CHAPTER 51

SLA

A service-level agreement (SLA) defines a level of service provided by a service provider to any customer. Performance is monitored through the SLA server. Cisco Prime Fulfillment monitors the service-related performance criteria by provisioning, collecting, and monitoring SLAs on Cisco IOS routers that support the Service Assurance Agent (SA Agent) devices. To provision the SLAs and to collect statistics for each SLA, the data collection task requires minimal user input.

Note SLA features are not supported on devices running IOS XR.

The SLA collection task collects the relevant performance data, stores it persistently, aggregates it, and presents useful reports. The SLA collection task collects from the SA Agent MIB on devices. Prime Fulfillment leverages the SA Agent MIB to monitor SLA performance on a 24 x 7 basis. Using the MIB, you can monitor network traffic for the popular protocols:

- Dynamic Host Configuration Protocol (DHCP)
- Domain Name System (DNS)
- File Transfer Protocol (FTP)
- Hyper text Transfer Protocol (HTTP)
- Internet Control Message Protocol Echo (ICMP Echo)
- Jitter (voice jitter)
- Transmission Control Protocol Connect (TCP Connect)
- User Datagram Protocol Echo (UDP Echo).

Note SLA uses the embedded Sybase database, independent of whether you choose Oracle as your database.

Note The SLA operations **Create**, **Delete**, **Enable Probes**, **Disable Probes**, **Enable Traps**, and **Disable Traps** automatically result in the creation of a task, which executes the actual operation. You can view the status of the task by navigating **Inventory > Task Manager > Logs**.

This section explains how to configure SLA probes, collect SLA data, and view SLA reports about these SLA probes.

Before you choose **Inventory > Device Tools > SLA**, implement the setup procedures in the "Setup Prior to Using SLA" section on page 51-2."

Then choose **Inventory > Device Tools > SLA** and you can select one of the following:

- Probes, page 51-2 is the default selection.
- Reports, page 51-18

Setup Prior to Using SLA

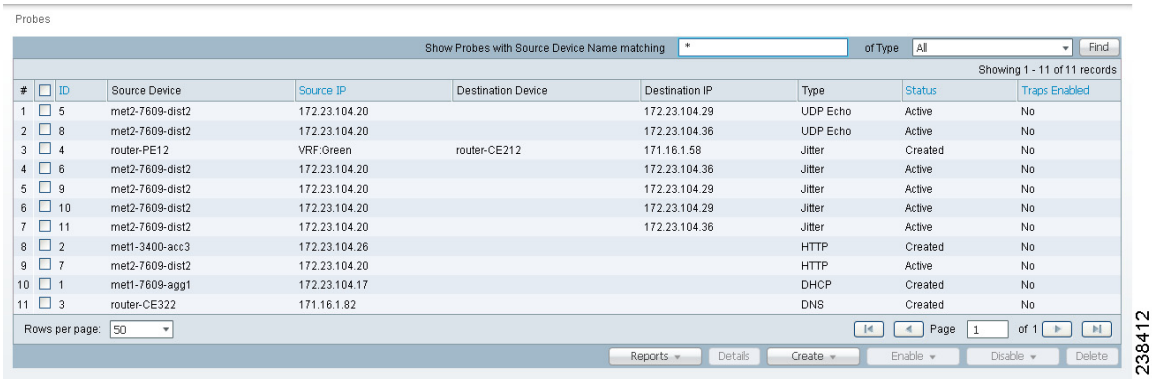
SLA is an SNMP activity. Be sure SNMP is enabled and the SNMP settings on the router match the settings in the repository.

When creating an SLA **From MPLS CPE** or **From MPLS PE or MVRF-CE**, the service requests associated with the devices *must* be in the Deployed state.

Probes

When you choose **Inventory > Device Tools > SLA**, you receive a window as shown in Figure 51-1.

Figure 51-1 SLA Probes



The default button that is enabled is **Create** and from the **Create** drop-down list, you can choose to create SLA probes **From Any SA Agent Device(s)**; **From MPLS CPE**; or **From MPLS PE or MVRF-CE**. However, if you select one or more existing probes by clicking the row(s) of existing probe(s), then you have access to the other buttons, **Details**, **Delete**, **Enable**, and **Disable**. For **Enable** and **Disable**, the drop-down list contains options to enable or disable SLA **Probes** and SLA **Traps**.

The explanations of the buttons and subsequent drop-down lists is given as follows:

- Create Common Parameters, page 51-3—This section explains the SLA common parameters for all of the probe creation types: **From Any SA Agent Device(s)**; **From MPLS CPE**; or **From MPLS PE or MVRF-CE**.
- Create From Any SA Agent Device(s), page 51-5—This section explains how to create probes from any SA Agent device(s) and begins after creating common parameters.
- Create from MPLS CPE, page 51-6—This section explains how to create probes from an MPLS CPE and begins after creating common parameters.
- Create From MPLS PE or MVRF-CE, page 51-8—This section explains how to create probes from an MPLS PE or MVRF-CE and begins after creating common parameters.
- Protocols, page 51-9—This section is common Probes information for each of the **Create** paths.
- Details, page 51-15—This section gives details about a specified probe.

- Delete, page 51-15—This section explains how to delete a probe.
- Enable Probes, page 51-16—This section explains how to enable the Probe and change its status from Created to Active state.
- Enable Traps, page 51-16—This section explains how to enable traps.
- Disable Probes, page 51-17—This section explains how to disable the Probe and change its status from Active to Disabled.
- Disable Traps, page 51-18—This sections explains how to disable traps.

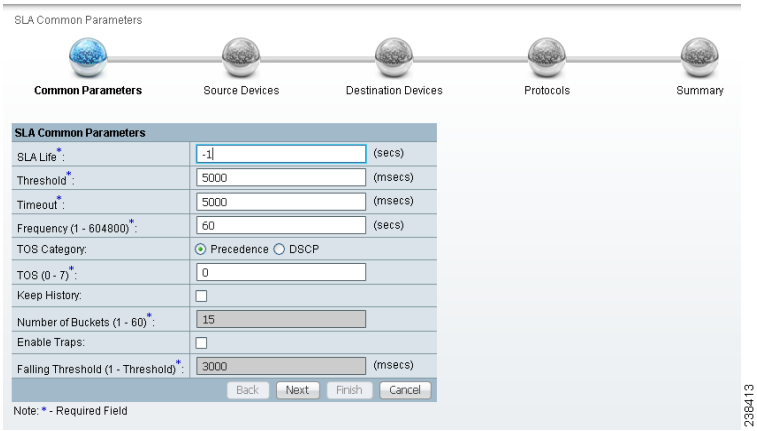
Create Common Parameters

When you choose **Inventory > Device Tools > SLA**, the default is the **Probes** page with only the **Create** button enabled, as shown in Figure 51-1. From the **Create** drop-down list, you can choose **From Any SA Agent Device(s)**, **From MPLS CPE**, or **From MPLS PE or MVRF-CE**. The first window to appear in all ways of creation is specified here. Then you proceed to the specific creation type you have chosen.

Follow these steps:

Step 1 Choose **Create**, and the window to appear is as shown in Figure 51-2.

Figure 51-2 SLA Common Parameters



Accept the defaults or change the information in the fields of the common SLA parameters, as follows, and then click **Next**:

- **SLA Life** (required)—The number of seconds that the probe is active (with the maximum value of a 32-bit integer in seconds). If the value is set to **-1**, the typical and default value, the probe is active forever.
- **Threshold** (required)—An integer that defines the threshold limit in milliseconds. When this threshold is exceeded and traps are enabled, a trap is sent. The maximum value is the maximum value of a 32-bit integer. If the service affecting agent (SA Agent) operation time exceeds this limit, the threshold violation is recorded by the SA Agent. The value for **Threshold** must not exceed the value for **Timeout**. The default value is **5000**.
- **Timeout** (required)—Duration in milliseconds to wait for an SA Agent operation completion. The value for **Timeout** must be less than or equal to the value for **Frequency** and greater than or equal to the value for **Threshold**. The default value is **5000**

- **Frequency (0 - 604800)** (required)—Duration in seconds between initiating each SA Agent operation. The value for **Frequency** must be greater than or equal to the value for **Timeout**. The default value is **60**.
- **TOS Category** (default: **Precedence**)—If you choose the **Precedence** radio button for **TOS Category**, you have one set of type of service (TOS) values. If you choose the **DSCP** radio button for **TOS Category**, you have a different set of TOS values.
- **TOS** (required)—An integer. The range and meanings of the values depend on whether the radio button in the **TOS Category** is set to **Precedence** (values: 0 to 7) or **DSCP** (values: 0 to 63).
  - When the **TOS Category** is set to **Precedence**, the valid values are **0** to **7**. These values represent the three most significant bits of the ToS field in an IP header. The default value is **0**. The meanings of the **Precedence** values are specified in Table 51-1.

