



Cisco UCS Performance Manager Getting Started Guide

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Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

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Preface

Cisco UCS Performance Manager Getting Started Guide provides detailed instructions for performing basic tasks with Cisco UCS Performance Manager Express and Cisco UCS Performance Manager.

Related publications

Title	Description
<i>Cisco UCS Performance Manager Administration Guide</i>	Provides an overview of Cisco UCS Performance Manager architecture and features, as well as procedures and examples to help use the system.
<i>Cisco UCS Performance Manager Installation Guide</i>	Provides detailed information and procedures for installing and upgrading Cisco UCS Performance Manager.
<i>Cisco UCS Performance Manager Release Notes</i>	Describes known issues, fixed issues, and late-breaking information not already provided in the published documentation set.
<i>Cisco UCS Performance Manager Extended Monitoring Guide</i>	Provides detailed information about additional monitoring capabilities provided through ZenPacks.

Documentation feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to ucs-docfeedback@cisco.com. We appreciate your feedback.

About the Cisco UCS Performance Manager

1

The Cisco UCS Performance Manager and its UI provides you the tools to monitor your Cisco UCS infrastructure. This means you can visualize problems, forecast potential issues, and fix or proactively prevent Cisco UCS and integrated infrastructure component problems.

The Cisco UCS Performance Manager UI provides tools and visual cues that enable you to:

- Know if there is a Cisco UCS or integrated infrastructure problem.
- Recognize and be alerted to unified fabric or component issues.
- Identify exactly where the problem is within your infrastructure.
- Identify which infrastructure components are contributing to the problem.

These topics are discussed in the section titled *How to Use Cisco UCS Performance Manager to Monitor Your System*.

The Cisco UCS Performance Manager UI also provides extensive information about your system that enables you to visualize and analyze both the physical and logical components of your Cisco infrastructure, network interconnections and network performance at all levels, including:

- Unified fabric connections between individual Cisco UCS components
- Bandwidth and Remaining Capacity information between various levels of component hierarchy
- Ports
- Aggregation pools (Port Channels)
- Service profiles
- Organizations
- IO modules
- FEXs
- Chassis
- Blade and Rack servers

Examples that describe how to use the UI to access and view the data are provided in the sections starting with *Topology and Performance*.

The Cisco UCS Performance Manager provides a web-based, graphical interface to display data about your system and the network. The data is presented in the form of screens, panes or dashboard portlets. There are many options concerning what data to display and how to display it. The *Cisco UCS Performance Manager Administration Guide* provides specific instructions about the content of each screen and its configuration.

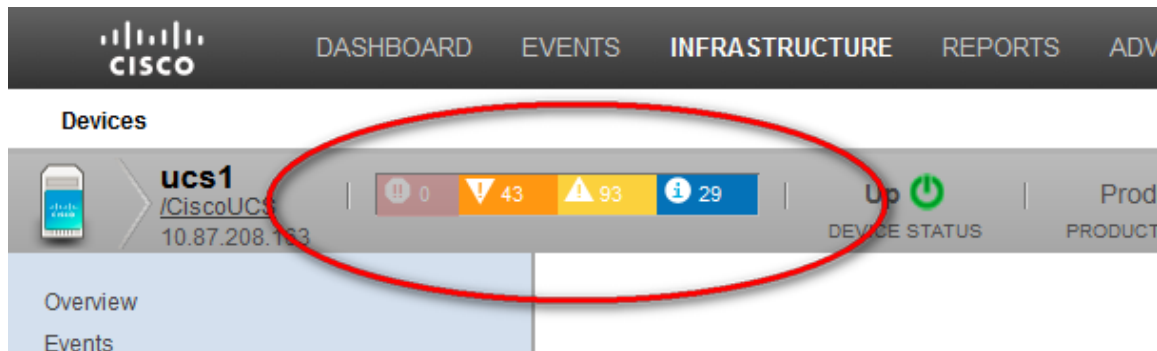
The Cisco UCS Performance Manager is available as either the Cisco UCS Performance Manager Express or the Cisco UCS Performance Manager.

This document provides specific scenario examples to help you perform some basic tasks. The scenarios apply to both Cisco UCS Performance Manager Express and Cisco UCS Performance Manager, unless specifically noted. Additional information is available in *Cisco UCS Performance Manager Extended Monitoring Guide* and *Cisco UCS Performance Manager Administration Guide* documents.

Cisco UCS Performance Manager Views

The Cisco UCS Performance Manager graphical interface enables you to view and analyze many kinds of data about your infrastructure. Among the many panes and windows available within the PM, the configurable Dashboard and Topology panes provide initial summary views into your infrastructure. These panes provide data that enable you to efficiently monitor your system. It is possible to drill down into individual components from these views to display more extensive, specific information. The Dashboard pane provides views into various types of data and can be customized by adding additional informational portlets (panes), dragging components to rearrange them, and resizing/reordering items such row headings.

The Cisco UCS Performance Manager UI also includes in many views an indicator bar with colors and numbers that provide quick visual feedback for various levels of event notification:



The event notification level or severity presented within the indicator bar includes values that indicate the number of occurrences together with the severity color. There are four possible colors that indicate relative severity, listed from most to least severe:

- Red - Critical
- Orange - Error
- Yellow - Warning
- Blue - Info

The Cisco UCS Performance Manager also provides tabular and or graphical reports about usage and performance data stored within historical databases. These reports display various data, depending on the type of report. Report filter options depend on the style of report.

The Cisco UCS Performance Manager collects and organizes data that can be used to identify and diagnose various conditions across your infrastructure, enhancing your ability to explore potential solutions. These conditions include, but are not limited to:

- Over-subscription of resources
- Under-performing components
- Out-of-balance port channel components
- Connection issues
- Overload conditions
- Sources of congestion
- Component misconfiguration

- Failing or inappropriately provisioned components

For descriptions of the various available views and instructions about how to configure the Dashboard and other views, see *Cisco UCS Performance Manager Administration Guide*.

Initial UCS Infrastructure Console Events and Thresholds

After you add your UCS infrastructure to Cisco UCS Performance Manager, a high number of threshold-related events might be displayed in the event console. This can be caused by a UCS configuration that does not align well with the default threshold values for Cisco UCS Performance Manager. You can adjust these thresholds to make your particular UCS environment easier to view and understand. For additional information about how to adjust these thresholds see the "Thresholds" section of the *Cisco UCS Performance Manager Administration Guide*.

Dashboard View

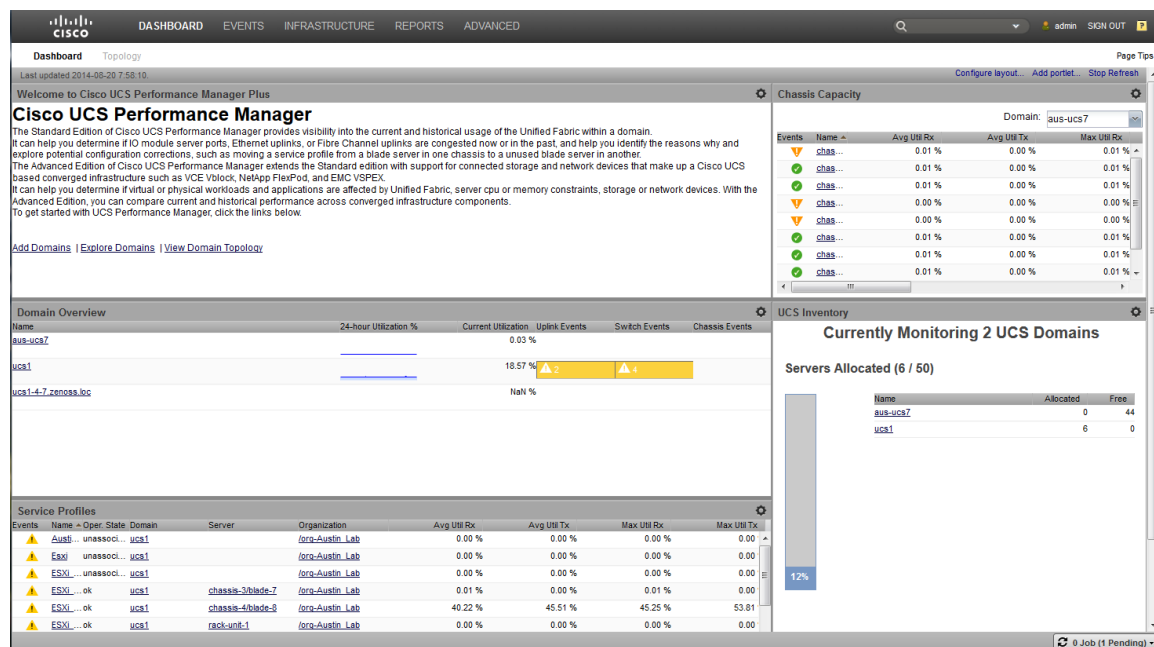
The Dashboard is the initial view that displays when you log into the Cisco UCS Performance Manager. It provides information about the status of your infrastructure. It is the primary window into devices and events that the system enables you to monitor.

The Dashboard view can be configured to provide customized data display. Additional portlets (panes) can be added to the view, including, for example:

- A **Blade Server Capacity** pane that helps you find servers consuming the most bandwidth
- Panes that can show **Out Of Balance Issues**
- A **Domain Overview** pane that shows Fabric Usage by Domain
- A **UCS Inventory** pane that shows unallocated servers by domain
- A **Chassis Capacity** pane that shows bandwidth consumption by chassis

See the *Cisco UCS Performance Manager Administration Guide* guide for directions.

The following is an example of the Dashboard view.

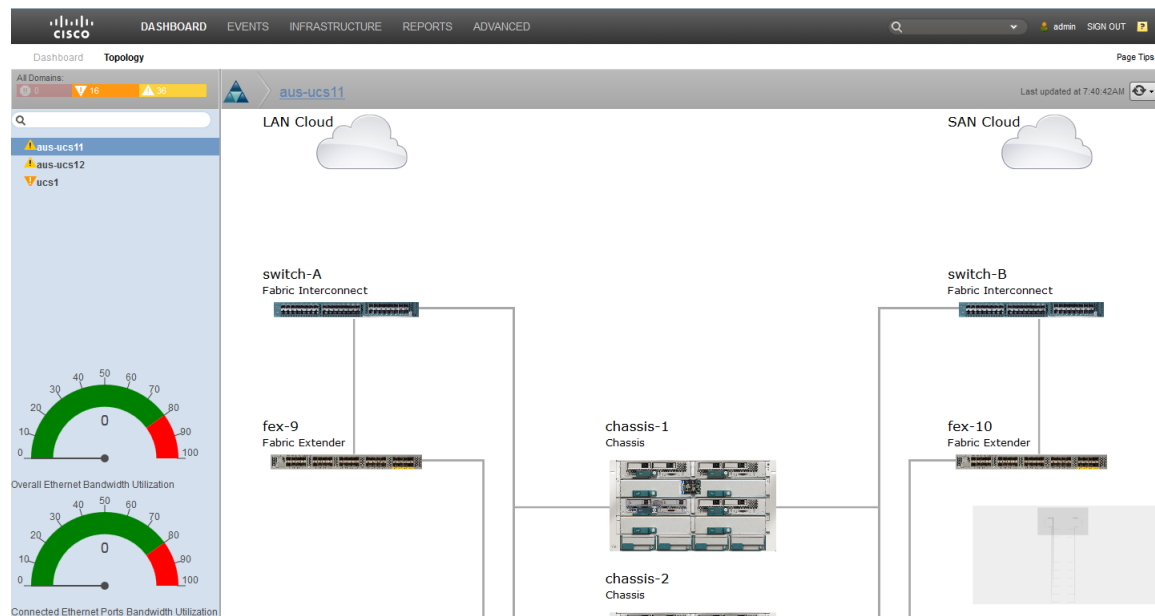


Topology View

The Topology screen provides a special view that displays a graphical view of Cisco UCS components and the unified fabric.

To launch the Topology view, click the **Topology** button.

