Server Status Dashboard

The Cisco Prime Network Registrar server status dashboard in the web user interface (web UI) presents a graphical view of the system status, using graphs, charts, and tables, to help in tracking and diagnosis. These dashboard elements are designed to convey system information in an organized and consolidated way, and include:

• Significant protocol server and other metrics

• Alarms and alerts

• Database inventories

• Server health trends

The dashboard is best used in a troubleshooting desk context, where the system displaying the dashboard is dedicated for that purpose and might be distinct from the systems running the protocol servers. The dashboard system should point its browser to the system running the protocol servers.

You should interpret dashboard indicators in terms of deviations from your expected normal usage pattern. If you notice unusual spikes or drops in activity, there could be communication failures or power outages on the network that you need to investigate.

Opening the Dashboard

Starting from Cisco Prime Network Registrar 9.0, the Dashboard feature is available on the regional cluster also. It provides System Metrics chart by default. It allows you to display the server specific (DHCP, DNS, and CDNS) charts for various clusters. This can be configured in the Chart Selections page.

To open the dashboard in the web UI, from the **Operate** menu, choose **Dashboard**.

Display Types

Provided you have DHCP and DNS privileges through administrator roles assigned to you, the preset display of the dashboard consists of the following tables (See the table below for an example):

- **System Metrics**—See System Metrics, on page 10.

- **DHCP General Indicators**—See the *"DHCP General Indicators" section in Cisco Prime Network Registrar 9.0 DHCP User Guide*.

- **DNS General Indicators**—See the *"DNS General Indicators" section in Cisco Prime Network Registrar 9.0 Authoritative and Caching DNS User Guide*.

Tip These are just the preset selections. See Selecting Dashboard Elements to Include, on page 8 for other dashboard elements you can select. The dashboard retains your selections from session to session.

Figure 1: Preset Dashboard Elements
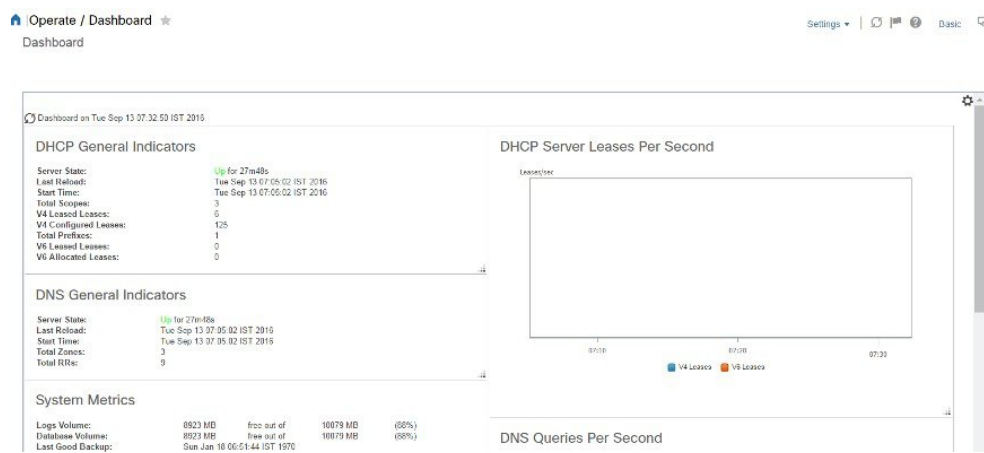
Each dashboard element initially appears as a table or a specific chart type, depending on the element:

- **Table**—See Tables, on page 3.

- **Line chart**—See Line Charts, on page 4.

- **Stacked area chart**—See Stacked Area Charts, on page 5.

General Status Indicators

Note the green box next to each dashboard element name in the above image. This box indicates that the server sourcing the information is functioning normally. A yellow box indicates that server operation is less than optimum. A red box indicates that the server is down. These indicators are the same as for the server health on the Manage Servers page in the regular web UI.

Graphic Indicators for Levels of Alert

Graphed lines and stacked areas in the charts follow a standard color and visual coding so that you can immediately determine key diagnostic indicators at a glance. The charts use the following color and textural indicators:

- **High alerts or warnings**—Lines or areas in red, with a hatched texture.

- **All other indicators**—Lines or areas in various other colors distinguish the data elements. The charts do not use green or yellow.

