link**.

- You can enter a description for the service request in the first **Description** field. The description will show up in this window and also in the Description column of the Service Request Editor window. The maximum length for this field is 256 characters.

- You can enter a description for each end-to-end wire in the **Description** field provided for each wire. The description shows up only in this window. The data in this field is not pushed to the device(s). The maximum length for this field is 256 characters.

- The ID number is system-generated identification number for the circuit.

- The Circuit ID is created automatically, based on the service. For example, for Ethernet, it is based on the VLAN number; for Frame Relay, it is based on the DLCI; for ATM, it is based on the VPI/VCI.

Step 6   Click **Add AC** in the Attachment Circuit1 (AC1) column.

The Customer and Link Selection window appears.

Step 7   Click **Select CE**.

The Select CPE Device window appears.

This window displays the list of currently defined CEs.

- **a.**   From the **Show CPEs with** drop-down list, you can display CEs by Customer Name, by Site, or by Device Name.

- **b.**   You can use the **Find** button to either search for a specific CE, or to refresh the display.

- **c.**   You can set the **Rows per page** to 5, 10, 20, 30, 40, or All.

Step 8   In the Select column, choose a CE for the L2VPN link.

Step 9 Click **Select**.

Step 10 In the Customer and Link Selection window, choose a CE interface from the drop-down list.

Step 11 If only one NPC exists for the Chosen CE and CE interface, that NPC is autopopulated in the Circuit Selection column and you need not choose it explicitly.

If more then one NPC is available, click **Select one circuit** in the Circuit Selection column. The Select NPC window appears, enabling you to choose the appropriate NPC. Each time you choose a CE and its interface, the NPC that was precreated from this CE and interface is automatically displayed under **Circuit Selection**. This means that you do not have to further specify the PE to complete the link.

Step 12 Click **OK**.

The EndToEndWire window appears displaying the name of the selected CE in the AC1 column.

Step 13 Click the Edit link in the AC1 Attributes column to edit the attributes of the attachment circuit if desired.

The Link Attributes window appears. Edit the attributes as desired. For more information, see the section Modifying the L2VPN Service Request, page 13-10.

Step 14 Click **OK**.

Step 15 Repeat Steps 6 through 14 for **AC2**.

Step 16 In the L2VPN Service Request Editor, click **Save**.

The EWS (EPL) service request is created and saved in Prime Fulfillment.

Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request without a CE

This section includes detailed steps for creating an L2VPN service request without a CE present for ERS (EVPL), ATM, and Frame Relay policies. If you are creating an L2VPN service request for an EWS (EPL) policy, go to Creating an EWS (EPL) L2VPN Service Request without a CE, page 13-8.

Perform the following steps.

Step 1 Create the L2VPN service request for ERS (EVPL) without a CE.

The L2VPN Service Request Editor window appears.

Step 2 Choose a **Topology** from the drop-down list.

If you choose **Full Mesh**, each CE will have direct connections to every other CE. If you choose **Hub and Spoke**, then only the Hub CE has connection to each Spoke CE and the Spoke CEs do not have direct connection to each other.

> **Note** The full mesh and the hub and spoke topologies make a difference only when you choose more than two endpoints. For example, with four endpoints, Prime Fulfillment automatically creates six links with full mesh topology. With hub and spoke topology, however, Prime Fulfillment creates only three links.

Step 3 Click **Add Link**.

Step 4 Specify the N-PE/PE-AGG/U-PE endpoints, as covered in the following steps.

Step 5 Click **Select U-PE/PE-AGG/N-PE** in the U-PE/PE-AGG/N-PE column.

The Select PE Device window appears.

This window displays the list of currently defined PEs.

    a. The **Show PEs with** drop-down list shows PEs by customer name, by site, or by device name.

    b. The **Find** button allows a search for a specific PE or a refresh of the window.

    c. The **Rows per page** drop-down list allows the page to be set to 5, 10, 20, 30, 40, or All.