The following figure shows an example of the Topology View:

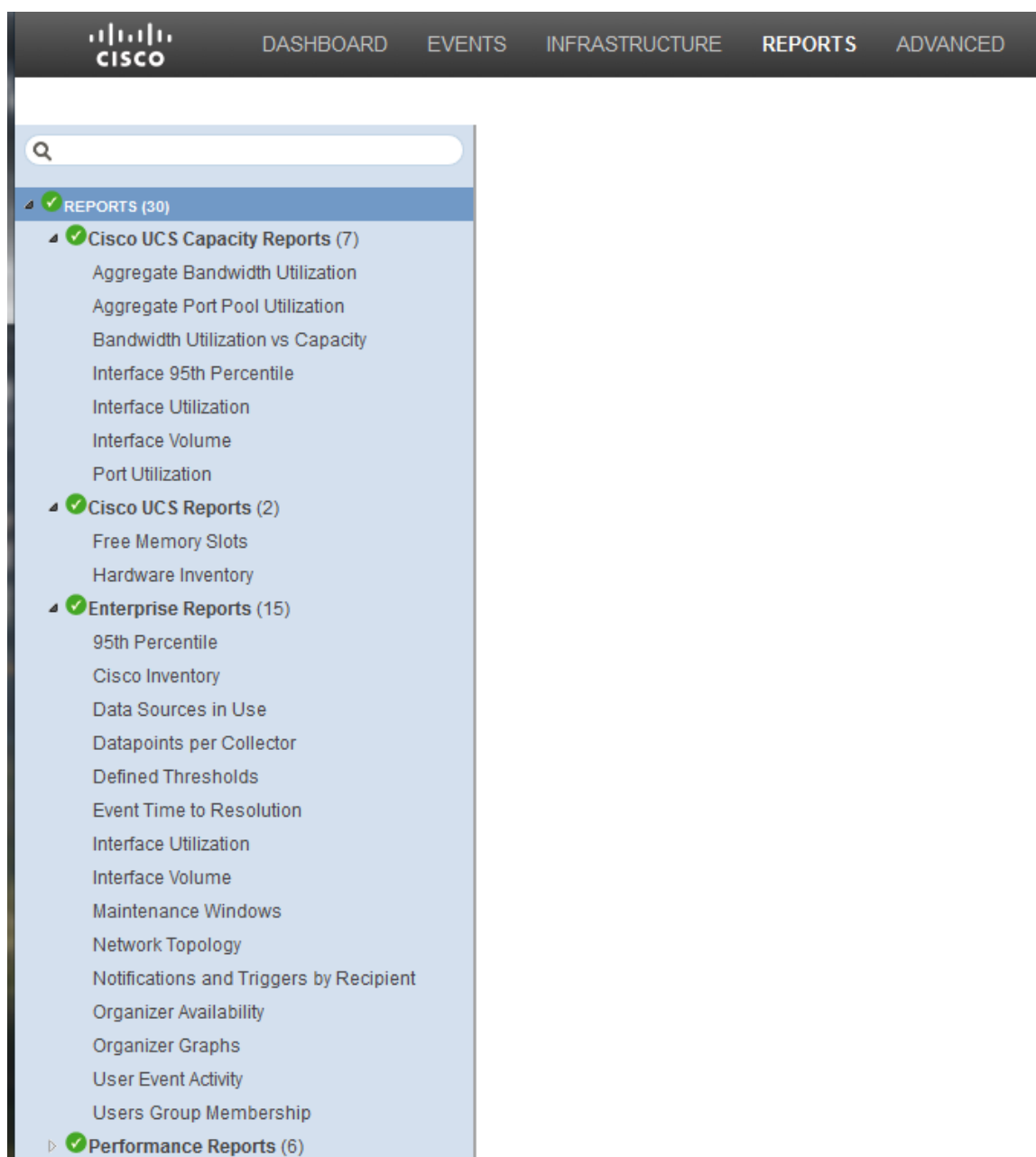


Reports View

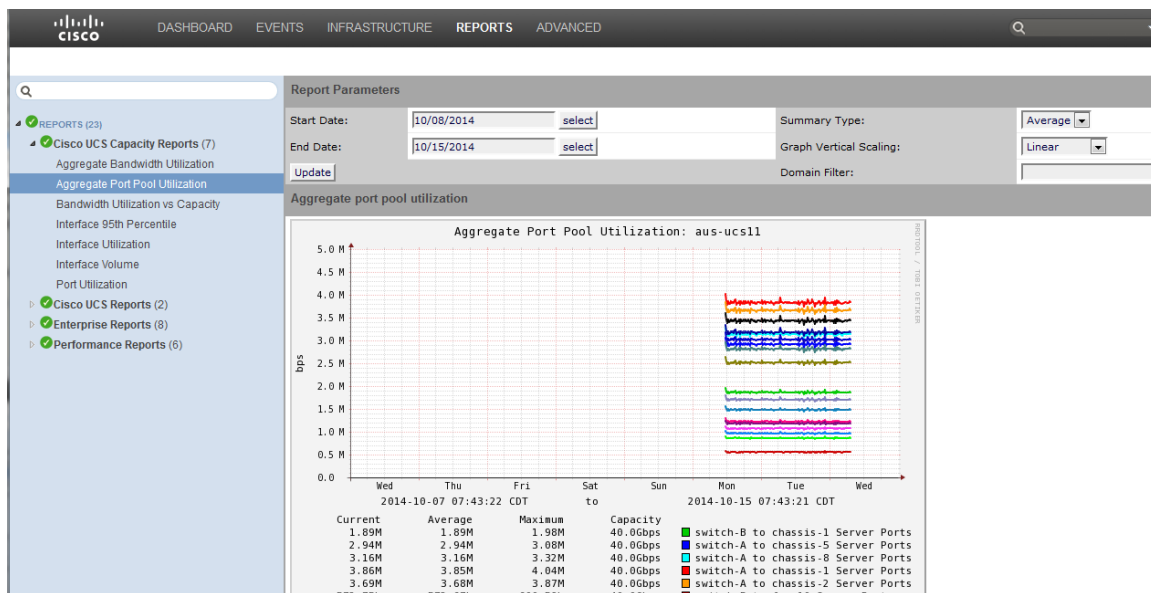
The Reports pane displays historical data about your system performance. The reports can be either tabular or graphical depending on the style of report. For additional information about the Reports view and instructions about how to configure it, see the Cisco UCS Performance Manager Administration guide.

To launch the Reports view, click the **Reports** button.

The following figure shows an example menu of available UCS Reports in the **Reports** pane:



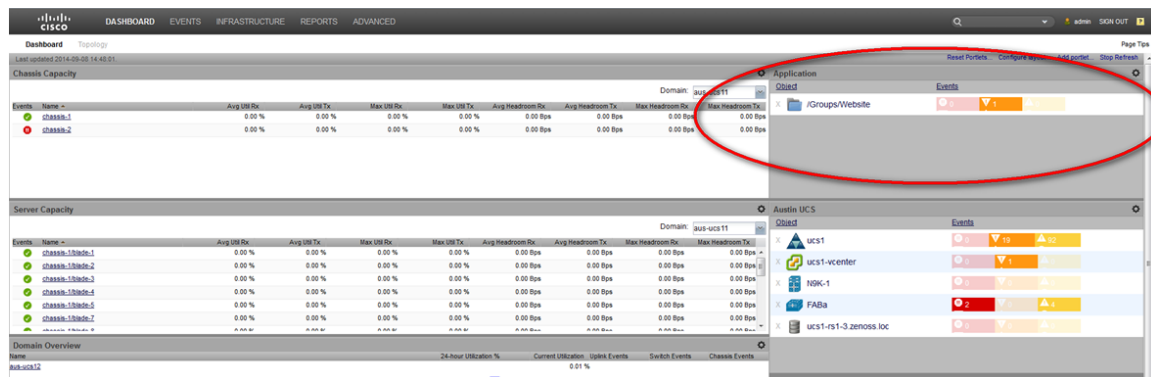
The following figure shows an example Report pane:



Application View

Note This functionality is only available with a Cisco UCS Performance Manager license.

The Cisco UCS Performance Manager UI enables you to add application view portlets to the dashboard to expand and enhance the UI capabilities. For additional instructions on how to add an application view, see [How to Add an Application View to the Dashboard](#) on page 107.

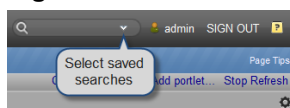


Cisco UCS Performance Manager Documentation

The Cisco UCS Performance Manager supplies a documentation set. It is available through the **User Information Area**.

User Information Area

Figure 1: User Information Area



The User information area offers information and selections:

- **Login ID**- The ID of the user currently logged in appears at the far left of this area. Click the ID to edit user settings, such as authentication information, roles, and groups. (You also can access user settings from the **Advanced > Settings > Users** page.)
- **Sign Out**- Click to log out of the system.
- **Help** icon - Click to access product documentation.

How to Use Cisco UCS Performance Manager to Monitor Your System

2

The Cisco UCS Performance Manager enables you to survey and monitor your infrastructure for throughput, network performance, and connection issues. The graphical UI enables you to pinpoint trouble areas and drill down to access additional, expanded information about each infrastructure component.

The UI enables you to:

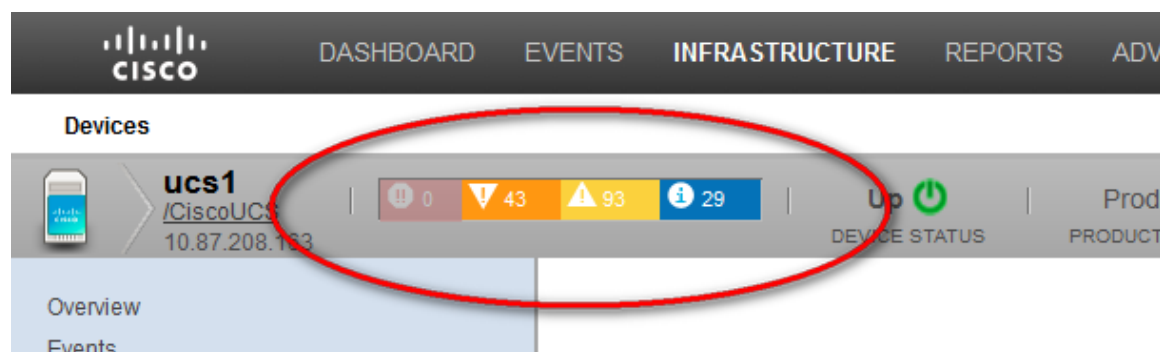
- Know when there is an infrastructure problem.
- Recognize and be alerted to infrastructure issues.
- Identify where in the infrastructure the problem exists.
- Identify the infrastructure components experiencing or contributing to the problem.

Understanding what information is available and how to access it through the Cisco UCS Performance Manager UI is the key to successfully using Cisco UCS Performance Manager to monitor your system.

How do I Know There is a Problem?

The Cisco UCS Performance Manager UI helps you to determine if there is a problem in your infrastructure. The UI provides graphics and color markers that are easy to see and easy to interpret.

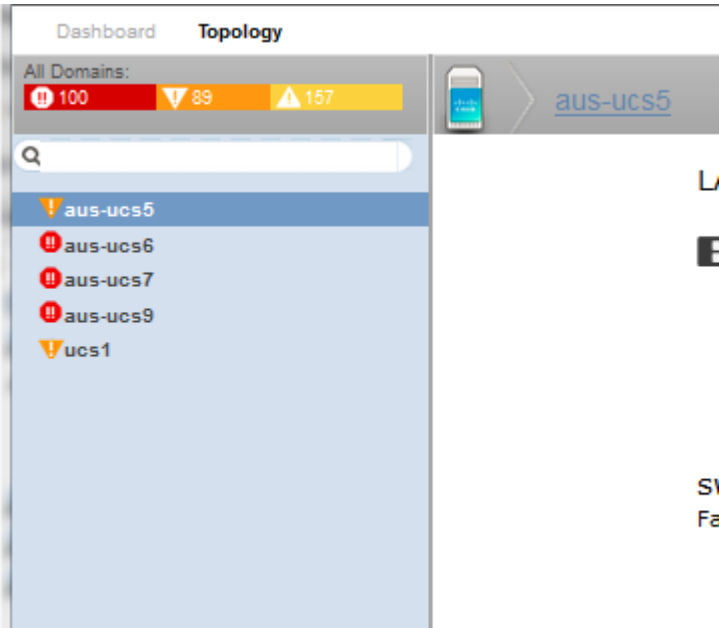
The UI includes (in many views) indicator bars with colors and numbers that provide quick visual feedback for various levels of event notification:



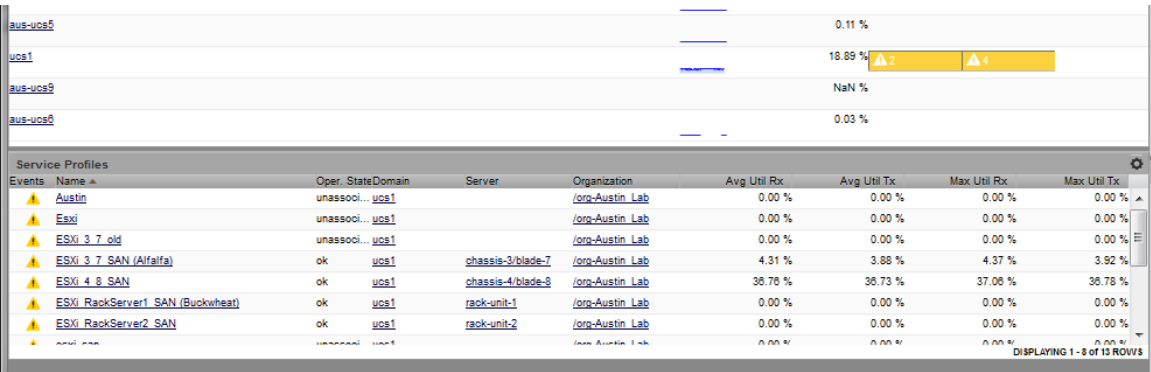
The event notification level or severity presented within the indicator bar includes values that indicate the number of occurrences together with the severity color. There are four possible colors that indicate relative severity, listed from most to least severe:

- Red - Critical
- Orange - Error
- Yellow - Warning
- Blue - Info

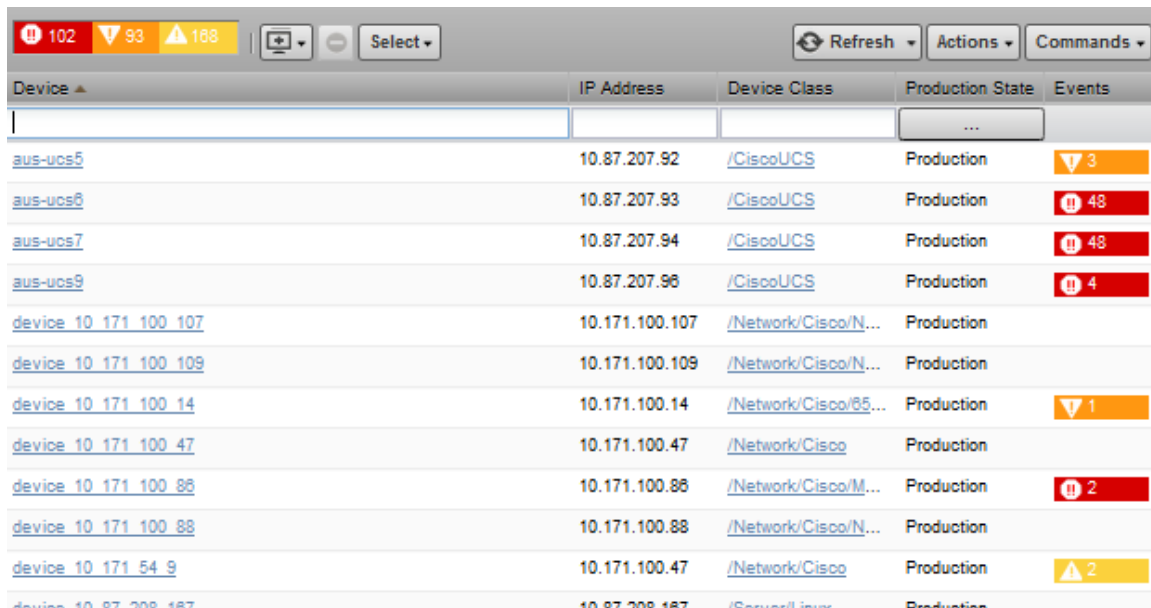
For example, the following figures show various components marked with color to signify they have a problem:



Colored icons and bars indicate issues:

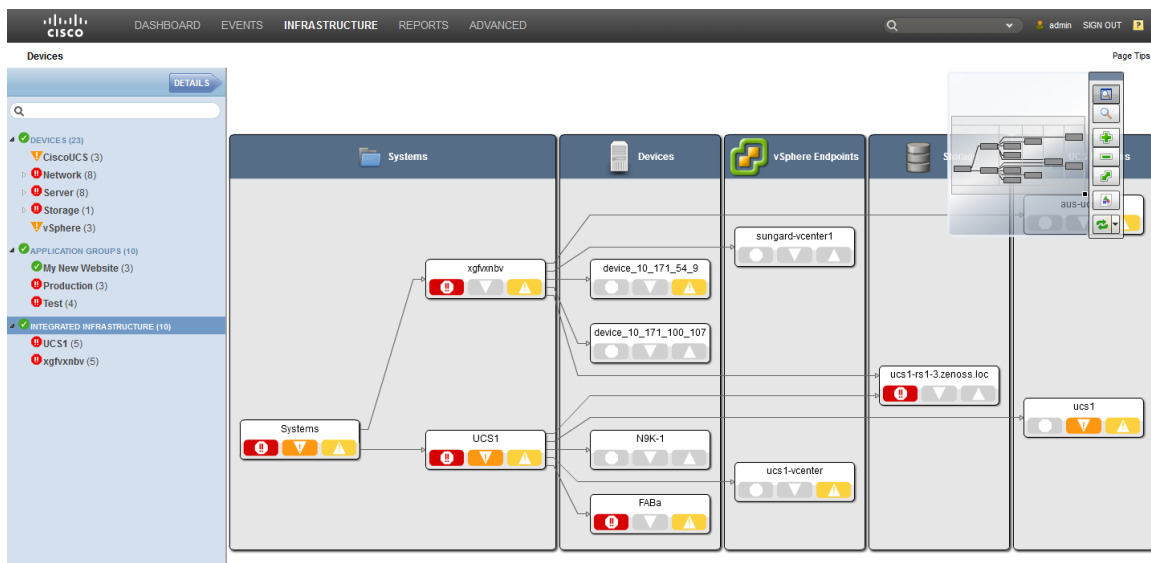


Devices show events in various state of severity together with counts:



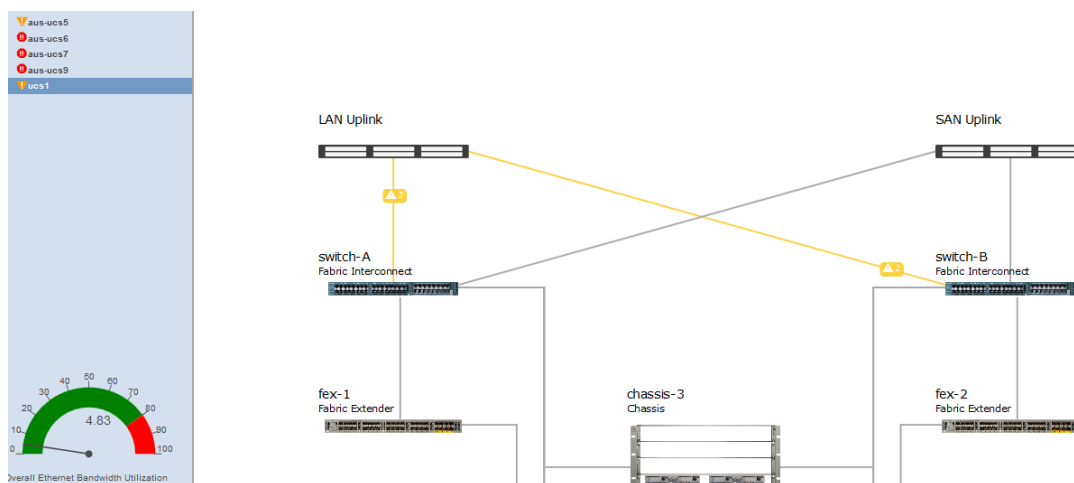
Device	IP Address	Device Class	Production State	Events
aus-ucs5	10.87.207.92	/CiscoUCS	Production	3
aus-ucs6	10.87.207.93	/CiscoUCS	Production	48
aus-ucs7	10.87.207.94	/CiscoUCS	Production	48
aus-ucs9	10.87.207.96	/CiscoUCS	Production	4
device 10 171 100 107	10.171.100.107	/Network/Cisco/N...	Production	
device 10 171 100 109	10.171.100.109	/Network/Cisco/N...	Production	
device 10 171 100 14	10.171.100.14	/Network/Cisco/65...	Production	1
device 10 171 100 47	10.171.100.47	/Network/Cisco	Production	
device 10 171 100 88	10.171.100.88	/Network/Cisco/M...	Production	2
device 10 171 100 88	10.171.100.88	/Network/Cisco/N...	Production	
device 10 171 54 9	10.171.100.47	/Network/Cisco	Production	2

Colored icons indicate potential issues in various views, including the **Dynamic View**:



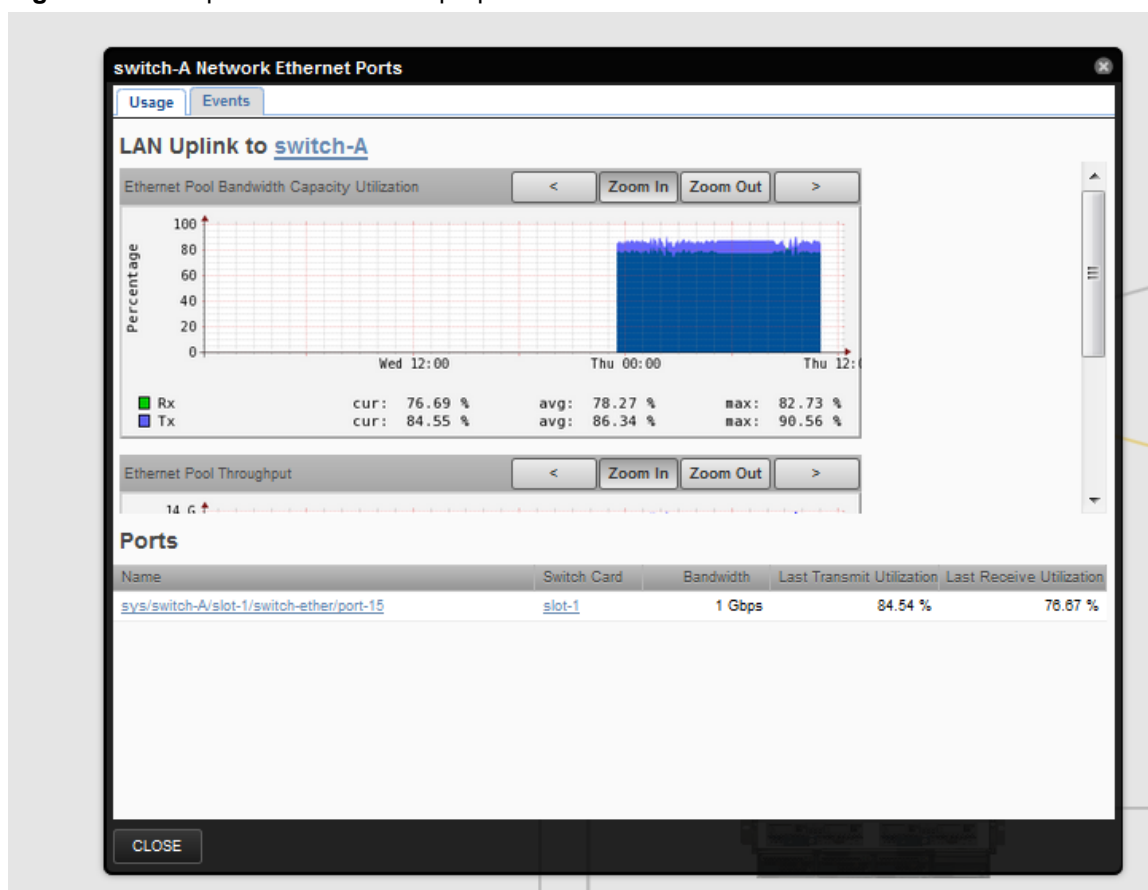
How can I Recognize and be Alerted to Infrastructure Issues?

The Cisco UCS Performance Manager Express UI provides visual feedback and or event notification (email) for detected infrastructure component problems in the form of brightly colored fonts and/or backgrounds for component information. The visual problem indicator cues include highlighted network connection lines drawn between components in the **Dynamic** or **Topology** views. For example, the following figure shows two **yellow** connection lines in the **Topology** view that indicate a problem. One yellow connection is between the **LAN Uplink** and the **switch-A (Fabric Interconnect)** component, and the other is between the **LAN Uplink** and the **switch-B (Fabric Interconnect)** component:



To view additional information about the problem connection (*yellow* line) between components, double-click the line. For example, double-click the line between the **LAN Uplink** and the **switch-A (Fabric Interconnect)** component to display the informational window:

Figure 2: LAN Uplink to switch-A Pop-up Window



Additional component specific information can be displayed. Click on the **tabs** and **links** that display within the pop-up window. In this example there are two tabs and two links for **Name** and the **Switch Card**.