Magnifying and Converting Charts

If Magnified Chart is the selected Chart Link, you can magnify a chart in a separate window by clicking the chart. In magnified chart view, you can choose an alternative chart type from the one that comes up initially (see Other Chart Types, on page 5).

Note Automatic refresh is turned off for magnified charts. To get the most recent data, click the **Refresh** icon next to the word Dashboard at the top left of the page.

To convert a chart to a table, see the *Displaying Charts as Tables* section. You cannot convert tables to a graphic chart format.

Legends

Each chart initially includes a color-coded legend. Removing the legend renders the graphic chart size relatively larger, which can be helpful if you have many charts displayed. You cannot remove legends in magnified views.

Tables

Dashboard elements rendered as tables have data displayed in rows and columns. The following dashboard elements are preset to consist of (or include) tables:

- System Metrics
- DHCP DNS Updates
- DHCP Address Current Utilization
- DHCP General Indicators
- DNS General Indicators
- Caching DNS General Indicators

**Note** If you view a table in Expert mode, additional data might appear.

Line Charts

Dashboard elements rendered as line charts can include one or more lines plotted against the x and y axes. The three types of line charts are described in the following table.

Table 1: Line Chart Types

| Type of Line Chart	Description	Dashboard Elements Rendered
Raw data line chart	Lines plotted against raw data.	• Java Virtual Machine (JVM) Memory Utilization (Expert mode only) • DHCP Buffer Capacity • DHCP Failover Status (two charts) • DNS Network Errors • DNS Related Servers Errors
Delta line chart	Lines plotted against the difference between two sequential raw data.	• DNS Inbound Zone Transfers • DNS Outbound Zone Transfer
Rate line chart	Lines plotted against the difference between two sequential raw data divided by the sample time between them.	• DHCP Server Request Activity (see the image below) • DHCP Server Response Activity • DHCP Response Latency • DNS Query Responses • DNS Forwarding Errors

Tip   To get the raw data for a chart that shows delta or rate data, enter Expert mode, set the Chart Link to Data Table, then click the chart. The Raw Data table is below the Chart Data table.

Figure 2: Line Chart Example
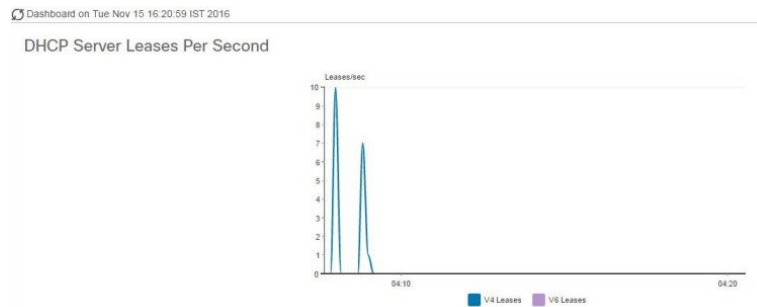
Stacked Area Charts

Dashboard elements rendered as stacked area charts have multiple related metrics plotted as trend charts, but stacked one on top of the other, so that the highest point represents a cumulative value. The values are independently shaded in contrasting colors. (See the image below for an example of the DHCP Server Request Activity chart shown in Figure 2: Line Chart Example, on page 5 rendered as a stacked area chart.)

Figure 3: Stacked Area Chart Example
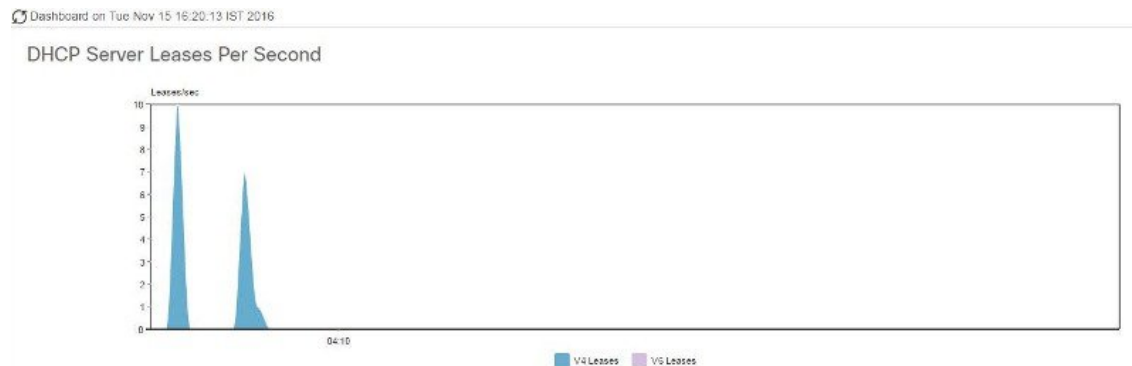
They are stacked in the order listed in the legend, the left-most legend item at the bottom of the stack and the right-most legend item at the top of the stack. The dashboard elements that are pre-set to stacked area charts are:

- DHCP Server Request Activity
- DHCP Server Response Activity
- DHCP Response Latency
- DNS Outbound Zone Transfers
- DNS Inbound Zone Transfers

Other Chart Types

The other chart types available for you to choose are:

- **Line**—One of the line charts described in Table 1: Line Chart Types, on page 4.
- **Stacked Area**—Charts described in the Stacked Area Charts, on page 5.
- **Pie**—Shows a single percentage pie chart of the data averaged over the time sampled.

- **Bar**—Multiple related current value metrics plotted side by side as groups of bars that show the actual data sampled.
- **Stacked Bar**—Addition total of the actual samples. This chart shows more distinct data points than the stacked area chart.

Tip Each chart type shows the data in distinct ways and in different interpretations. You can decide which type best suits your needs.

Getting Help for the Dashboard Elements

You can open a help window for each dashboard element by clicking the title of the element.

Customizing the Display

To customize the dashboard display, you can:

- Refresh the data and set an automatic refresh interval.

- Expand a chart and render it in a different format.

- Convert a graphic chart to a table.

- Download data to comma-separated value (CSV) output.

- Display or hide chart legends.

- Configure server chart types.

- Reset to default display

Each chart supports:

- Resizing

- Drag and drop to new cell position

- Minimizing

- Closing

Each chart has a help icon with a description of the chart and a detailed help if you click the chart title.

Note The changes made to the dashboard/chart will persist only if you click **Save** in the Dashboard window.

Refreshing Displays

Refresh each display so that it picks up the most recent polling by clicking the **Refresh** icon.

Setting the Polling Interval

You can set how often to poll for data. Click the **Dashboard Settings** icon in the upper-right corner of the dashboard display. There are four options to set the polling interval of the cached data, which polls the protocol servers for updates. (See the image below)

*Figure 4: Setting the Chart Polling Interval*
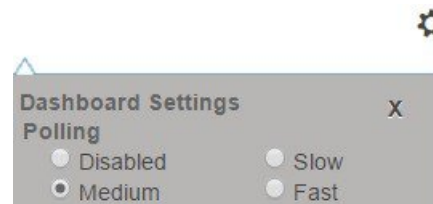
You can set the cached data polling (hence, automatic refresh) interval to:

- **Disabled**— Does not poll, therefore does not automatically refresh the data.

- **Slow**— Refreshes the data every 30 seconds.

- **Medium**— Refreshes the data every 20 seconds.

- **Fast** (the preset value)— Refreshes the data every 10 seconds.

Displaying Charts as Tables

You can choose to display a graphic chart as a table when you magnify the chart by clicking it. At the middle of the top of the dashboard display are the controls for the chart links (see the image below)

Figure 5: Specifying Chart Conversion to Table Format
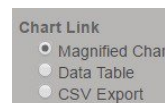
Click the **Data Table** radio button. When you click the chart itself, it opens as a table. The preset display format is Magnified Chart. Displaying Charts as Tables

Exporting to CSV Format

You can dump the chart data to a comma-separated value (CSV) file (such as a spreadsheet) when you magnify the chart by clicking it. In the Chart Link controls at the top of the page (see the above image), click the **CSV Export** radio button, then click the chart. A Save As window appears, where you can specify the name and location of the CSV file.

Displaying or Hiding Chart Legends

You can include or exclude the color-coded legends for charts on the main dashboard page. You might want to remove the legends as you become more familiar with the data and track it on a slightly larger chart display. In the upper-right of the dashboard display are the controls for the legend display (see the image below). The preset value is Visible.

Figure 6: Displaying or Hiding Chart Legends and Selecting Chart

Selecting Dashboard Elements to Include

You can decide how many dashboard elements you want to display on the page. At times, you might want to focus on one server activity only, such as for the DHCP server, and exclude all other metrics for the other servers. In this way, the dashboard becomes less crowded, the elements are larger and more readable. At other times, you might want an overview of all server activities, with a resulting smaller element display.