Note Type of Service does not apply to the **DNS** and **DHCP** types of SLA probes. Prime Fulfillment ignores any ToS value set for these two types of SLA probes. For example, if you first choose a ToS value of 5, then choose the **DNS**, **DHCP,** and **ICMP Echo** protocols for an SLA probe, Prime Fulfillment applies the selected ToS value to the **ICMP Echo** probe only.

Table 51-1 Meanings of Precedence Values

ToS Value	Binary Value	Meaning
7	111	Network Control
6	110	Internetwork Control
5	101	CRITIC/ECP
4	100	Flash Override
3	011	Flash
2	010	Immediate
1	001	Priority
0	000	Routine

  - When the **TOS Category** is set to **DSCP**, the valid values are **0** to **63**. These values represent the six most significant bits of this ToS field in an IP header. The default value is **0**. The interpretation of these **TOS** values is user specified.

Note Prime Fulfillment maps the 0 - 7 PRECEDENCE values to the three most significant ToS bits by left-shifting the value by five positions. Similarly, the 0 - 63 DSCP values are left-shifted by two positions.

- **Keep History (default: unchecked)**—If you check the **Keep History** check box, you indicate to keep the recent History Table on the router. Specifically, it is kept in the SA Agent MIB that keeps the raw round-trip time (RTT) SLA measurement. This selection also enables you to indicate the **Number of Buckets** of raw history data to keep. If you leave the default of an unchecked check box for **Keep History**, no raw history data is kept. **Keep History** is not supported for **HTTP** and **Jitter**.

- **Number of Buckets (1 - 60)** (required)—The default is **15** when the **Keep History** check box is checked. The range is 1 to 60 and indicates the number of most recent raw data entries to be kept in the raw history data. When the specified **Number of Buckets** is surpassed, removal of buckets starts with the oldest bucket to keep only the number of raw data entries specified.
- **Enable Traps** (default: unchecked, which means No)—If you check the **Enable Traps** check box, the created SLA is configured to send three types of traps. This selection also enables you to indicate the **Falling Threshold**. If you leave the **Enable Traps** check box unchecked, the traps are disabled on the SLAs created in this task.
- **Falling Threshold (1 - Threshold)** (required)—The default is **3000** in milliseconds when the **Enable Traps check box is checked**. The range is **1** to the **Threshold** value in milliseconds. When traps are enabled and the delay meets the specified number of milliseconds, a trap is sent.

Step 2 Next you proceed to Create From Any SA Agent Device(s), page 51-5, Create from MPLS CPE, page 51-6, or Create From MPLS PE or MVRF-CE, page 51-8.

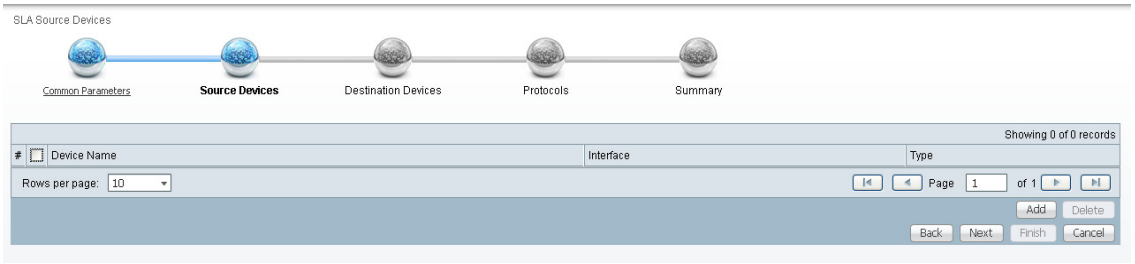
Create From Any SA Agent Device(s)

After you have completed the steps in Create Common Parameters, page 51-3, follow these steps:

Note IP connectivity must be available between the SA Agent devices.

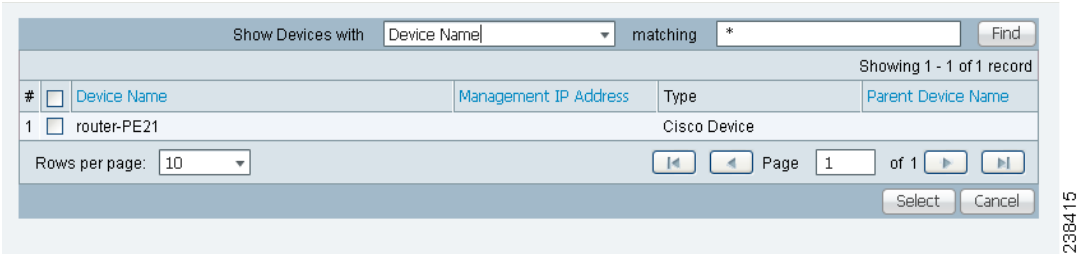
Step 1 The next window to appear is as shown in Figure 51-3.

Figure 51-3 SLA Source Devices



Step 2 Click the **Add** button and a window appears as shown in Figure 51-4, which lists all the devices in the database that have a minimum of one interface. Check the check box next to each row for the device you want to select, then click **Select**.

Figure 51-4 SLA Devices > Add



You return to Figure 51-3 and the newly added source device(s) appear. The information about this source device is specified in the following columns:

- **Device Name**—You can click this heading and the device names are organized alphabetically.
- **Interface**—You can click **Select** and from the resulting window, you can update the IP address. Select one radio button for an interface and click **Select** and the IP address changes in Figure 51-3.
- **Type**—Gives you the type of the source device.

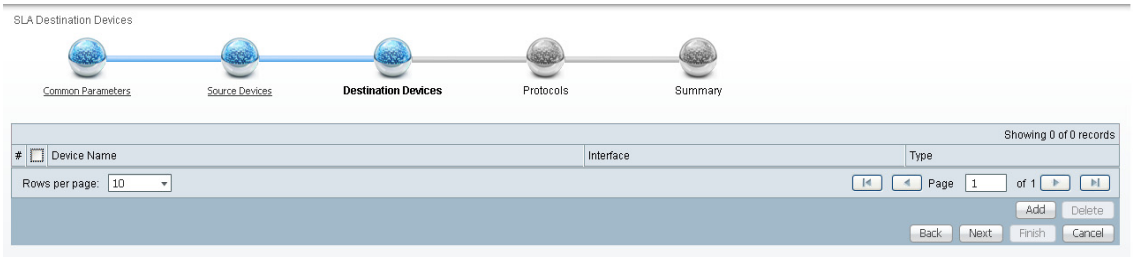
Step 3 You can repeat Step 2 to to add more devices, or you can delete any of the currently selected source devices. To delete, check the check box next to each row for the device you want to delete and then click **Delete**.

Note There is no second chance for deleting source devices. There is no confirm window.

Step 4 Click **Next**.

The next window to appear is as shown in Figure 51-5.

Figure 51-5 SLA Destination Devices



Step 5 Click the **Add** button and a window appears as shown in Figure 51-4. Check the check box next to each row for the device you want to select. Then click **Select**.

Step 6 You return to Figure 51-5 and the newly added destination device(s) appear. The information about this destination device is specified in the following columns:

- **Device Name**—You can click this heading and the device names are organized alphabetically.
- **Interface**—You can click **Select** and from the resulting window, you can update the IP address. Select one radio button for an interface and click **Select** and the IP address changes in Figure 51-5.
- **Type**—Gives you the type of the source device.

Step 7 You can repeat Step 5 to Step 6 to add more devices, or you can delete any of the currently selected destination devices. To delete, check the check box next to each row for the device you want to delete and then click **Delete**.

Note There is no second chance for deleting destination devices. There is no confirm window.