How can I Identify Where the Infrastructure Problem is?

The Cisco UCS Performance Manager enables you to identify where in your infrastructure a problem or bottleneck exists. Use the queues provided within the UI to quickly and efficiently visually survey your system. Color indicators provide visual markers for problems that involve limited throughput, degraded network performance, and connection issues. The graphical UI enables you to pinpoint trouble areas and drill down to access additional, expanded information about each infrastructure component.

The available tools include the **Topology** and **Dynamic** views as well as Performance Graphs (for aggregates and individual components) and event notifications controlled through threshold trigger definitions. For additional information about how to use these tools, see the following documents:

- *Cisco UCS Performance Manager Administration Guide*
- *Cisco UCS Performance Manager Extended Monitoring Guide*

How can I Identify Problem Infrastructure Components?

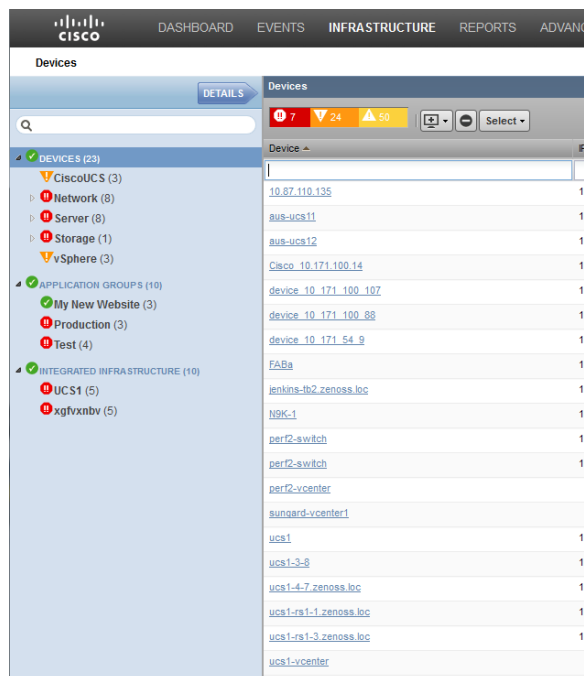
The Cisco UCS Performance Manager Express helps identify the infrastructure components experiencing or contributing to performance issues. The concepts of analyzing network capacity, determining available remaining capacity, detecting network congestion and addressing fabric constraints are discussed in *Cisco UCS Performance Manager Administration Guide*. A specific example of how to access the data and use it to determine issues is discussed in the sections that follow.

How can I View Current Performance Data?

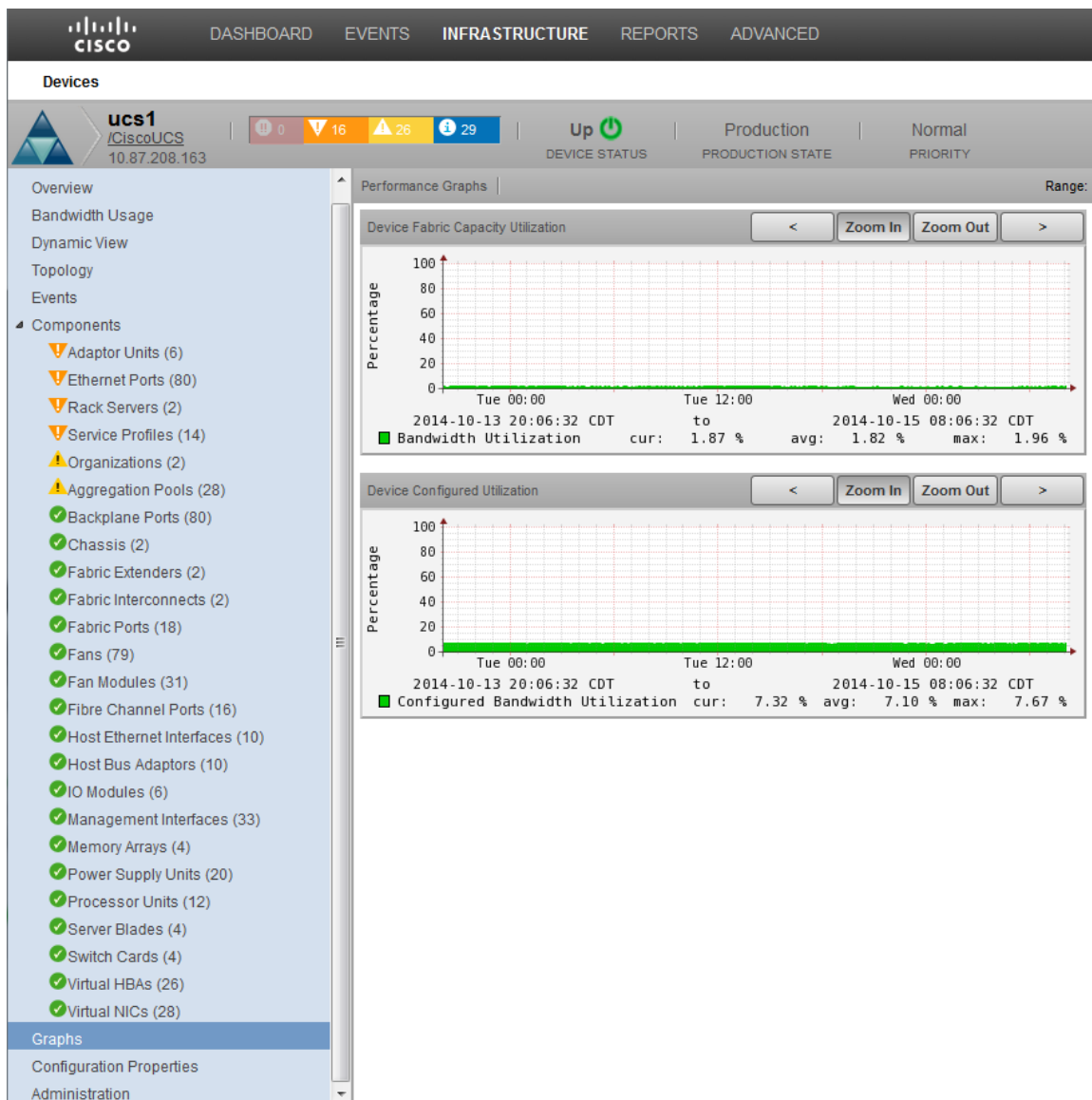
The Cisco UCS Performance Manager Express provides both current and historical performance data in the form of **Reports** and **Graphs**. This data is available in both tabular and graphical forms and various display parameters can be defined.

To access current graphical data about your system performance, perform the following:

- 1 Click **Infrastructure** to display the **Devices** pane on the left. For example:

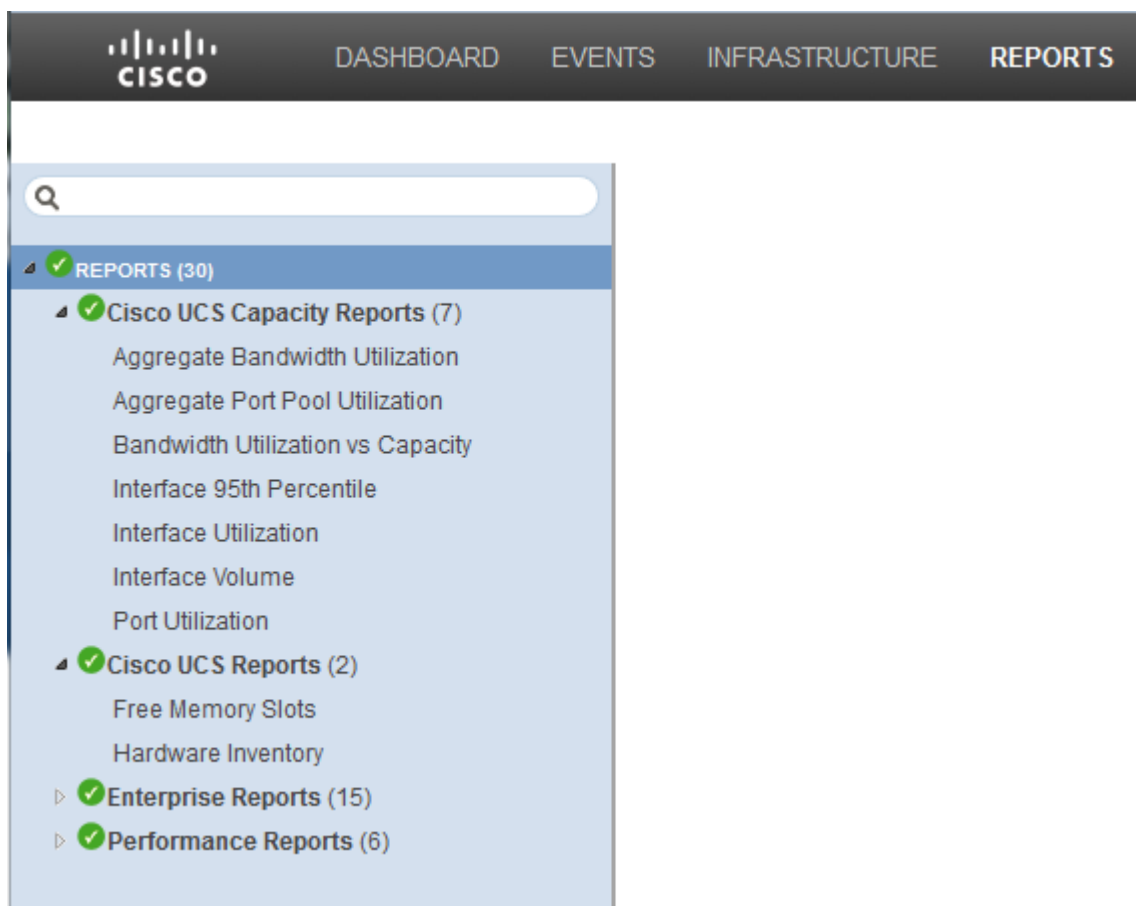


- 2 Select a device from the left-hand **Devices** pane, for example, **CiscoUCS**.
- 3 Double-click a device name in the right-hand **Device** list, **ucs1** for example.
- 4 Select **Graphs** from the left-hand pane to display the **Performance Graphs** pane on the right:

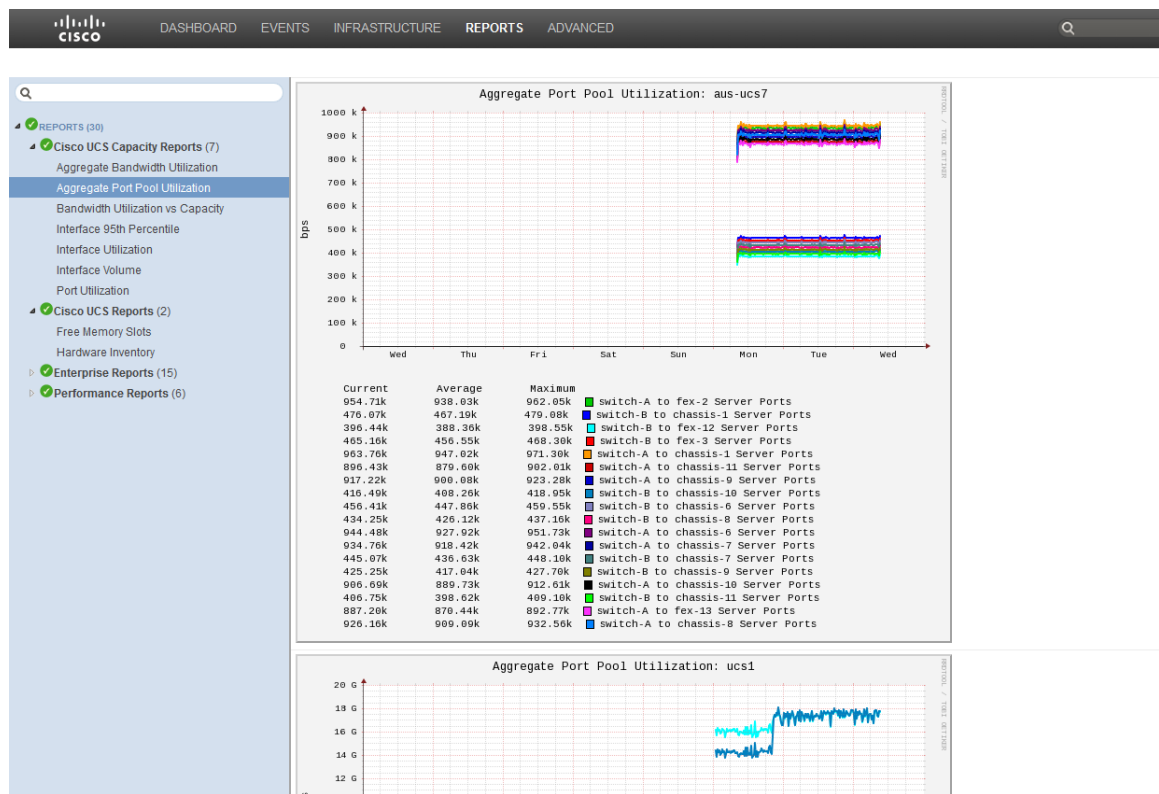


If you prefer to view the various tabular reports, with both current and historical data, depending on your defined specifications, perform the following:

- 1 Click **Reports** to display the left-hand **Reports** pane. For example:



- 2 Expand the various **Reports (nn)** available and select your choice to display the report information in the right pane. For example, **Aggregate Bandwidth Utilization**:



Depending on the available options that display, you can customize your report and the information it displays.