You can select the dashboard elements to display from the main Dashboard page by clicking **Chart Selections** in the Dashboard Settings dialog. Clicking the link opens the Chart Selection page.

Configuring Server Chart Types

You can set the default chart types on the main dashboard view. You can customize the server charts in the dashboard to display only the specific chart types as default.

To set up default chart type, check the check box corresponding to the Metrics chart that you want to display and choose a chart type from the **Type** drop-down list. The default chart types are consistent and shared across different user sessions (see the image below).

Note You can see either the CDNS or DNS Metrics in the **Dashboard Settings** > **Chart Selection** page based on the service configured on the server.

Tip The order in which the dashboard elements appear in the Chart Selection list does not necessarily determine the order in which the elements will appear on the page. An algorithm that considers the available space determines the order and size in a grid layout. The layout might be different each time you submit the dashboard element selections. To change selections, check the check box next to the dashboard element that you want to display.

Figure 7: Selecting Dashboard Elements
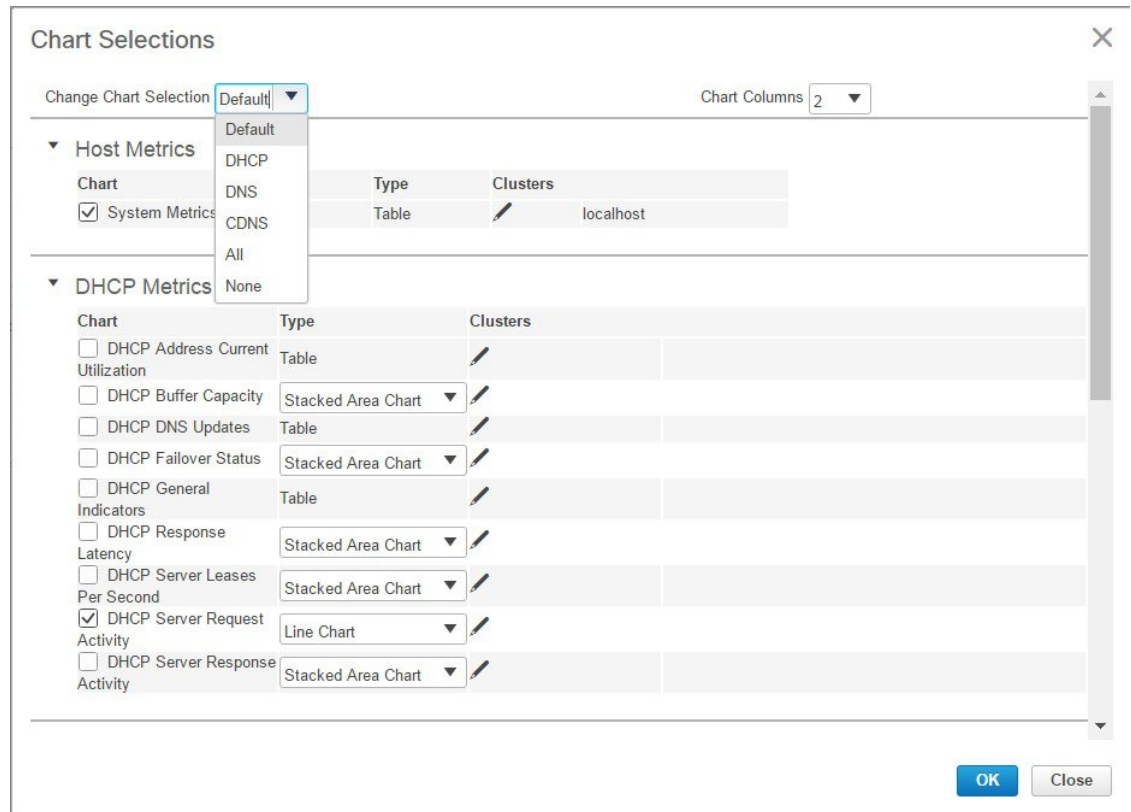
The above image displays the Charts Selection table in the regional web UI. The Clusters column is available only in regional dashboard and it displays the list of local clusters configured. You can add the local cluster by clicking the Edit icon and then by selecting the local cluster name from the Local Cluster List dialog box.