Step 6 In the **Select** column, choose the PE device name for the L2VPN link.

Step 7 Click **Select**.

The L2VPN Service Request Editor window appears displaying the name of the selected PE in the N-PE/PE-AGG/U-PE column.

Step 8 Choose the UNI interface from the drop-down list.

> **Note** When you provision an L2VPN ERS (EVPL) service, when you choose a UNI for a particular device, Prime Fulfillment determines if there are other services using the same UNI. If so, a warning message is displayed. If you ignore the message and save the service request, all of the underlying service requests lying on the same UNI are synchronized with the modified shared attributes of the latest service request. In addition, the state of the existing service requests is changed to the Requested state.

> **Note** Prime Fulfillment only displays the available interfaces for the service, based on the configuration of the underlying interfaces, existing service requests that might be using the interface, and the customer associated with the service request. You can click the **Details** button to display a pop-up window with information on the available interfaces, such as interface name, customer name, VPN name and service request ID, service request type, VLAN translation type, and VLAN ID information.

Step 9 If the PE role type is U-PE, click **Select one circuit** in the Circuit Selection column.

The Select NPC window appears.

If only one NPC exists for the Chosen PE and PE interface, that NPC is auto populated in the Circuit Selection column and you need not choose it explicitly.

> **Note** If the PE role type is N-PE, the columns Circuit Selection and Circuit Details are disabled.

Step 10 Choose the name of the NPC from the **Select** column.

Step 11 Click **OK**.

Each time you choose a PE and its interface, the NPC that was precreated from this PE and interface is automatically displayed under **Circuit Selection**. This means that you do not have to further specify the PE to complete the link.

Step 12 If you want to review the details of this NPC, click **Circuit Details** in the Circuit Details column.

The Select NPC Details window appears and lists the circuit details for this NPC.

Step 13 After you specify all the PEs, Prime Fulfillment creates the links between PEs based on the Topology that you chose.

Step 14 Click **OK**.

For ERS (EVPL), ATM, and Frame Relay, the EndToEndWire window appears.

Step 15 The VPN for this service request appears in the Select VPN field.

If there is more than one VPN, click **Select VPN** to choose a VPN.

Step 16   Specify remaining items in the EndToEnd Wire window, as necessary for your configuration:

- You can choose any of the blue highlighted values to edit the end-to-end wire.

- You can edit the AC link attributes to change the default policy settings. After you edit these fields, the blue link changes from Default to Changed. For more information, see the section Modifying the L2VPN Service Request, page 13-10.

- You can also click **Add Link** to add an end-to-end wire.

- You can click **Delete Link** to delete an end-to-end wire.

> **Note**   If you are attempting to decommission a service request to which a template has been added, see Decommissioning Service Requests, page 47-12, for information on the proper way to do this.

- You can enter a description for the service request in the first **Description** field. The description will show up in this window and also in the Description column of the Service Requests window. The maximum length for this field is 256 characters.

- You can enter a description for each end-to-end wire in the **Description** field provided for each wire. The description shows up only in this window. The data in this field is not pushed to the device(s). The maximum length for this field is 256 characters.

- The ID number is system-generated identification number for the circuit.

- The Circuit ID is created automatically, based on the service. For example, for Ethernet, it is based on the VLAN number; for Frame Relay, it is based on the DLCI; for ATM, it is based on the VPI/VCI.

Step 17   When you are finished editing the end-to-end wires, click **Save**.

The service request is created and saved into Prime Fulfillment.

Creating an EWS (EPL) L2VPN Service Request without a CE

This section includes detailed steps for creating an L2VPN service request without a CE present for EWS (EPL). If you are creating an L2VPN service request for an ERS (EVPL), ATM, or Frame Relay policy, see Creating an ERS (EVPL), ATM, or Frame Relay L2VPN Service Request without a CE, page 13-6.

Step 1   Create the L2VPN service request for EWS (EPL) without a CE.

The L2VPN Service Request Editor window appears.