How can I be Notified when there is a Problem?

The Cisco UCS Performance Manager enables you to configure alerts and traps using SNMP. These traps and events can be used to trigger notifications such as email.

Working with Triggers and Notifications

You can create *notifications* to send email or pages, create SNMP traps, or execute arbitrary commands in response to an event. Notifications also can be used to notify other management systems, and to execute arbitrary commands to drive other types of integration. How and when a notification is sent is determined by a *trigger*, which specifies a rule comprising a series of one or more conditions.

To set up a notification, you must:

- Create a trigger, selecting the rules that define it
- Create a notification, selecting one or more triggers that cause it to run
- Choose appropriate options and subscribers, depending on the notification type

Read the following sections to learn about:

- Setting up triggers and trigger permissions
- Setting system SMTP settings for notifications
- Setting up notifications and notification permissions

Creating a Trigger

To create a trigger:

- 1 Select **Events > Triggers** from the Navigation menu.

The Triggers page appears. It displays all existing triggers, indicating whether each is enabled.

- 2 Click the **Add** icon.

The Add Trigger dialog appears.

- 3 Enter a name for the trigger, and then click **Submit**.

The trigger is added to the list and is automatically enabled.

- 4 Double-click the trigger, or click **Edit** to open the Edit Trigger dialog.

Figure 3: Edit Trigger

Enter information or make selections to define the trigger:

- **Enabled** - Select this option to enable the trigger.
- **Rule** - Define the rule comprising the trigger:
 - Select All or Any from the list to specify whether a notification will be triggered based on all, or any one, of the trigger rules.
 - Define the rule by making selections from each event field.

To add a rule to the trigger, click the **Add** icon.

Setting Global Trigger Permissions

You can set global permissions for viewing, editing, and managing triggers. Global permissions are given to any user with "manage" permission, which includes:

- admin, Manager, and ZenManager roles
- Trigger owner

Edit global permissions from the Users tab on the Edit Trigger dialog.

Global options are:

- **Everyone can view** - Provides global view permission.
- **Everyone can edit content** - Provides global update permission.
- **Everyone can manage users** - Provides global manage permission.

Figure 4: Edit Trigger - Users Tab

The screenshot shows the 'Edit Trigger' dialog box with the 'Users' tab selected. The 'Global Options' section contains three unchecked checkboxes: 'Everyone can view', 'Everyone can edit content', and 'Everyone can manage users'. Below this is a 'Users' section with a search bar, an 'Add' button, and a minus button. A table with four columns is visible: 'Type', 'Users', 'Write', and 'Manage'. The table is currently empty. At the bottom of the dialog are 'SUBMIT' and 'CANCEL' buttons.

Setting Individual Trigger Permissions

You can grant permissions to individual users. For each user added, you can select:

- **Write** - Select this option to grant the user permission to update the trigger
- **Manage** - Select this option to grant the user permission to manage the trigger.

Working with Notifications

Setting up a notification involves:

- Creating the notification
- Defining notification content (for email- or page-type notifications)
- Defining the SNMP trap host (for SNMP trap-type notifications)
- Defining commands to run (for command-type notifications)
- Setting notification permissions
- Setting up notification schedules

Creating or Editing a Notification

To create or edit a notification:

- 1 Select **Events > Triggers** from the Navigation menu.
- 2 Select **Notifications** in the left panel.

The Notifications page appears.

Figure 5: Notifications

Enabled	Id	Trigger	Action	Subscribers
Yes	RemodeHostsOnMigrat		command	0
Yes	RemodeEndpoint		command	0
No	MSEXchangeSWMTotal		command	0
Yes	RemodeHostByRef		command	0
Yes	RemodeOnMigration		command	0
Yes	rancid-run		command	0
No	ExampleServiceEmailNo	Example Service Triggs	email	0

The Notifications area lists all defined notifications. For each notification, the area indicates whether the notification is enabled (Yes or No), the Action associated with the notification, and the number of notification subscribers.

To edit a notification, double-click it; or select it, and then click the **Action** icon.

To create a notification:

- a Click the **Add** icon.

The Add Notification dialog appears.

- b Enter a name for the notification.
- c Select an Action associated with the notification:
 - **Command**- Allows the system to run arbitrary shell commands when events occur. Common uses of a Command notification include:
 - *Auto-remediation of events.* You can use SSH to remotely restart services on a UNIX system when they fail, or winexe to do the same for Windows services.
 - *Integration with external systems.* This includes opening tickets in your incident management system.
 - *Extending alerting mechanisms.* Cisco UCS Performance Manager supports email and pagers as alerting mechanisms "out of the box" through normal alerting rules.
 - **Email** - Sends an HTML or text email message to authorized subscribers when an event matches a trigger rule.
 - **Page** - Pages authorized subscribers when an event matches a trigger rule.
 - **Syslog** - Sends a message to the syslog.
 - **SNMP Trap** - Sends an SNMP trap when an event matches a trigger rule.
- d Click **Submit**.
- e Edit your newly created notification by double-click it or by selecting it and clicking the **Action** icon.

The Edit Notification dialog appears.

Figure 6: Edit Notification

Edit Notification Subscription

Notification | Content | Subscribers

Enabled: ☐ Delay (seconds):

Send Clear: ☐ Repeat (seconds):

Send only on Initial Occurrence?: ☒

Triggers

Add

Trigger

Example Service Trigger

On the Notification tab, you can select or set:

- **Enabled** - Select this option to enable the notification.
- **Send Clear** - Specify to send a notification when the problem has been resolved by a clear event.
- **Send only on Initial Occurrence** - Select this option to send the notification only on the first occurrence of the trigger.
- **Delay (seconds)** - Specify the minimum age (in seconds) of an event before the notification will be executed. You might want to set a delay to prevent notifications being sent for transient problems, or to prevent multiple notifications being sent for the same problem.

For example, if you have five events that come in and match the trigger in 45 seconds, specifying a delay of 60 seconds will ensure that only one notification is sent. Additionally, if you have an event that matches the trigger at 15 seconds and is later cleared by another event at 45 seconds, a delay of 60 seconds will prevent notifications being sent.

- **Repeat (seconds)** - Specify how often to repeat the notification until the event that triggered it is resolved.

Defining Notification Content

To define notification content, click the **Content** tab of the notification.

For email-type notifications, you can use the default configuration for the following fields, or customize them to your needs:

- **Body Content Type** - Select HTML or text.
- **Message (Subject) Format** - Sent as the subject of the notification.
- **Body Format** - Sent in the notification.
- **Clear Message (Subject) Format** - Sent when a notification clears.
- **Body Format** - Sent when a notification clears.

- **From Address for Emails** - Sent as email address of sender
- **Various SMTP settings** - Used to define SMTP port, username, and password

Figure 7: Define Notification Content (Email)

Edit Notification - ExampleServiceEmailNotification (email)

Notification Content Subscribers

Body Content Type:

Message (Subject) Format:

Body Format:

```

Device: ${evt/device}
Component: ${evt/component}
Severity: ${evt/severity}
Time: ${evt/lastSeen}
Message:
${evt/message}
<a tal:attributes="href urls/eventUrl">Event Detail</a>
<a tal:attributes="href urls/ackUrl">Acknowledge</a>
<a tal:attributes="href urls/closeUrl">Close</a>
<a tal:attributes="href urls/eventsUrl">Device Events</a>
The following events are causes of this event:
<tal:block tal:repeat="item esa/causes">
Impact Chain: ${item/impactChain}
Device: ${item/evt/device}
Component: ${item/evt/component}
Severity: ${item/evt/severity}
Time: ${item/evt/lastSeen}
Message:
${item/evt/message}
<a tal:attributes="href item/urls/eventUrl">Event Detail</a>
<a tal:attributes="href item/urls/ackUrl">Acknowledge</a>
<a tal:attributes="href item/urls/closeUrl">Close</a>
<a tal:attributes="href item/urls/eventsUrl">Device
Events</a>
</tal:block>

```

Clear Message (Subject) Format:

Body Format:

```

Event: '${evt/summary}'
Cleared by: '${evt/id}'
At: ${evt/stateChange}
Device: ${evt/device}
Component: ${evt/component}
Severity: ${evt/severity}
Message:
${evt/message}
<a href="${urls/reopenUrl}">Reopen</a>

```

SUBMIT CANCEL

For page-type notifications, you can use the default configuration for the following fields, or customize them to your needs:

- **Message (Subject) Format** - Sent as the subject of the notification.
- **Clear Message (Subject) Format** - Sent when a notification clears.

Figure 8: Edit Notification Content (Page)

Notification Content Variables

Within the body of your email, page, and command notifications, you can specify information about the current event, in the form:

```
'${objectname/objectattribute}'
```

Note Do not escape event command messages and event summaries. For example, write this command as: `${evt/summary}` (rather than `echo '${evt/summary}'`).

Object names may be `evt`, `evtSummary`, or `urls`; or for clearing event context, `clearEvt` and `clearEventSummary`. For each object name, the following lists show valid attributes (for example, `${evt/DevicePriority}`):

- `evt/` and `clearEvt/`
 - `DevicePriority`
 - `agent`
 - `clearid`
 - `component`
 - `count`
 - `created`
 - `dedupid`
 - `device`
 - `eventClass`
 - `eventClassKey`
 - `eventGroup`
 - `eventKey`
 - `eventState`

- evid
- facility
- firstTime
- ipAddress
- lastTime
- manager
- message
- ntevid
- ownerid
- priority
- prodState
- severity
- stateChange
- status
- summary

Note The `message` and `summary` names are, by default, wrapped in double quotes in event commands.

- `eventSummary/` and `clearEventSummary/`

- uuid
- occurrence
- status
- first_seen_time
- status_change_time
- last_seen_time
- count
- current_user_uuid
- current_user_name
- cleared_by_event_uuid
- notes
- audit_log
- update_time
- created_time
- fingerprint
- event_class
- event_class_key
- event_class_mapping_uuid
- actor
- summary
- message
- severity
- event_key
- event_group
- agent
- syslog_priority
- syslog_facility
- nt_event_code
- monitor
- tags

- `urls/`
 - `ackUrl`
 - `closeUrl`
 - `reopenUrl`
 - `eventUrl`
 - `eventsUrl`

ZenPacks also can define additional notification actions, and can extend the context available to notifications to add additional objects or attributes.

Defining the SNMP Trap Host

For SNMP trap-type notifications, enter information or make selections on the Content tab of the notification:

- **SNMP Trap Destination**- Specify the host name or IP address where the trap should be sent.
- **SNMP Community**- Specify the SNMP community. By default, this is public.
- **SNMP Version**- Select v2c (default) or v1.
- **SNMP Port**- Specify the SNMP port. Typically, this is 162.

SNMP traps sent as a result of this notification are defined in the `ZENOSS-MIB` file. You can find this MIB file on any Cisco UCS Performance Manager server at `$ZENHOME/share/mibs/site/ZENOSS-MIB.txt`.

Figure 9: Edit Notification Content (SNMP Trap)

The screenshot shows a window titled "Edit Notification - test_trap (trap)". It has three tabs: "Notification", "Content" (which is selected), and "Subscribers". Under the "Content" tab, there are four configuration fields:

- SNMP Trap Destination:** A text input field containing the value "traphost".
- SNMP Community:** A text input field containing the value "public".
- SNMP Version:** A dropdown menu with "v2c" selected.
- SNMP Port (usually 162):** A spinner box with the value "162".