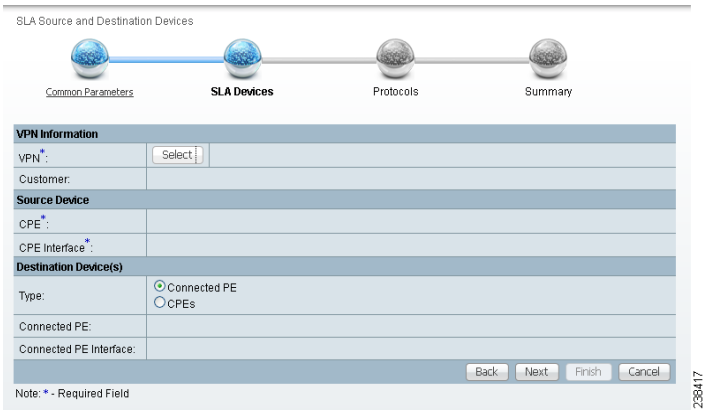
Step 8 Click **Next**. Proceed to the "Protocols" section on page 51-9."

Create from MPLS CPE

After you have completed the steps in Create Common Parameters, page 51-3, follow these steps:

Step 1 Complete the steps in the "Create Common Parameters" section on page 51-3 and the next window to appear is as shown in Figure 51-6.

Figure 51-6 SLA CPE Parameters



Step 2 Click the **Select** button for **VPN** and a window appears, which lists all the VPNs in the database.

Step 3 Click the radio button for the VPN you want to select. Then click **Select**. You return to Figure 51-6 and the newly added VPN and Customer information appear and a **Select** button appears for **CPE**. You can change the VPN by repeating Step 2.

Step 4 Click the **Select** button for **CPE** and a window appears which lists the CPEs associated with the selected VPN. Click the radio button for the CPE you want to select. Then click **Select**.

Step 5 You return to Figure 51-6 and the newly added **CPE** and its first interface appear and a **Select** button appears for **CPE Interface**. You can change the CPE by repeating Step 4.

Step 6 If you want to change the default **CPE Interface** information that appears, click **Select** and you receive a window appears.

Step 7 Click the radio button next to the row for the interface you want to select. Then click **Select**. You return to Figure 51-6 and the newly added **CPE Interface** appears.

Step 8 You can change the CPE Interface by repeating Step 6.

Step 9 You can keep the default **Type**, by leaving the radio button for **Connected PE** chosen, which creates an SLA between the CPE and its directly connected PE, or you can select the radio button for **CPEs** in the same VPN. If you keep the default of **Connected PE**, proceed to Step 10. If you click the **CPEs** radio button, proceed to Step 14.

Step 10 Click **Select** for **Connected PE Interface** and a window appears.

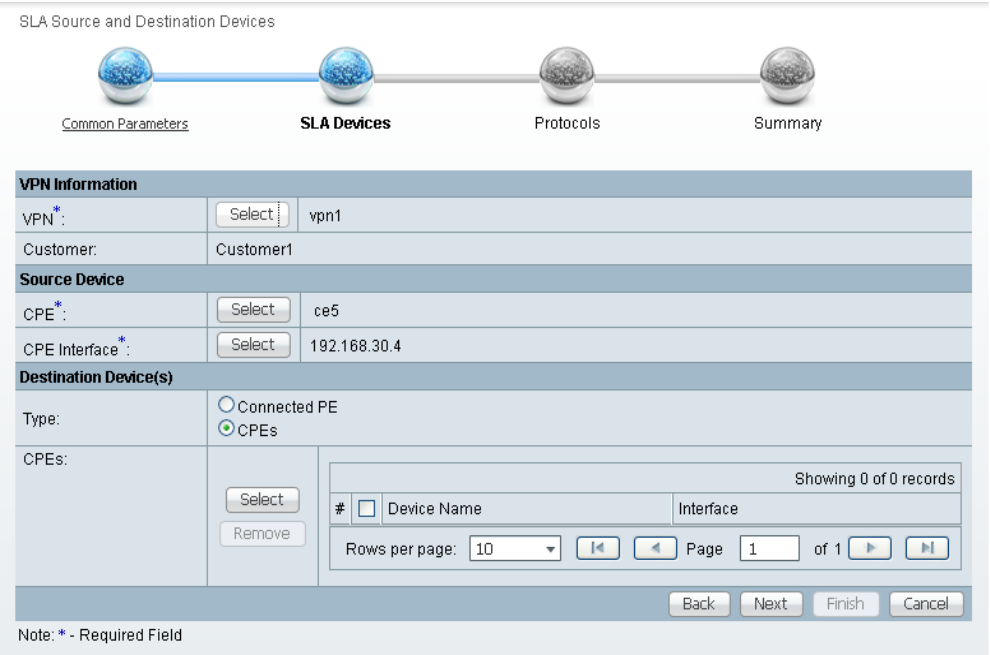
Step 11 Click the radio button next to the row for the interface you want to select. Then click **Select**.

Step 12 You return to Figure 51-6 and the newly added **Connected PE Interface** appears. You can change the Connected PE Interface by repeating Step 10.

Step 13 Click **Next** and proceed to the "Protocols" section on page 51-9.

Step 14 When you click **CPEs**, the window is as shown in Figure 51-7, "CPEs."

Figure 51-7 CPEs



Step 15 Click the **Select** button for **CPEs** and a window appears which lists all the CPEs associated with the specified VPN in the database.

Step 16 Check the check box next to the row(s) for the CPE(s) you want to select. Then click **Select**.

Note Do *not* add a device chosen as a **Source Device** to **Destination Device(s)**.

You return to Figure 51-7 and the newly added **Device Name** appears.

Step 17 Click **Select** in the **Interface** column and a window appears.

Step 18 Click the radio button next to the row for the CPE you want to select. Then click **Select**.

Step 19 You return to Figure 51-7 and the newly added **CPE Interface** appears. You can change the CPE Interface by repeating Step 17.

Step 20 Check the check box next to each row for the Devices you want to remove. Then click the **Remove** button and a window as shown in Figure 51-7 appears without the removed Device(s).

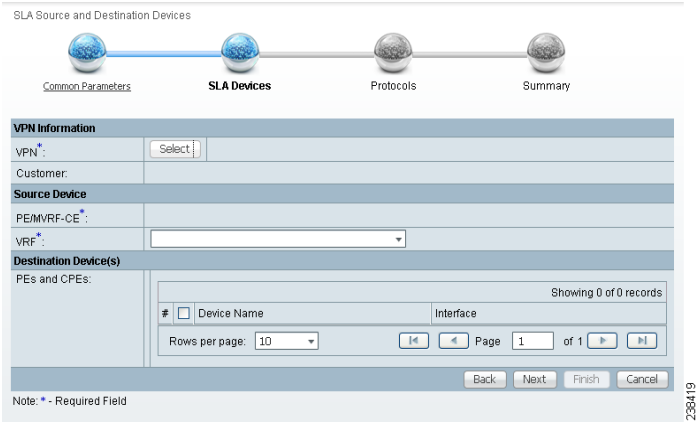
Step 21 When Figure 51-7 reflects what you want, click **Next** and proceed to the "Protocols" section on page 51-9.

Create From MPLS PE or MVRF-CE

After you have completed the steps in Create Common Parameters, page 51-3, follow these steps:

Step 1 Complete the steps in the "Create Common Parameters" section on page 51-3 and the next window to appear is as shown in Figure 51-8, "SLA Source and Destination Devices."

Figure 51-8 SLA Source and Destination Devices



Step 2 Click the **Select** button for **VPN** and a window appears which lists all the VPNs in the database. Click the radio button next to the row for the VPN you want to select.

Step 3 Then click **Select**.

Step 4 You return to Figure 51-8 and the newly added VPN and Customer information appears. You can change the VPN and Customer by repeating Step 2.

Step 5 Click the new **Select** button for **PE/MVRF-CE** and you receive a drop-down list from which you can choose **PE** or **MVRF-CE**. If you choose **PE**, a window appears, which lists all the PEs associated with the selected VPN. If you choose MVRF-CE, a window appears, which lists all the MVRF-CEs associated with the selected VPN. Click the radio button next to the row for the PE or MVRF-CE you want to select. Then click **Select** or **OK**.

Step 6 You return to Figure 51-8 and the newly added PE or MVRF-CE information appears. You can change this selection by repeating Step 5.