To change selections, check the check box next to the dashboard element that you want to display.

Specific group controls are available in the drop-down list, **Change Chart Selection**, at the top of the page. To:

- Uncheck all check boxes, choose **None**.
- Revert to the preset selections, choose **Default**. The preset dashboard elements for administrator roles supporting DHCP and DNS are:

  - Host Metrics: System Metrics
  - DHCP Metrics: General Indicators
  - DNS Metrics: General Indicators

- Select the DHCP metrics only, choose **DHCP** (see the *"DHCP Metrics" section in Cisco Prime Network Registrar 9.0 DHCP User Guide*).
- Select the DNS metrics only, choose **DNS** (see the *"Dashboard and Authoritative DNS Metrics" section in Cisco Prime Network Registrar 9.0 Authoritative and Caching DNS User Guide*).
- Select the DNS metrics only, choose **CDNS** (see the *"Caching DNS Metrics" section in Cisco Prime Network Registrar 9.0 Authoritative and Caching DNS User Guide*)
- Select all the dashboard elements, choose **All**.

Click **OK** at the bottom of the page to save your choices, or **Cancel** to cancel the changes.

Host Metrics

Host metrics comprise two charts:

- **System Metrics**—See the System Metrics, on page 10.
- **JVM Memory Utilization** (available in Expert mode only).

System Metrics

The System Metrics dashboard element shows the free space on the disk volumes where the Cisco Prime Network Registrar logs and database directories are located, the date and time of the last server backup, and CPU and memory usage for the various servers. System metrics are available if you choose **Host Metrics**: **System Metrics** in the Chart Selection list.

The resulting table shows:

- **Logs Volume**—Current free space out of the total space on the disk drive where the logs directory is located, with the equivalent percentage of free space.
- **Database Volume**—Current free space out of the total space on the disk drive where the data directory is located, with the equivalent percentage of free space.
- **Last Good Backup**—Date and time when the last successful shadow database backup occurred (or Not Done if it did not yet occur) since the server agent was last started.
- **CPU Utilization** (in seconds), **Memory Utilization** (in kilobytes), and (in Expert mode only) the **VM Utilization** (in kilobytes) and Process ID (**PID**) for the:
  - Cisco Prime Network Registrar server agent
  - CCM server
  - DNS server
  - DHCP server
  - Web server
  - SNMP server
  - DNS caching server

How to Interpret the Data

The System Metrics data shows how full your disk volumes are getting based on the available free space for the Cisco Prime Network Registrar logs and data volumes. It also shows if you had a last successful backup of the data files and when that occurred. Finally, it shows how much of the available CPU and memory the Cisco Prime Network Registrar servers are using. The difference in the memory and VM utilization values is:

- **Memory Utilization**—Physical memory that a process uses, or roughly equivalent to the Resident Set Size (RSS) value in UNIX **ps** command output, or to the Task Manager Mem Usage value in Windows: the number of pages the process has in real memory minus administrative usage. This value includes only the pages that count toward text, data, or stack space, but not those demand-loaded in or swapped out.
- **VM Utilization**—Virtual memory that a process uses, or roughly equivalent to the SZ value in UNIX **ps** command output, or to the Task Manager VM Size value in Windows: the in-memory pages plus the

page files and demand-zero pages, but not usually the memory-mapped files. This value is useful in diagnosing how large a process is and if it continues to grow.

Troubleshooting Based on the Results

If you notice the free disk space decreasing for the logs or data directory, you might want to consider increasing the disk capacity or look at the programs you are running concurrently with Cisco Prime Network Registrar.

JVM Memory Utilization

The Java Virtual Machine (JVM) Memory Utilization dashboard element is available only when you are in Expert mode. It is rendered as a line trend chart that traces the Unused Maximum, Free, and Used bytes of JVM memory. The chart is available if you choose **Host Metrics: JVM Memory Utilization** in the Chart Selection list when you are in Expert mode.

How to Interpret the Data

The JVM Memory Utilization data shows how much memory applies to running the dashboard in your browser. If you see the Used byte data spiking, dashboard elements might be using too much memory.

Troubleshooting Based on the Results

If you see spikes in Used memory data, check your browser settings or adjust the polling interval to poll for data less frequently.

Troubleshooting Based on the Results