At the bottom of the dialog, there are two buttons: "SUBMIT" and "CANCEL".

Defining Commands to Run

For Command-type notifications, you must specify the command to run when configured triggers are matched. Do this on the Content tab of the notification. Configure these fields:

- **Command Timeout** - By default, 60 seconds.

- **Command** - Command to run when a trigger is matched.
- **Clear Command** - Optional command to run when the triggering event clears.
- **Environment variables** -

Figure 10: Edit Notification Content (Command)

The screenshot shows a web-based configuration window titled "Edit Notification - command_notification (command)". It features three tabs: "Notification", "Content", and "Subscribers". The "Content" tab is currently selected. Within this tab, there are four input fields: "Command Timeout (seconds):" which is set to "60", "Command:", "Clear Command:", and "Environment variables:". Each of these last three fields is currently empty. At the bottom of the window, there are two buttons labeled "SUBMIT" and "CANCEL".

Setting Global Notification Permissions

By establishing permissions, you can control which users have the ability to view, manage, and update notifications. Permissions are granted based on the user's assigned role. The following table lists account roles and their associated notification permissions:

Role	Permissions
admin, Manager, ZenManager	Users assigned the admin, Manager, or ZenManager roles can view, update, and manage any notification.
notification owner	When a user creates a notification, he is designated the owner of that notification. During the life of the notification, the owner can view, update, and manage it.
all other users (including those assigned ZenUser and ZenOperator roles)	Must be specifically granted permissions through the interface to view, edit, or manage notifications.

You can set global permissions for viewing, updating and managing a notification. Global permissions are given to any user with "manage" permission, which includes:

- admin, Manager, and ZenManager roles
- Notification owner

Edit global permissions from the Subscribers tab on the Edit Notification Subscription panel.

Global options are:

- **Everyone can view** - Provides global view permission.
- **Everyone can edit content** - Provides global update permission.
- **Everyone can manage subscriptions** - Provides global manage permission.

Permission checks occur when the data is sent to the browser and when any action occurs. To determine where a user can make modifications to a particular tab, permission checks are performed on global roles, then managerial roles, and then individual roles. Any role that provides the required permission will allow that permission's associated behavior.

Figure 11: Edit Notification

Type	Subscribers	Write	Manage
user	admin (User)	<input type="checkbox"/>	<input type="checkbox"/>

Setting Individual Notification Permissions

You can grant permissions to individual users or groups. For each user or group added, you can select:

- **Write** - Select this option to grant the user or group permission to update the notification.
- **Manage** - Select this option to grant the user or group permission to manage the notification.

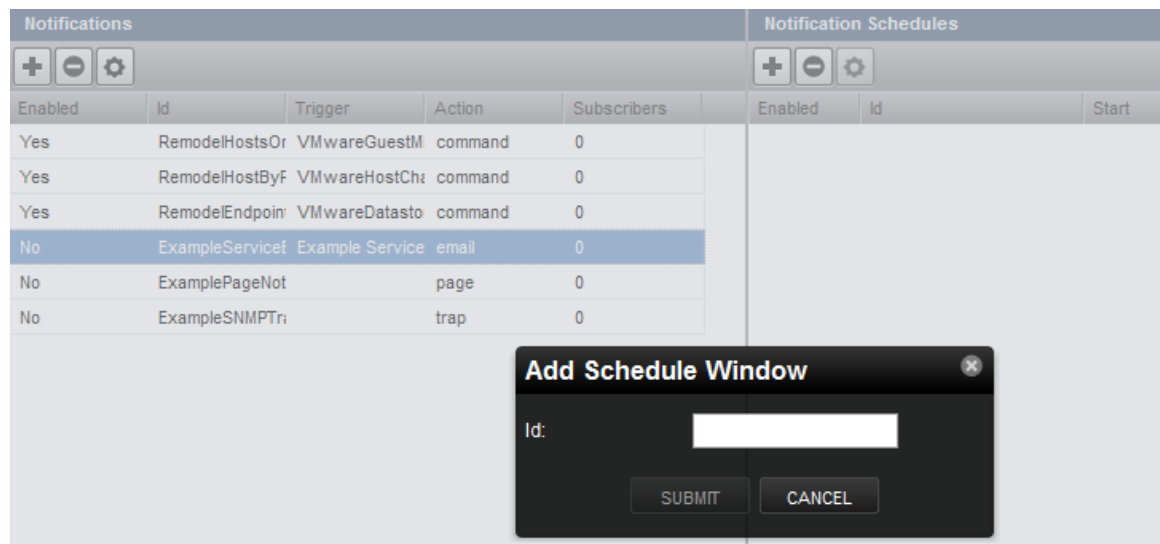
You can manually enter in the name of a user or group, or select one from the list of options.

Setting Up Notification Schedules

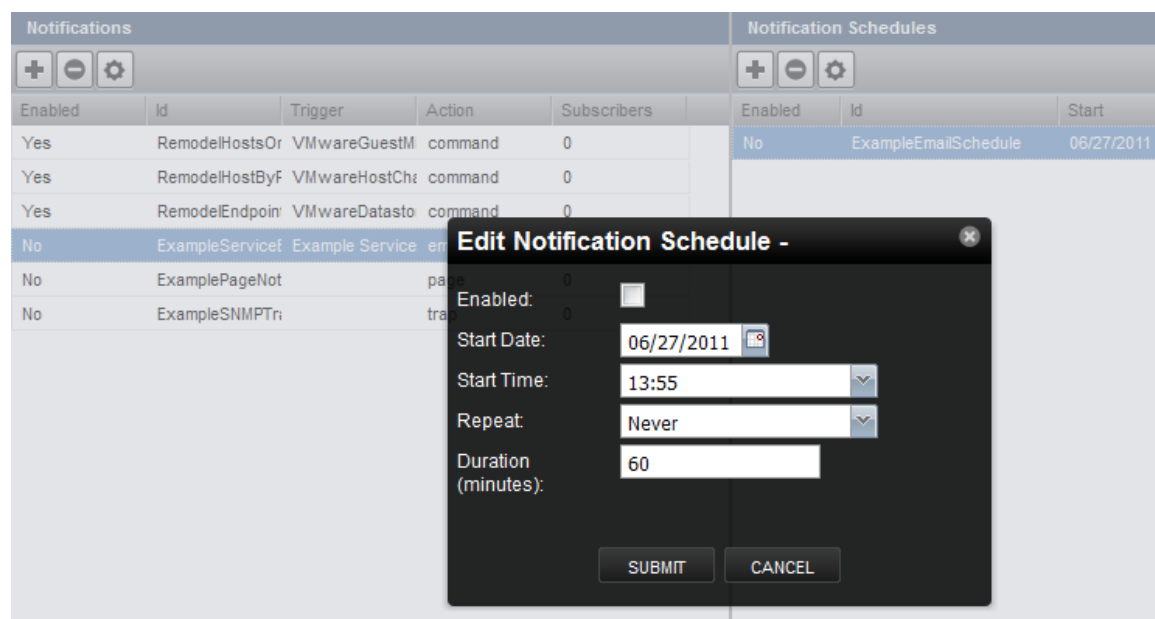
You can establish one or more notification schedules for each defined notification. To set up a schedule:

- 1 Select the notification in the Notifications area.
- 2 Click Add in the Notification Schedules area.

The Add Schedule Window dialog appears.

Figure 12: Add Notification Schedule

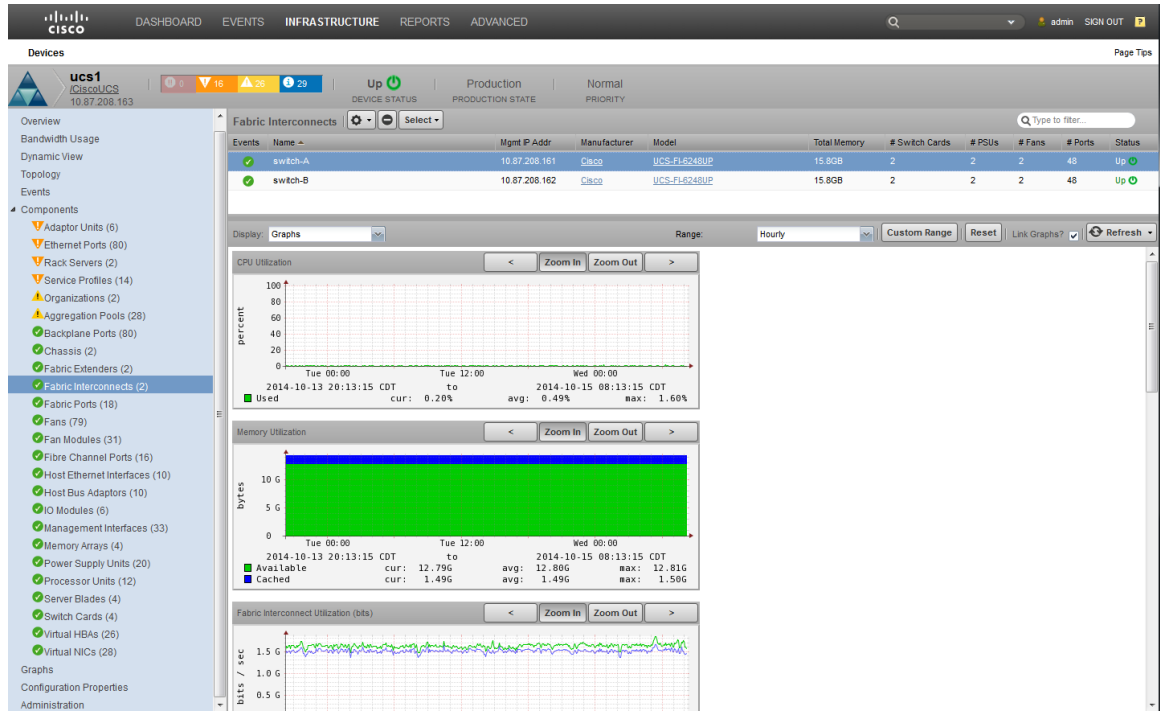
- 3 Enter a schedule ID, and then click **Submit**.
- 4 Double-click the newly added schedule to edit it. Select or enter values for the following fields:
 - **Enabled**- Select to enable the schedule. By default, this schedule is not enabled.
 - **Start Date**- Enter or select a start date for the schedule.
 - **Start Time**- Enter or Select a start time for the schedule.
 - **Repeat**- Select a schedule repeat value: Never, Daily, Every Weekday, Weekly, Monthly, or First Sunday of the Month.
 - **Duration (Minutes)**- Enter a schedule duration, which is the period of time that the notification window is active. If a notification has notification windows specified, then notifications are sent only if one of the windows is active when the notification is received.
- 5 Click **Submit**.

Figure 13: Edit Notification Schedule

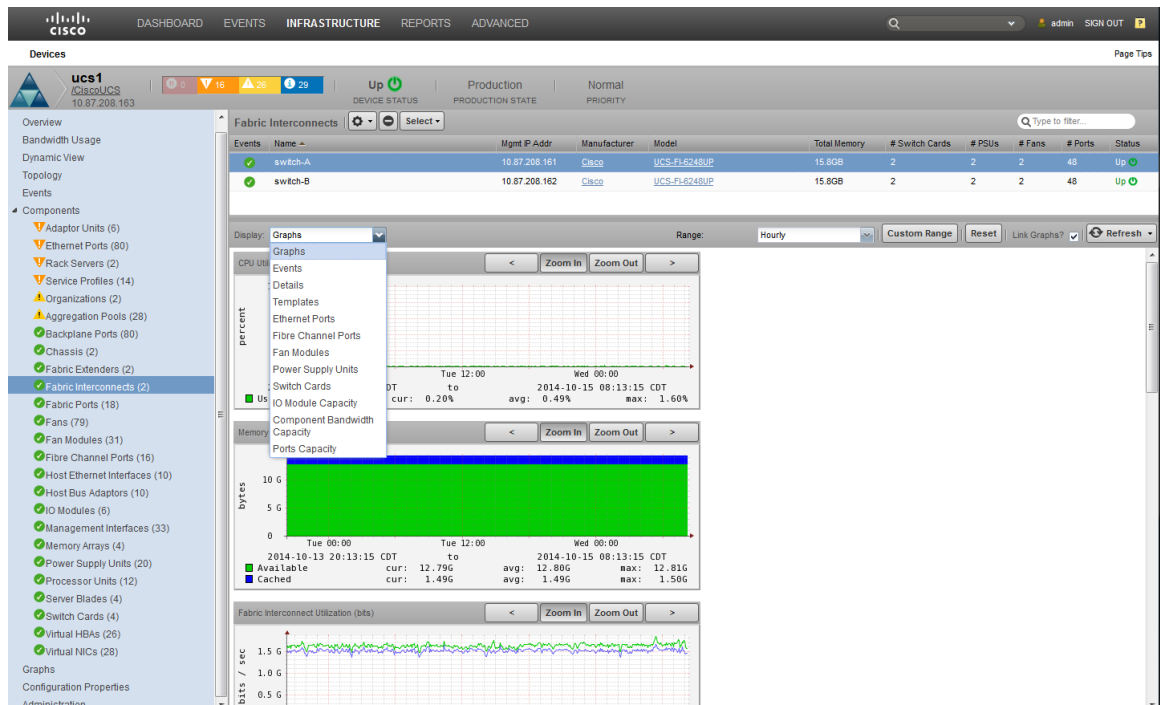
How can I Drill Down to Determine Usage? - an Example

You can use the capabilities of the UI to drill down into component infrastructure to see important details. The following example shows you how to drill down and follow usage from the fabric interconnect back to the server.