Step 7 If in Step 5 you chose MVRF-CE information, you can click the **VRF** drop-down list.

Step 8 Click the new **Select** button for **Destination Device(s)—PEs and CPEs** and from a drop-down list, choose **PEs** or **CPEs**. If you choose **PEs**, a window appears, which lists all the PE Interfaces in the database. If you choose **CPEs**, a window appears, which lists all the CPE Interfaces in the database. Click the radio button next to the row for the Device Interface you want to select. Then click **Select**.

Note Do *not* add a device chosen as a **Source Device** to **Destination Device(s)**.

Step 9 You return to Figure 51-8 and you receive interface information. Click **Select** and you get a window from which you can click a radio button next to a different interface. Click **Select** and the new interface replaces the old interface. You can change the Interface by repeating this step.

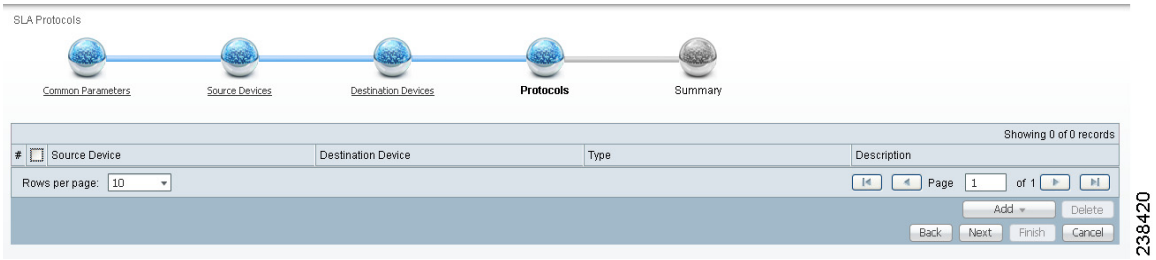
Step 10 Click **Next** and proceed to the "Protocols" section on page 51-9.

Protocols

You choose this location after you have completed all the steps in one of the **Create** functions: Create Common Parameters, page 51-3; Create from MPLS CPE, page 51-6; or Create From MPLS PE or MVRF-CE, page 51-8. Follow these steps:

Step 1 Complete the steps in the "Create Common Parameters" section on page 51-3 and the next window to appear is as shown in Figure 51-9.

Figure 51-9 Protocols

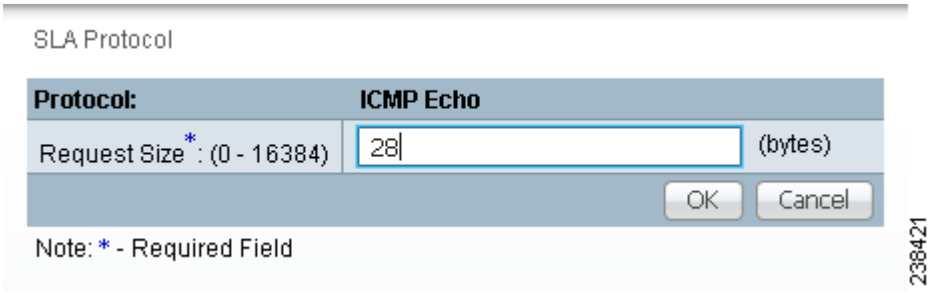


Step 2 Click the **Add** drop-down list and select:

- **ICMP Echo** (only available if destination devices are available)—Proceed to Step 3.
- **TCP Connect** (not available for Create From MPLS PE or MVRF-CE; for all the other Creates, TCP Connect is only available if destination devices are available)—Proceed to Step 4.
- **UDP Echo** (only available if destination devices are available)—Proceed to Step 5.
- **Jitter** (only available if destination devices are available)—Proceed to Step 6.
- **FTP** (not available for Create from MPLS PE or MVRF-CE)—Proceed to Step 7.
- **DNS** (not available for Create from MPLS PE or MVRF-CE)—Proceed to Step 8.
- **HTTP** (not available for Create from MPLS PE or MVRF-CE)—Proceed to Step 9.
- **DHCP** (not available for Create from MPLS PE or MVRF-CE)—Proceed to Step 10.

Step 3 From Step 2, if you chose **ICMP Echo**, you receive a window as shown in Figure 51-10.

Figure 51-10 Protocol ICMP Echo

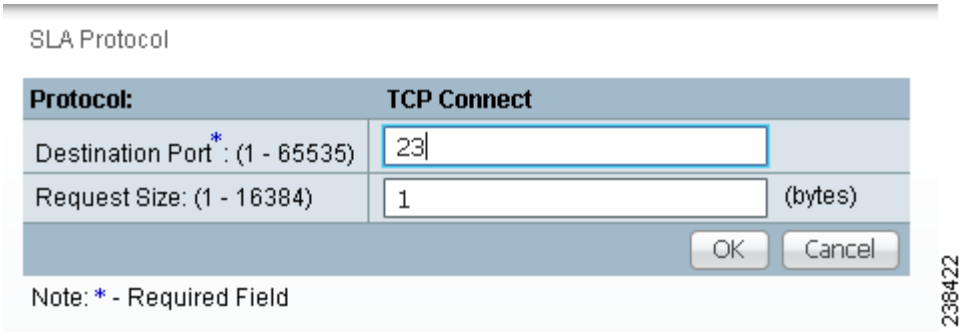


Enter the required information as follows, click **OK**, and then proceed to Step 11.

- Request Size (0 - 16384) (required)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **28**.

Step 4 From Step 2, if you chose **TCP Connect**, you receive a window as shown in Figure 51-11.

Figure 51-11 Protocol TCP Connect

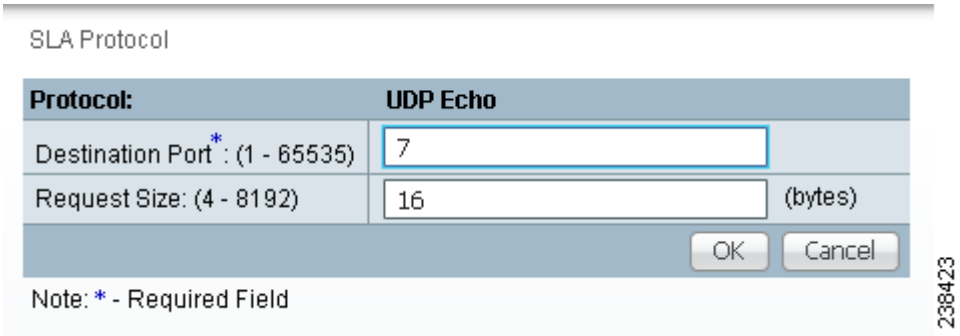


Enter the required and optional information as follows, click **OK**, and then proceed to Step 11.

- **Destination Port (1 - 65535)** (required)—Port number on the target where the monitoring packets is sent. If you do not specify a specific port, port **23** is used.
- **Request Size (1 - 16384)** (optional)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **1**.

Step 5 From Step 2, if you chose **UDP Echo**, you receive a window as shown in Figure 51-12.

Figure 51-12 Protocol UDP Echo

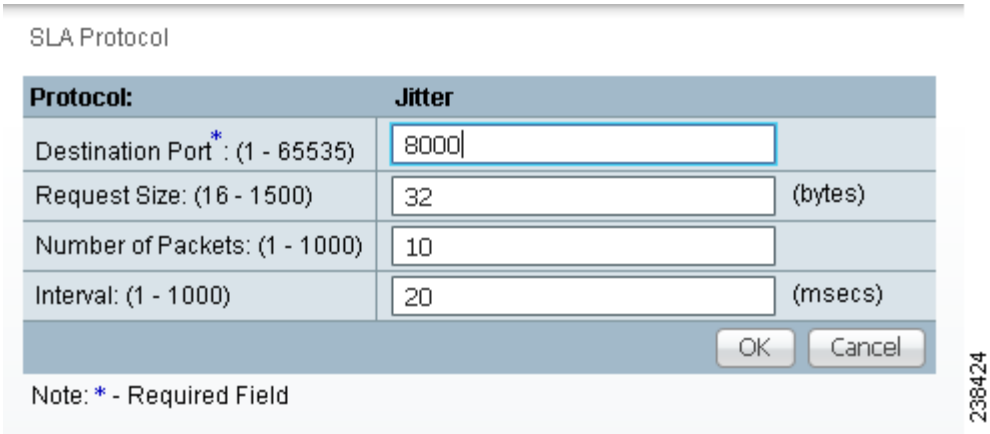


Enter the required and optional information as follows, click **OK**, and then proceed to Step 11.

