Planning Network Capacity Changes

Cisco Prime Infrastructure with Assurance allows you to view and report a variety of key performance indicators that are critical for maintaining and improving your network's operational readiness and performance quality. This information is especially critical in adapting to ever increasing network loads.

Note To use the features described in this chapter, your Prime Infrastructure implementation must include Assurance licenses. These features are supported on ASR platforms only.

In the following workflow, we take the role of a network administrator who has just been told that a large staff expansion is planned for a branch office. This change will add more users to the branch LAN, many of whom will be using WAN applications. We want to monitor the branch's key interfaces for usage and traffic congestion, so we can see if more users on the branch LAN will mean degraded WAN application performance for those users. To be certain we have an adequate picture, we will need to look at both short- and long-term performance trends for all the WAN applications the branch uses.

Before You Begin

- Set up the **Top N WAN Interfaces by Utilization** dashlet:
    a. Choose **Monitor > Monitoring Policies** and create an Interface Health template.
    b. Choose **Inventory > Grouping > Port**, select the interfaces and click **Add to Group**, then select **WAN Interfaces** as the group.
- Enable SNMP polling (see Enabling SNMP Polling in the *Cisco Prime Infrastructure 2.2 User Guide*).

Step 1 Choose **Dashboard > General**.

Step 2 To view the usage statistics for the WAN interfaces on the routers connecting remote branches to the WAN, choose **Dashboards > Network Interface** and if it is not already there, add the **Top N WAN Interfaces by Utilization** dashlet (see Adding Dashlets in the *Cisco Prime Infrastructure 2.2 User Guide*).

For each interface, this dashlet shows the site, the IP of the device hosting the WAN interface, the interface name, maximums and average utilization, and the utilization trend line for the past 24 hours.

Step 3 To see the utilization statistics for the past month, set the **Time Frame** on the **Filters** line to **Past 4 Weeks**.

Step 4 Find the WAN interface for the branch to which you are adding users. In the **Interface** column, click the interface's name to display that interface's dashboard. The interface dashboard shows the following for this single interface:

- Interface Details

- Top Applications by Volume

- Number of Users Over Time

- Class Map Statistics

- Interface Tx and Rx Utilization

- Top N Clients (In and Out)

- DSCP Classification

- Top Application Traffic Over Time

Step 5   Concentrate on **Top Application Traffic Over Time**, which gives a color-coded map of the top ten applications with the heaviest traffic over this interface.

Step 6   To get a better idea of the longer-term performance trend, click the **Clock** icon next to the dashlet title to change the Time Frame to **Past 24 Hours**, **Past 4 Weeks**, or **Past 6 Months**. To zoom in on particular spikes in the graph, use the Pan and Zoom handles in the lower graph.

Step 7   For a quick report of the same data as the interface dashboard, choose **Reports > Report Launch Pad**. Then choose **Performance > Interface Summary**. Specify filter and other criteria for the report, select the same interface in Report Criteria, then click **Run**.

Table 15-1 shows the ISP profile used to test against (it is very similar to the Caida.org Internet profile).

Table 15-1   Internet Profile - Traffic Profile per 1Gbps

	TCP	UDP	HTTP	RTP	Total
Connection Rate (flows per second)	5,000	5,000	800	10	10,000
Concurrent Flows	150,000	150,000	50,000	300	300,000
Packet Rate	150,000	40,000	50,000	15,000	199,000
Related Bandwidth (bps)	900Mbps	100Mbps	295Mbps	25Mbps	1GBps
Packet Size (derived)	750	313	738	208	658

Number of Parallel Active Users	60,000	Derived from the number of flows