Step 2   Click **Select VPN** to choose a VPN for use with this PE.

The Select VPN window appears with the VPNs defined in the system.

Step 3   Choose a **VPN Name** in the Select column.

Step 4   Click **Select**.

The EndToEndWire window appears with the VPN name displayed.

Step 5   Click **Add AC** in the Attachment Circuit 1(AC1) column.

The Customer and Link Selection window appears.

Step 6   Click **Select N-PE/PE-AGG/U-PE**. in the N-PE/PE-AGG/U-PE column.

The Select PE Device window appears.

This window displays the list of currently defined PEs.

a. From the **Show PEs with** drop-down list, you can display PEs by Customer Name, by Site, or by Device Name.

b. You can use the **Find** button to either search for a specific PE, or to refresh the display.

c. You can set the **Rows per page** to 5, 10, 20, 30, 40, or All.

Step 7 In the Select column, choose a PE for the L2VPN link.

Step 8 Click **Select**.

The Customer and Link Selection window appears.

Step 9 Choose a PE interface from the drop-down list.

Note Prime Fulfillment only displays the available interfaces for the service, based on the configuration of the underlying interfaces, existing service requests that might be using the interface, and the customer associated with the service request. You can click the **Details** button to display a pop-up window with information on the available interfaces, such as interface name, customer name, VPN name and service request ID, service request type, VLAN translation type, and VLAN ID information.

Step 10 If the PE role type is N-PE, the columns Circuit Selection and Circuit Details are disabled. In this case, skip to Step 13.

Step 11 If the PE role type is U-PE, click **Select one circuit** in the Circuit Selection column.

The Select NPC window appears.

Note If only one NPC exists for the Chosen PE and PE interface, that NPC is auto populated in the Circuit Selection column and you need not choose it explicitly.

Step 12 If applicable, choose the name of the NPC from the Select column.

Step 13 Click **OK**.

Note Each time you choose a PE and its interface, the NPC that was precreated from this PE and interface is automatically displayed under **Circuit Selection**. This means that you do not have to further specify the PE to complete the link.

Step 14 Click **OK**.

The l2VPN Service Request window appears displaying the name of the selected PE in the Attachment Circuit1 (AC1) column.

Step 15 Click the **Edit** link in the AC1 Attributes and edit the attributes, if desired.

For more information, see the section Modifying the L2VPN Service Request, page 13-10.

Step 16 Repeat Steps 5 through 14 for Attachment Circuit2.

Step 17 Specify remaining items in the EndToEndWire window, as necessary for your configuration.

- You can enter a description for the service request in the first **Description** field. The description will show up in this window and also in the Description column of the Service Requests window. The maximum length for this field is 256 characters.

- You can enter a description for each end-to-end wire in the **Description** field provided for each wire. The description shows up only in this window. The data in this field is not pushed to the device(s). The maximum length for this field is 256 characters.

- The ID number is system-generated identification number for the circuit.

- The Circuit ID is created automatically, based on the service. For example, for Ethernet, it is based on the VLAN number; for Frame Relay, it is based on the DLCI; for ATM, it is based on the VPI/VCI.

Step 18   Click **Save**.

The EWS (EPL) service request is created and saved in Prime Fulfillment.

Modifying the L2VPN Service Request

This section describes how to edit the L2VPN service request attributes. This is also where you can associate templates and data files to devices that are part of theattachment circuits.

Perform the following steps.

Step 1   Choose **Operate > Service Request > Service Request Manager**.

The L2VPN Service Request window appears.

Step 2   Check a check box for a service request.

Step 3   Click **Edit**.

The EndToEndWire window appears.

Step 4   Modify any of the attributes, as desired:

- The VPN for this service request appears in the Select VPN field. If this request has more than one VPN, click **Select VPN** to choose a VPN.

- You can choose any of the blue highlighted values to edit the end-to-end wire.

- You can edit the AC link attributes to change the default policy settings. After you edit these fields, the blue link changes from Default to Changed.