- **Destination Port (1 - 65535) (required)**—Port number on the target to where the monitoring packets are sent. If you do not specify a specific port, port **7** is used.
- **Request Size (4 - 8192)** (optional)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **16**.

Step 6 From Step 2, if you chose **Jitter**, you receive a window as shown in Figure 51-13.

Figure 51-13 Protocol Jitter

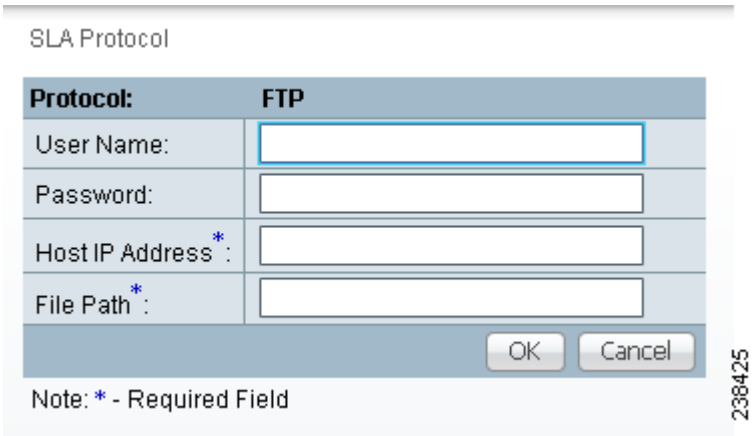


Enter the required and optional information as follows, click **OK**, and then proceed to Step 11.

- **Destination Port (1 - 65535)** (required)—Port number on the target where the monitoring packets are sent. If you do not specify a specific port, port **8000** is used.
- **Request Size (16 - 1500)** (optional)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **32**.
- **Number of Packets (1 - 1000)** (optional)—Integer that represents the number of packets that must be transmitted. The default value is **10**.
- **Interval (1 - 1000)** (optional)—Integer, **1** to **1,000**, that represents the inter-packet delay between packets in milliseconds.The default value is **20**.

Step 7 From Step 2, if you chose **FTP**, you receive a window as shown in Figure 51-14.

Figure 51-14 Protocol FTP

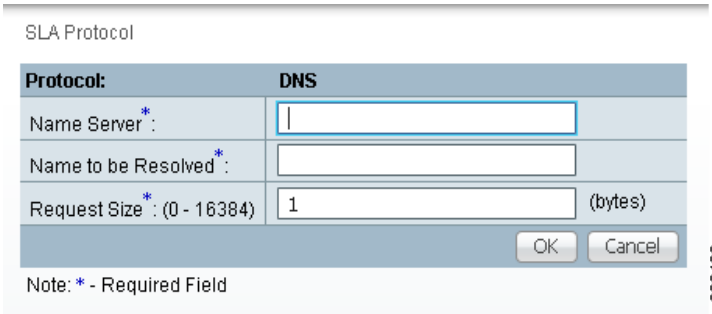


Enter the required and optional information as follows, click **OK**, and then proceed to Step 11.

- **User Name** (optional)**—**If blank, anonymous is used.
- **Password** (optional)—If blank, test is used.
- **Host IP Address** (required)—Enter the IP address for File Transfer Protocol (FTP).
- **File Path** (required)—Enter the path of the file you want to FTP on the FTP server.

Step 8 From Step 2, if you chose **DNS**, you receive a window as shown in Figure 51-15.

Figure 51-15 Protocol DNS

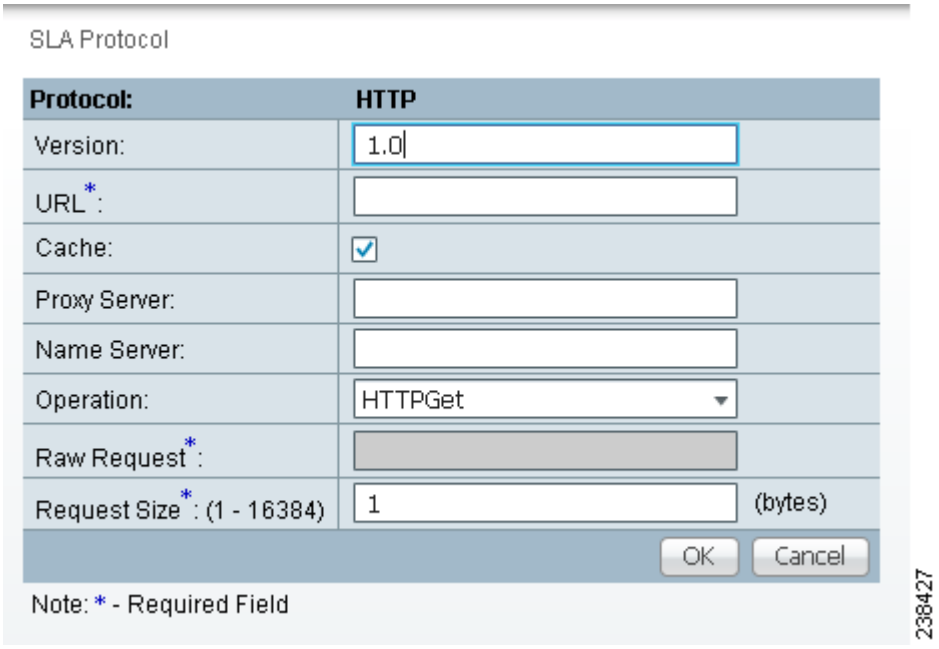


Enter the required information as follows, click **OK**, and then proceed to Step 11.

- **Name Server** (required)—String that specifies the IP address of the name server. The address is in dotted IP address format.
- **Name to be Resolved** (required)—String that is either the name or the IP address that is to be resolved by the DNS server. If the string is a name, the length is 255 characters. If the string is an IP address, it is in dotted IP address format.
- **Request Size** (0 - 16384) (required)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **1**.

Step 9 From Step 2, if you chose **HTTP**, you receive a window as shown in Figure 51-16.

Figure 51-16 Protocol HTTP



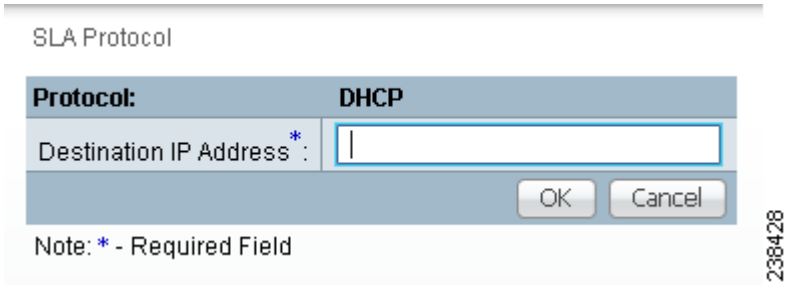
Enter the optional and required information as follows, click **OK**, and then proceed to Step 11.

- **Version** (default: 1.0)—String that specifies the version of the HTTP server. Do not change this. Prime Fulfillment only supports version 1.0.

- **URL** (required)—String that represents the URL to which an HTTP probe should communicate, *HTTPServerName*[*/directory*]*/filename* or *HTTPServerAddress*[*/directory*]*/filename* (for example: **http://www.cisco.com/index.html** or **http://209.165.201.22/index.html**). If you specify the *HTTPServerName*, the **Name Server** is required. If you specify the *HTTPServerAddress*, the **Name Server** is not required.
- **Cache** (default: selected, which means Yes)—For an unchecked check box, the HTTP request should not download cached pages. For a checked check box, the HTTP request downloads cached pages if available, otherwise the request is forwarded to the HTTP server.
- **Proxy Server** (optional)—String that represents the proxy server information (with a maximum of 255 characters). The default is the null string.
- **Name Server** (optional, dependent on the **URL** setting)—String that specifies the IP address of the name server. The address is in dotted IP address format.
- **Operation** (default: HTTPGet)—If you want **HTTPRaw**, which represents the HTTP request with user defined payload, instead of the default **HTTPGet** which represents the HTTP get request, use the drop-down list and make that choice.
- **Raw Request** (required if the **Operation** is **HTTPRaw**; not available if the **Operation** is **HTTPGet**)—String that is only needed if the **Operation** is **HTTPRaw**. It allows you to invoke other types of HTTP operations other than the simple GET operation.
- **Request Size** (1 - 16384) (required)—Number that represents the number of octets (in bytes) to be placed into the data portion of the packet. The default is **28**.