- 1 View utilization at the Fabric Interconnect level:
 - a Navigate to **Infrastructure > Device** (for example UCS1)
 - b Expand **Components** in the left pane.
 - c Select **Fabric Interconnects (n)** from the list to display the Fabric Interconnect capacity utilization information in the right pane.

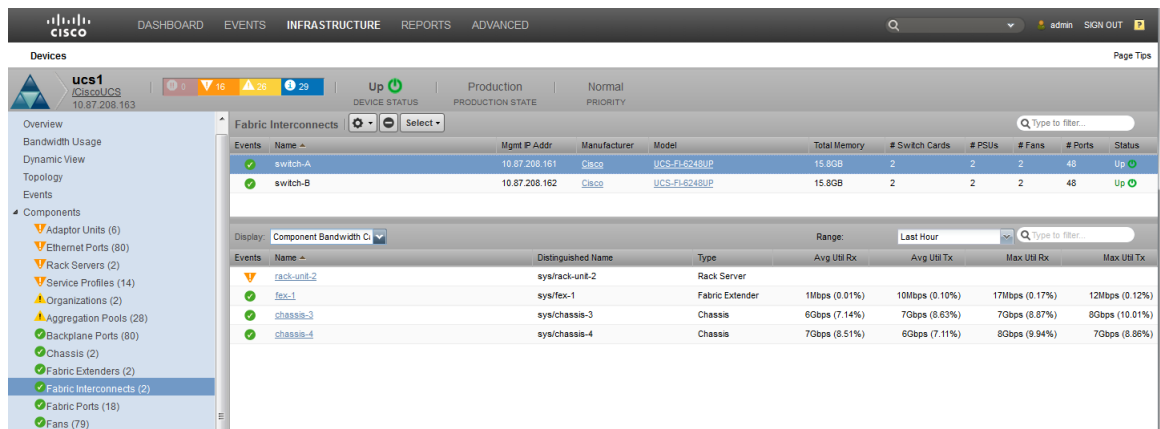


- 2 Display the **Component Bandwidth Capacity** to see the components using resources:
 - a From within the Fabric Interconnect capacity utilization information (right pane), click the **down arrow** next to **Display** to expand the drop-down list of display options.
 - b Choose **Component Bandwidth Capacity** to display the various entities connected to the FI, including IO Modules, Ports, and Chassis or FEX. This enables you to determine which ones are consuming the greatest resources.



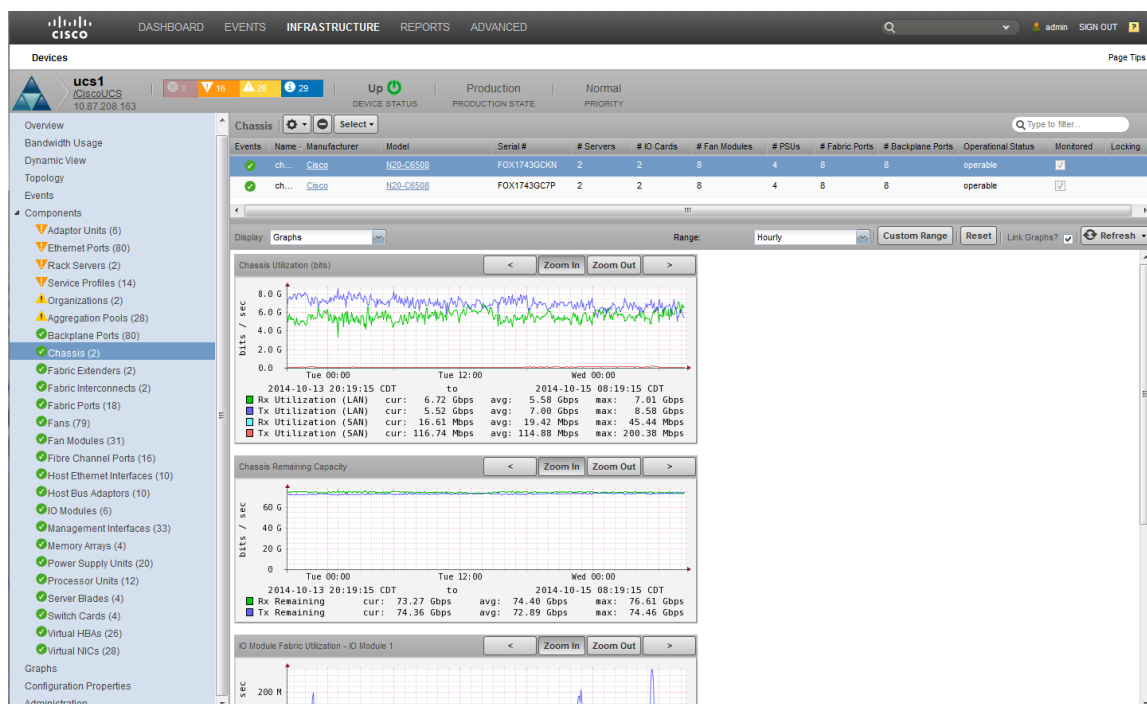
3 Review historical usage for the Fabric Interconnect:

- a Within the right pane, with **Component Bandwidth Capacity** selected, you can view historical usage data for selected components. You can choose from time frame display options in the drop-down list - **Last Hour, Day, or Week**.



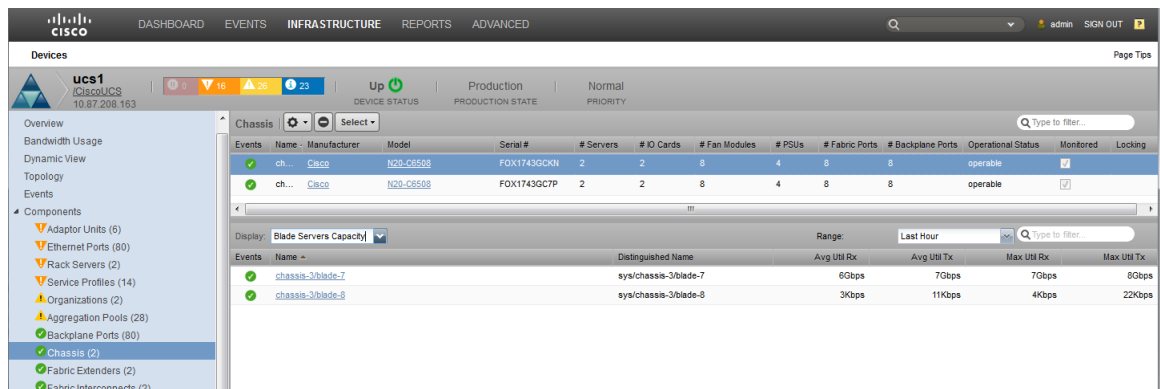
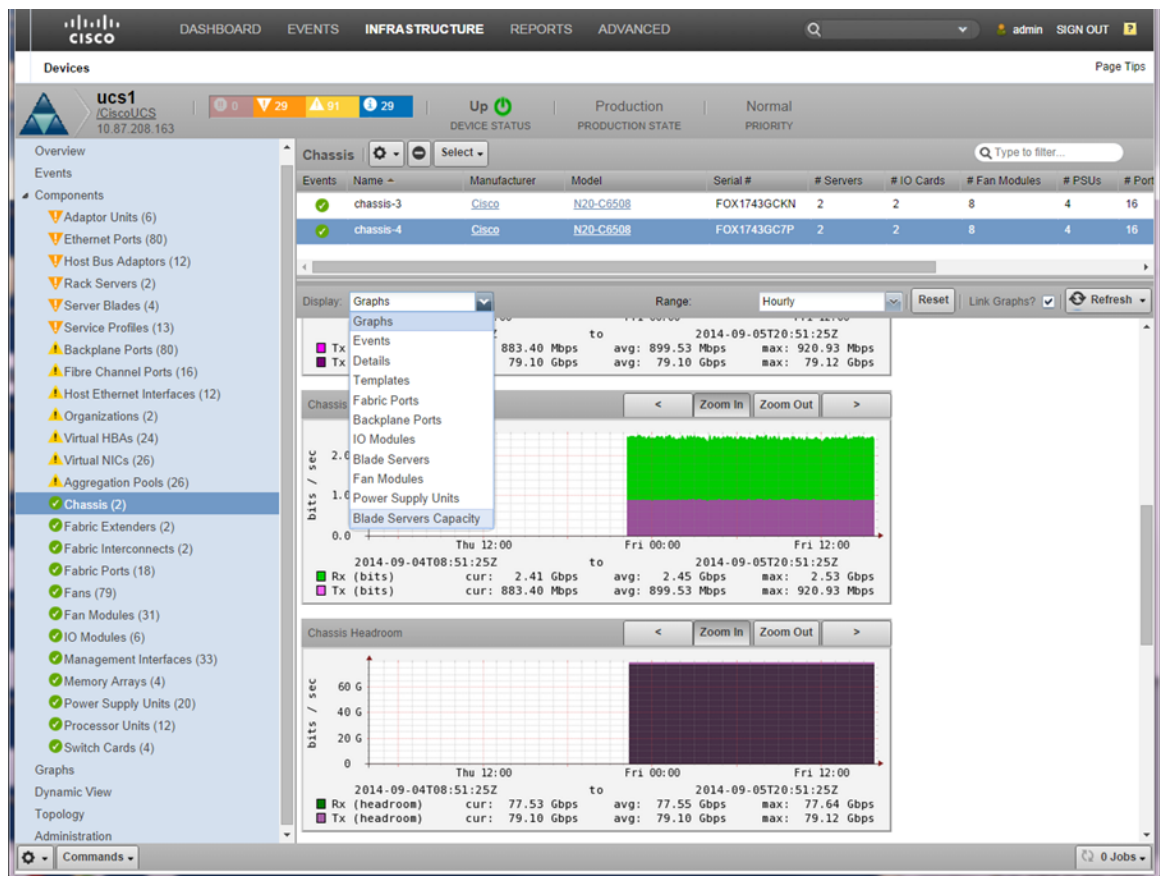
Note that you can change which columns display and change their sort order.

- b You can continue to drill down for additional information. Click the name of any component that displays in the right pane to access additional information about that component.
- ### 4 View component usage, for example for a particular chassis:
- Click the name of a component that displays in the right pane to access additional information about that component. For example, click the name **Chassis-4** to display information that includes **Remaining Capacity**, and **Throughput** data.