- You can enter a description for the service request in the first **Description** field. The description will show up in this window and also in the Description column of the Service Requests window. The maximum length for this field is 256 characters.

- You can enter a description for each end-to-end wire in the **Description** field provided for each wire. The description shows up only in this window. The data in this field is not pushed to the device(s). The maximum length for this field is 256 characters.

- The Circuit ID is created automatically, based on the VLAN data for the circuit.

- If the policy was set up for you to define a VC ID manually, enter it into the empty **VC ID** field. If policy was set to "auto pick" the VC ID, Prime Fulfillment will supply a VC ID, and this field will not be editable. In the case where you supply the VC ID manually, if the entered value is in the provider's range, Prime Fulfillment validates if the entered value is available or allocated. If the entered value has been already allocated, Prime Fulfillment generates an error message saying that the entered value is not available and prompts you to re-enter the value. If the entered value is in the

provider's range, and if it is available, then it is allocated and is removed from the VC ID pool. If the entered value is outside the provider's range, Prime Fulfillment displays a warning saying that no validation could be performed to verify if it is available or allocated.

- You can also click **Add Link** to add an end-to-end wire.

- You can click **Delete Link** to delete an end-to-end wire.

✎ **Note**   If you are attempting to decommission a service request to which a template has been added, see Decommissioning Service Requests, page 47-12 for information on the proper way to do this.

- The ID number is system-generated identification number for the circuit.

- The Circuit ID is created automatically, based on the service. For example, for Ethernet, it is based on the VLAN number; for Frame Relay, it is based on the DLCI; for ATM, it is based on the VPI/VCI.

Step 5   To edit AC attributes, click the **Default** link in the appropriate AC Attributes column.

The Link Attributes window appears.

Step 6   Edit any of the link attributes, as desired.

Step 7   To add a template and data file to an attachment circuit, choose a Device Name, and click **Add** under Templates.

The Add/Remove Templates window appears.

✎ **Note**   To add a template to an attachment circuit, you must have already created the template. For detailed steps to create templates, see Chapter 48, "Overview of Templates and Data Files." For more information on how to use templates and data files in service requests, see Chapter 49, "Using Templates and Data Files with Policies and Service Requests."

Step 8   Click **Add**.

The Template Data File Chooser window appears.

Step 9   In the left pane, navigate to and select a template.

The associated data files are listed in rows in the main window.

Step 10   Check the data file that you want to add and click **Accept**.

The Add/Remove Templates window appears with the template displayed.

Step 11   Choose a Template name.

Step 12   Under Action, use the drop-down list and choose **APPEND** or **PREPEND.**

Append tells Prime Fulfillment to append the template generated CLI to the regular Prime Fulfillment (non-template) CLI. Prepend is the reverse and does not append the template to the Prime Fulfillment CLI.

Step 13   Choose **Active** to use this template for this service request.

If you do not choose Active, the template is not used.

Step 14   Click **OK**.

The Link Attributes with the template added appears.

Note   For more information about using templates and data files in service requests, see Chapter 49, "Using Templates and Data Files with Policies and Service Requests."

Step 15   Click **OK**.

The L2VPN Service Request window appears showing the link in the AC Attachment Circuit column has changed from Default to Changed.

Step 16   When you are finished editing the end-to-end wires, click **Save**.

Saving the L2VPN Service Request

To save an L2VPN service request, perform the following steps.

Step 1   When you are finished specifying the link attributes for all the attachment circuits, click **Save** to finish the L2VPN service request creation.

If the L2VPN service request is successfully created, you will see it listed in the Service Request Manager window. The newly created L2VPN service request is added with the state of REQUESTED.

Step 2   If, however, the L2VPN service request creation failed for some reason (for example, a value chosen is out of bounds), you are warned with an error message. In such a case, you should correct the error and save the service request again.

For information on deploying L2VPN service requests, see Deploying Service Requests, page 47-11.