Step 10 From Step 2, if you chose **DHCP**, you receive a window as shown in Figure 51-17.

Figure 51-17 Protocol DHCP



Enter the required information as follows, click **OK**, and then proceed to Step 11.

- **Destination IP Address** (required)

Step 11 You return to Figure 51-9 and additional columns of information now appear based on the Protocol information you provided. Before you click **Next** to proceed, determine if you want to **Add** more protocols, in which case repeat Step 2 to Step 10, or **Delete** any of the currently selected protocols, in which case, click **Delete** and proceed much as in Step 2 to Step 10 to now delete protocols.

Note There is no second chance for deleting destination devices. There is no confirm window.

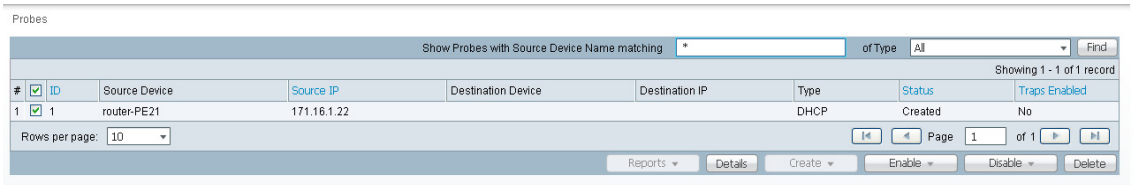
Step 12 The next window to appear is a Probe Creation Task Summary window that shows the **Description** (date and time created), **Common Parameters**, **Source Devices**, **Destination Devices**, and **Protocols** that you have defined. If all exists the way you want it, click **Finish**. Otherwise, click **Back** and make corrections.

Details

When you choose **Inventory > Device Tools > SLA**, you can get details by following these steps:

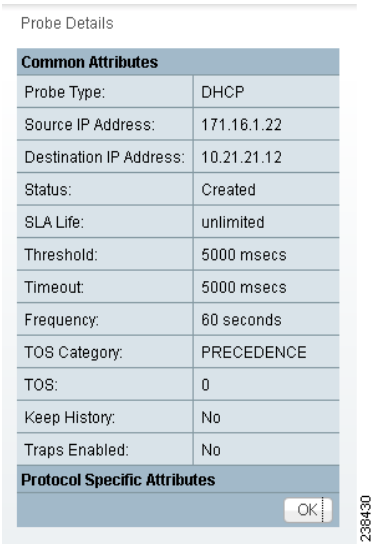
Step 1 Select an existing probe by checking the corresponding check box for which you want details. Then you have access to the **Details** button, as shown in Figure 51-18.

Figure 51-18 SLA Probes > Details



Step 2 After you click the **Details** button, you receive a window as shown in Figure 51-19. This includes the **Common Attributes** information defined when you first **Create** and the **Protocol Specific Attributes** information defined in the section Protocols.

Figure 51-19 SLA Probes Details



Step 3 Click **OK** to return to a window as shown in Figure 51-18. You can continue to select more **Details** or complete another function.

Delete

When you choose **Inventory > Device Tools > SLA**, you can delete probes from the list by following these steps:

Step 1 Select one or more existing probes by checking the check box(es) for the row(s) of existing probe(s). Then you have access to the **Delete** button.

Step 2 After you click the **Delete** button, a confirmation window appears.

Step 3 Click **OK** if it reflects what you want to delete or click **Cancel** if it does not.

Note After the probe is deleted, it is deleted from the probe list page but still remains in the database.

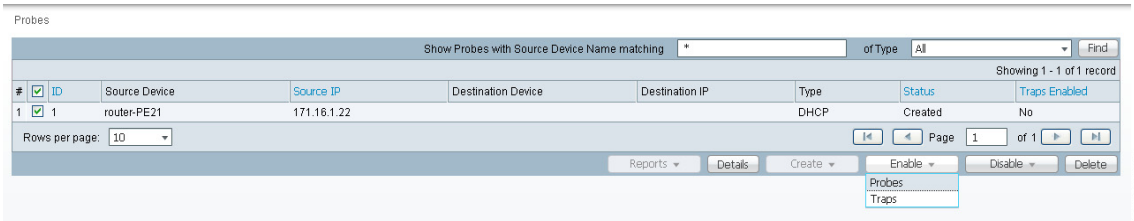
You return to window with updated information.

Enable Probes

When you choose **Inventory > Device Tools > SLA**, you can enable probes by following these steps:

Step 1 Select one or more existing probes by checking the check box(es) for the row(s) of existing probe(s). Then you have access to the **Enable** button. From the **Enable** drop-down list, you have access to **Probes**, as shown in Figure 51-20.

Figure 51-20 SLA Probes > Enable > Probes



Step 2 After you choose **Enable > Probes,** a confirm enable probes window appears.

Step 3 Click **OK** if it reflects the probes you want to enable or click **Cancel** if it does not.

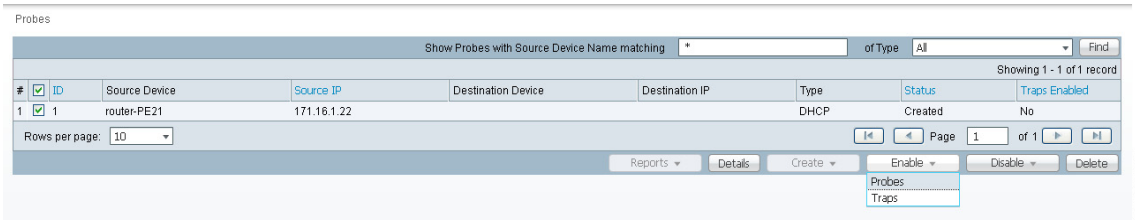
In both cases, you return to Figure 51-20. If this was successful, you receive a Status window with a green check mark for **Succeeded**. The Status column is set to **Active** when the probe is created successfully on the router.

Enable Traps

When you choose **Inventory > Device Tools > SLA**, you can enable traps by following these steps:

Step 1 Select one or more existing probes by checking the check box(es) for the row(s) of existing probe(s). Then you have access to the **Enable** button. From the **Enable** drop-down list, you have access to **Traps**, as shown in Figure 51-21.

Figure 51-21 SLA Probes > Enable > Traps



Step 2 After you choose **Enable > Traps**, a confirm enable traps window appears. All the traps have 3000 ms as the falling threshold set automatically

Step 3 Click **OK** if it reflects the traps you want to enable or click **Cancel** if it does not.

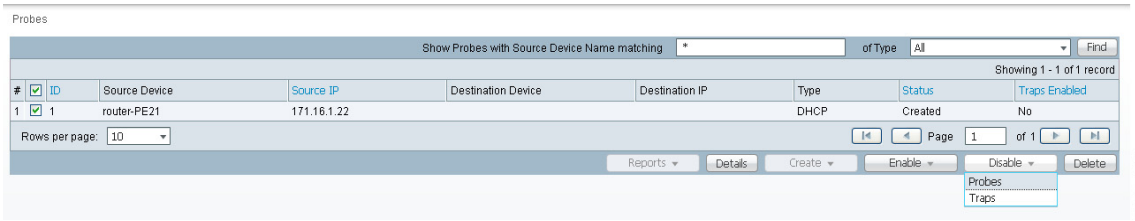
In both cases you return to Figure 51-21. If this was successful, you receive a Status window with a green check mark for **Succeeded**. The Traps Enabled column is set to **yes** when the probes on the router are successfully changed.

Disable Probes

When you choose **Inventory > Device Tools > SLA**, you can use **Disable Probes** to delete probes on the devices. Follow these steps:

Step 1 Select one or more enabled probes by checking the check box(es) for the row(s) of existing probe(s). Then you have access to the **Disable** button. From the **Disable** drop-down list, you have access to **Probes**, as shown in Figure 51-22.

Figure 51-22 SLA Probes > Disable > Probes



Step 2 After you choose **Disable > Probes,** a confirm disable probes window appears.

Step 3 Click **OK** if it reflects the probes you want to disable or click **Cancel** if it does not.

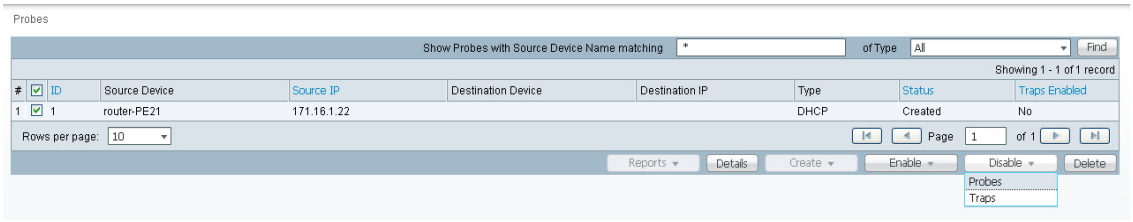
In both cases you return to Figure 51-22. If this was successful, you receive a Status window with a green check mark for **Succeeded**, and the probe's status becomes Disabled when the probe on the router is successfully removed.

Disable Traps

When you choose **Inventory > Device Tools > SLA**, you can disable traps by following these steps:

Step 1 Select one or more existing probes by checking the check box(es) for the row(s) of existing probe(s). Then you have access to the **Disable** button. From the **Disable** drop-down list, you have access to **Traps**, as shown in Figure 51-23.

Figure 51-23 SLA Probes > Disable > Traps



Step 2 After you choose **Disable > Traps,** a confirm disable traps window appears.

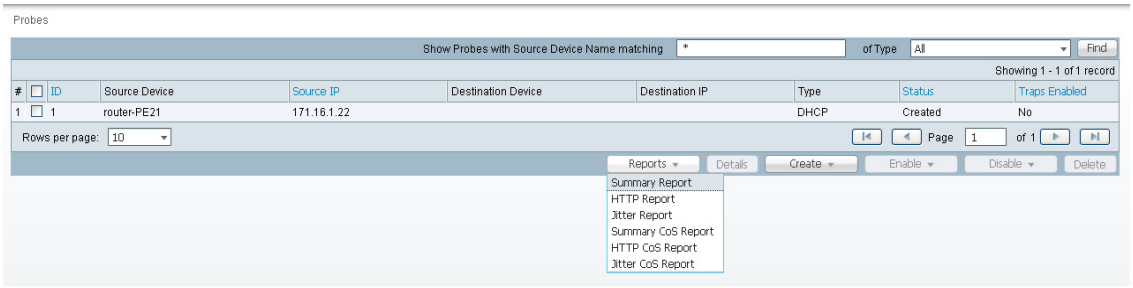
Step 3 Click **OK** if it reflects the traps you want to disable or click **Cancel** if it does not.

In both cases you return to Figure 51-23. If this was successful, you receive a Status window with a green check mark for **Succeeded**. The traps are disabled when the probes on the router are successfully changed.

Reports

When you choose **Inventory > Device Tools > SLA**, you receive a window as shown in Figure 51-24.

Figure 51-24 SLA Reports



You can then click on any of the following choices and receive that report

- Summary Report, page 51-19—This report summarizes all the information other than for HTTP and Jitter (ICMP Echo, TCP Connect, UDP Echo, FTP, DNS, and DHCP).
- HTTP Report, page 51-21—This is a summary report for HTTP information.
- Jitter Report, page 51-21—This is a summary report for Jitter information.
- Summary CoS Report, page 51-22—This report a summary report for Class of Service (CoS) other than for HTTP and Jitter (ICMP Echo, TCP Connect, UDP Echo, FTP, DNS, and DHCP).

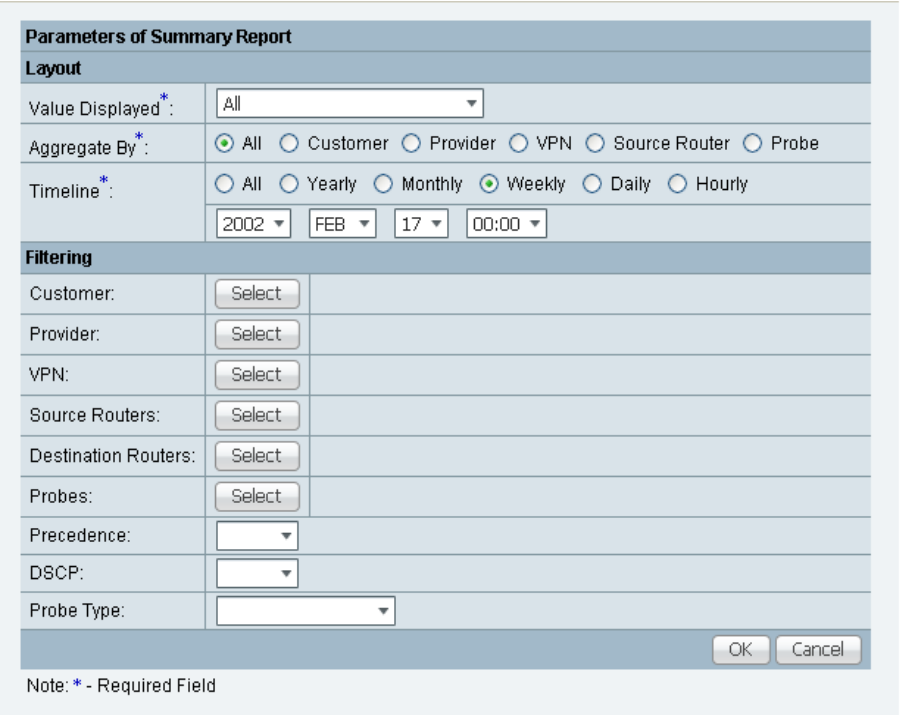
- HTTP CoS Report, page 51-23—This report is for HTTP CoS information.
- Jitter CoS Report, page 51-23—This report is for Jitter CoS information.

Summary Report

From Figure 51-24, choose **Summary Report** and follow these steps:

Step 1 Choose **Summary Report,** and the resulting window is shown in Figure 51-25.

Figure 51-25 Parameters of Summary Report



Step 2 For Figure 51-25, fill in the **Layout** fields, as follows:

- **Value Displayed** (required) (default: **All**) Click the drop-down list and choose one of the following:
  - **All**—To display all the values.
  - **Connections (#)**—To display the number of connections.
  - **Timeouts (#)**—To display the number of timeouts.
  - **Connectivity (%)**—To display connectivity as a percentage.
  - **Threshold Violations (%)**—To display threshold violations as a percentage.
  - **Max Delay (ms)**—To display the maximum delay in milliseconds.
  - **Min Delay (ms)**—To display the minimum delay in milliseconds.
  - **Avg Delay (ms)**—To display the average delay in milliseconds.
- **Aggregate By** (required) (default: All) Click the radio button for how you want to aggregate the data, by **All**, **Customer**, **Provider**, **VPN, Source Router**, or **Probe**.

- **Timeline** (required) (default: **Weekly**; starting with midnight of the first day of the selected week) Click the radio button for the report data that you want to display, **All** data; **Yearly** data; **Monthly** data; **Weekly** data; **Daily** data; or **Hourly** data. Also click the drop-down lists for the year, month, day of the month, and time of day for which to start the report.

Step 3 For Figure 51-25, fill in the **Filtering** fields, as follows.

Note The report contains only the data that fulfills all the conditions in the filtering fields (all the conditions are ANDed together).

- **Customer** (optional)—Click the **Select** button and from the resulting list of Customers, filter the list if you choose. From the listed Customers, click the radio button for the Customer for which you want this SLA report. Then click Select. The result is that you return to Figure 51-25 and the selected customer is listed for **Customer**. You can repeat this process if you want to change your selection.
- **Provider** (optional)—Click the **Select** button and from the resulting list of Providers, filter the list if you choose. From the listed Providers, click the radio button for the Provider for which you want this SLA report. Then click **Select**. The result is that you return to Figure 51-25 and the selected provider is listed for **Provider**. You can repeat this process if you want to change your selection.
- **VPN** (optional)—Click the **Select** button and from the resulting list of VPNs, filter the list if you choose. From the listed VPNs, click the radio button for the VPN for which you want this SLA report. Then click **Select**. The result is that you return to Figure 51-25 and the selected VPN is listed for **VPN**. You can repeat this process if you want to change your selection.
- **Source Routers** (optional)—Click the **Select** button and from the resulting list of devices, filter the list if you choose. From the listed devices, check the check box(es) for device(s). Then click **Select**. The result is that you return to Figure 51-25 and **Source Routers** contains the selected device(s). You can repeat this process if you want to change your selection.
- **Destination Routers** (optional)—Click the **Select** button and from the resulting list of devices, filter the list if you choose. From the listed devices, check the check box(es) for device(s). Then click **Select**. The result is that you return to Figure 51-25 and **Destination Routers** contains the selected device(s). You can repeat this process if you want to change your selection.
- **Probes** (optional)—Click the **Select** button and from the resulting list of source probes, filter the list if you choose. From the listed source probes, check the check box(es) for source probe(s). Then click **Select**. The result is that you return to Figure 51-25 and **Probes** contains the selected source probe(s). You can repeat this process if you want to change your selection.
- **Precedence** (default: **All**)—Click the drop-down list to select the other **Precedence** TOS choices, **0** to **7**. These values represent the three most significant bits of the ToS field in an IP header. The meanings of the **Precedence** values are specified in Table 51-1.

Note Prime Fulfillment maps the 0 - 7 PRECEDENCE values to the three most significant ToS bits by left-shifting the value by five positions.

Note Type of Service does not apply to the **DNS** and **DHCP** types of SLA probes. Prime Fulfillment ignores any ToS value set for these two types of SLA probes. For example, if you first choose a ToS value of 5, then choose the **DNS**, **DHCP,** and **ICMP Echo** protocols for an SLA probe, Prime Fulfillment applies the selected ToS value to the **ICMP Echo** probe only.

- **DSCP** (default: **All**)—Click the drop-down list to select the other **DSCP TOS** choices, **0** to **63**. These values represent the six most significant bits of this ToS field in an IP header. The interpretation of these **TOS** values is user specified.

Note Prime Fulfillment maps the 0 - 63 DSCP values to the six most significant ToS bits by left-shifting the values by two positions.

- **Probe Type** (default: **All**)—Click the drop-down list to select from the following types of probes: ICMP Echo; UDP Echo; TCP Connect; HTTP; DNS; Jitter; DHCP; FTP.

Note These probe types are explained in detail in the "Protocols" section on page 51-9.

Step 4 Click **OK** in Figure 51-25 after you have the information you want.

The result is a Summary Report with the selections you made listed. You can **Modify**, **Refresh**, **Print**, or **Close** this report with the appropriate button.

Note If you choose **Modify**, you receive a window such as Figure 51-25 in which you can modify your selections as explained in the previous steps.

HTTP Report

From Figure 51-24, choose **HTTP Report** and proceed similarly to the "Summary Report" section on page 51-19, with the following exceptions:

- **Value Displayed** has different drop-down choices.
- There is no **Destination Routers** selection.
- There is no **Probe Type** drop-down list in the equivalent of Figure 51-25, because the probe type is automatically **HTTP**. The result is an HTTP Report.

Jitter Report

From Figure 51-24, choose **Jitter Report** and proceed similarly to the "Summary Report" section on page 51-19, with the following exceptions:

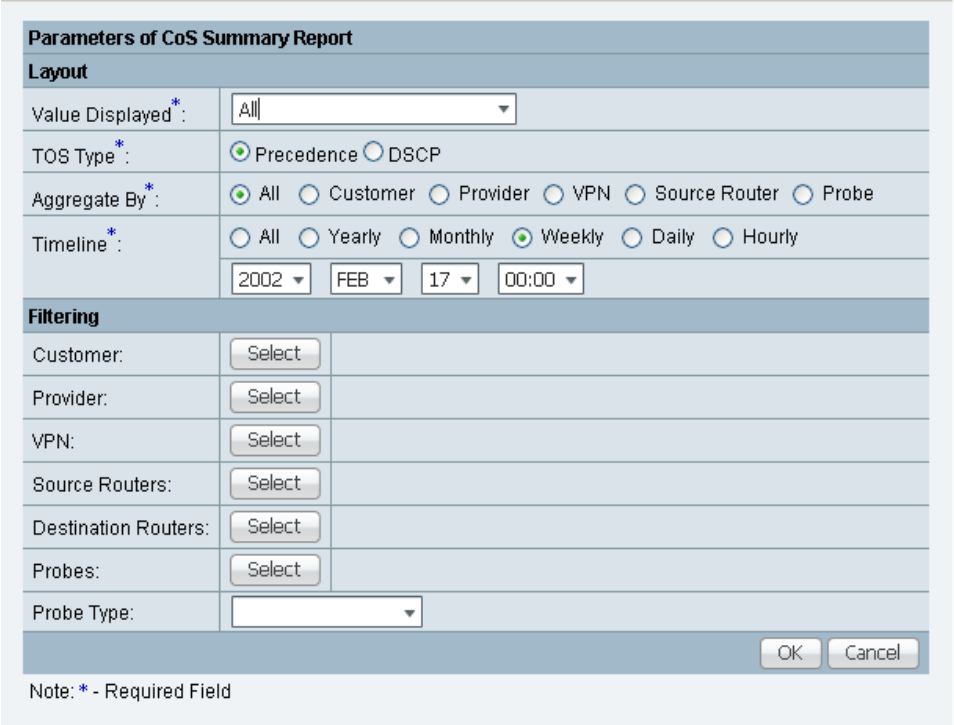
- **Value Displayed** has different drop-down choices.
- There is no **Destination Routers** selection.
- There is no **Probe Type** drop-down list in the equivalent of Figure 51-25, because the probe type is automatically **Jitter**. The result is a Jitter Report.

Summary CoS Report

From Figure 51-24, choose **Summary CoS Report** for a summary of the Class of Service (CoS) reports, which are based on the TOS values of the SLA probes, and follow these steps:

Step 1 Choose **Summary CoS Report**, and the resulting window is shown in Figure 51-26.

Figure 51-26 Parameters of CoS Summary Report



Step 2 For Figure 51-26, fill in the **Layout** fields, as shown in Step 2 of the "Summary Report" section on page 51-19, with the following exception. After **Value Displayed** and before **Aggregate By**, select the radio button **Precedence** (default) or **DSCP** for the new **TOS Type**. The explanations are given in the Filtering section, Step 3 of the "Summary Report" section on page 51-19.

Step 3 For Figure 51-26, fill in the **Filtering** fields, as shown in Step 3 of the "Summary Report" section on page 51-19, with the exception that there are no **Precedence** or **DSCP** drop-down lists. They are now in the **Layout** fields, as explained in Step 2 in this section.

Step 4 Click **OK** in Figure 51-26 after you have the information you want.

The result is a CoS Summary Report with the selections you made listed. You can **Modify**, **Refresh**, **Print**, or **Close** this report with the appropriate button.

Note If you choose **Modify**, you receive a window such as Figure 51-26 in which you can modify your selections as explained in the previous steps.

HTTP CoS Report

From Figure 51-24, choose **HTTP Report** and proceed exactly as in the "Summary CoS Report" section on page 51-22, with the following exceptions:

- **Value Displayed** has the same drop-down choices as **HTTP Report**.
- There is no **Destination Routers** selection.
- There is no **Probe Type** drop-down list in the equivalent of Figure 51-26, because the probe type is automatically **HTTP CoS**. The result is a CoS HTTP Report. This CoS HTTP report is based on the TOS values of the SLA probes.

Jitter CoS Report

From Figure 51-24, choose **Jitter Report** and proceed exactly as in the "Summary CoS Report" section on page 51-22, with he following exceptions:

- **Value Displayed** has the same drop-down choices as **Jitter Report**.
- There is no **Destination Routers** selection.
- There is no **Probe Type** drop-down list in the equivalent of Figure 51-26, because the probe type is automatically **Jitter CoS**. The result is a CoS Jitter Report. This CoS Jitter report is based on the TOS values of the SLA probes.