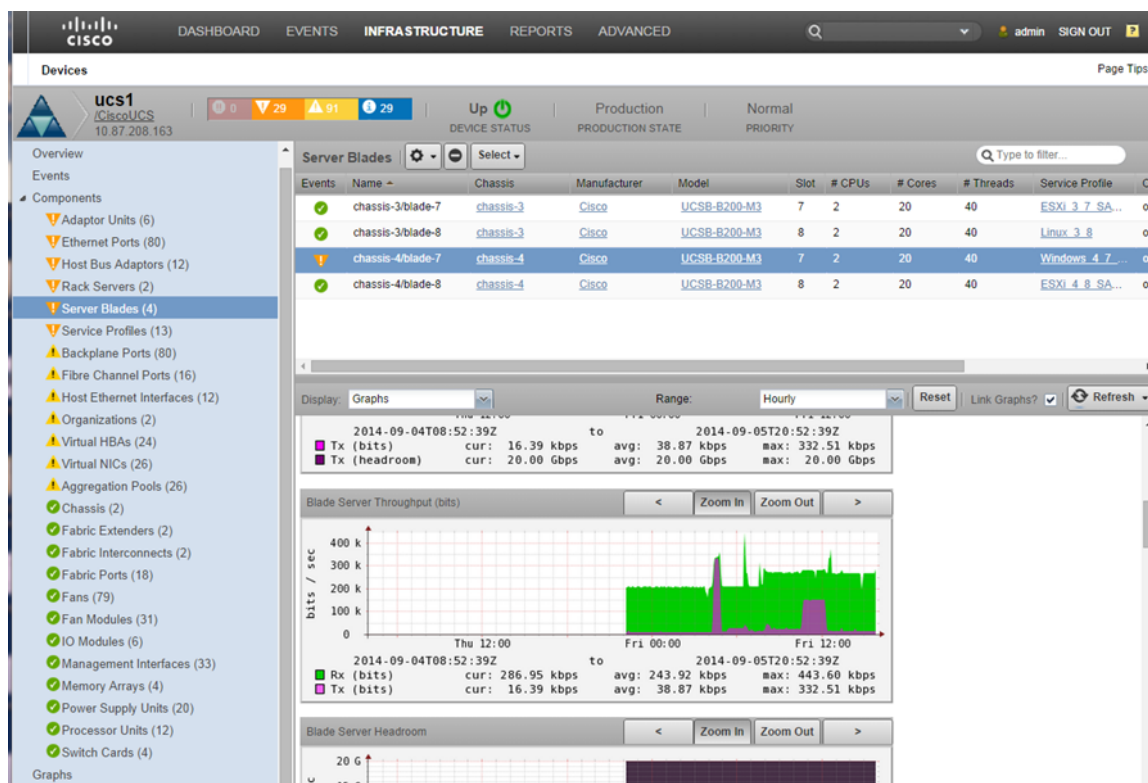
5 View server usage to determine the busiest servers:

- While viewing the right pane with the component information, for **Chassis-4** for example, click the **down arrow** next to **Display** to expand the drop-down list of display options.
- Select the **Blade Server Capacity** option to display the blade servers attached to this chassis.
- View and analyze the blade server usage information to determine which server is busiest.



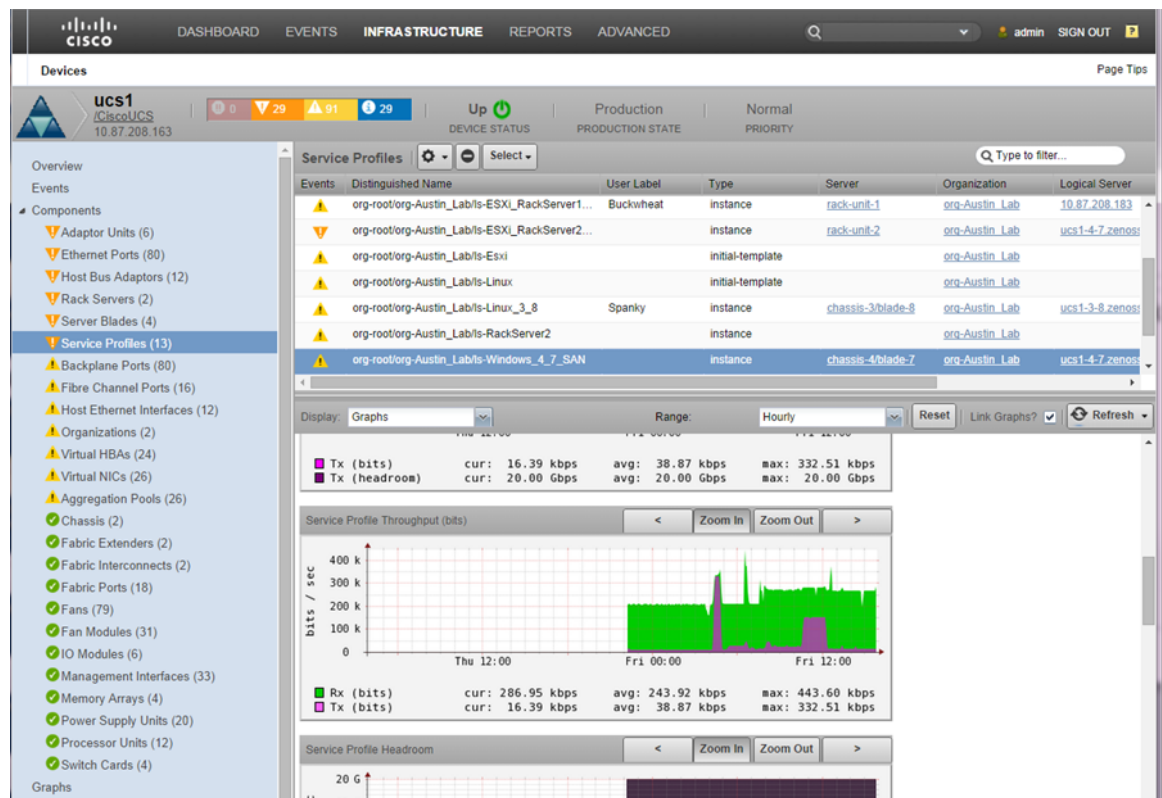
6 View a server's historical use:

- Navigate to **Infrastructure > Device** (for example *UCS1*)
- Expand **Components** in the left pane.
- Select **Server Blades(n)** from the list to display the Server Blades associated with the chassis in the right pane.



7 View a Server Blade service profile:

- From the list of Server Blades associated with the chassis in the right pane, locate the **Service Profile** column.
- Click the **Service Profile** name for a server of interest to display the **Service Profile** view for that server.



The top pane of this view enables you to see various information about the service profiles, including which server supports this service profile.

3

Network Capacity

Network capacity is a measure of the maximum amount of data that can be moved between network locations. This includes data moving across or between Ethernet ports, switches, FEXs (Fabric Extenders), FIs (Fiber Interconnects) and servers over a link or network path. An additional measure that is directly related to capacity is *remaining capacity* - the amount of unused or available bandwidth in your system. This includes aggregation pools, ports, fabric interconnects, FEXs, switches, servers, etc.

Identifying potential capacities and comparing them with actual capacities derived from analyzing your system and components enables you to perform various tasks, including:

Determining how close to maximum capacity you are.

This enables you to plan ahead for potential expansion or restructure.

Determining the amount of available remaining capacity.

This enables you to determine if a device is over-subscribed or has additional resources that can be used to alleviate over-subscription or help eliminate bottlenecks.

Determining if IOM server ports, Ethernet Uplinks, FC Uplinks are congested now or historically.

This enables you to act to alleviate the congestion or potentially forecast when the next cyclic congested event might occur

Identifying sources of congestion.

This enables you to explore ways to address the congestion, such as moving service profiles between chassis.

Determining if virtual or physical workloads and applications are affected by UCS fabric capacity constraints.

This enables you to plan for or make changes to the system configurations or hardware components.

Determining if virtual or physical workloads and applications are affected by UCS server CPU and memory configuration.

This enables you to plan for or make changes to the server configurations or hardware components.

Comparing current and historical performance across converged infrastructure components to determine where constraints exist.

This enables you to identify where the constraints exist and decide if and how the constraints can be removed.

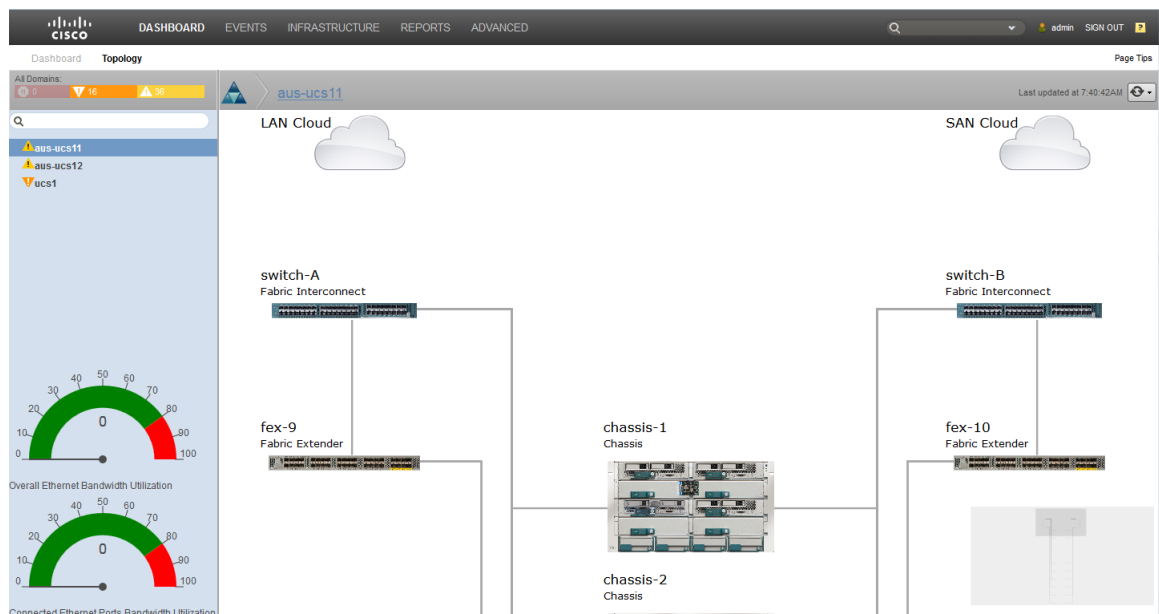
Network Topology and Performance

One method to determine how close your system is to maximum performance capacity is to display the Topology view and analyze it for information about the connection quality between various components. The Topology view includes graphical bandwidth usage information in the form of speedometers for both Overall and Port Bandwidth usage.

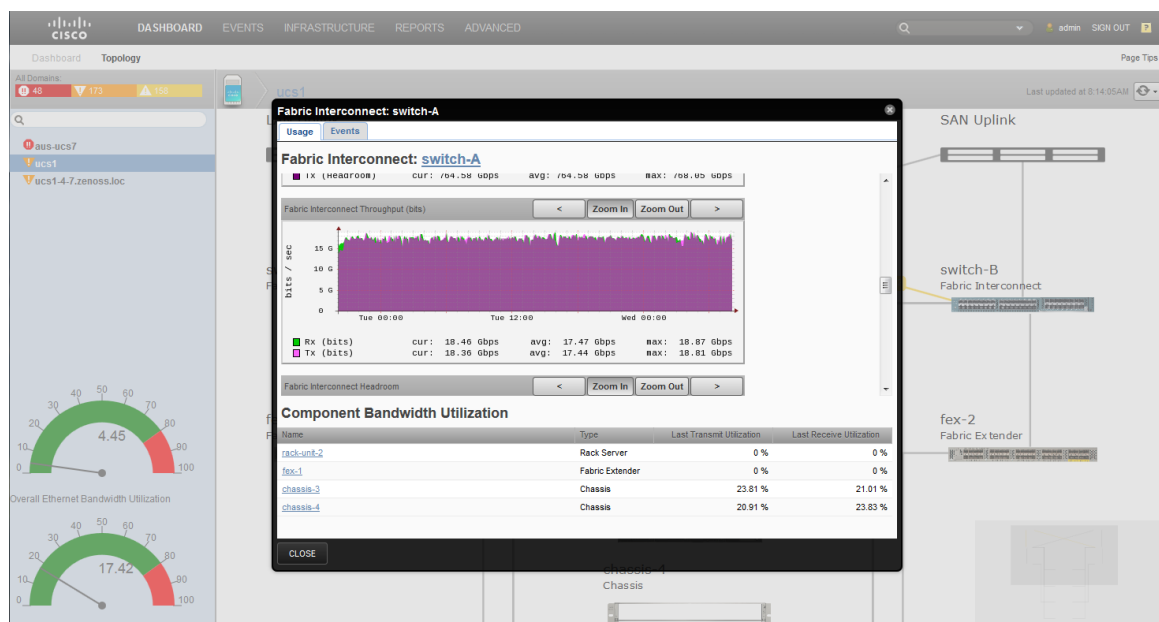
The Topology view includes a clickable diagrammatic map of your device connections.

Perform the following steps to display your network Topology and associated information:

- 1 Launch the Cisco UCS Performance Manager interface.
- 2 Log in to the Cisco UCS Performance Manager interface
- 3 Click **DASHBOARD**.
- 4 Click the **Topology** button to display the clickable topology map in the right pane and the bandwidth speedometers in the left pane.



- 5 To access additional information about a component, click the component name in the Topology view in the right pane. For example, clicking on **Fabric Interconnect Switch-A** displays the following information window:



Identifying Remaining Capacity in Your System

Identifying available remaining capacity enables you to determine where available remaining capacity exists in your system. This enables you to alter resource allocation to make use of the available remaining capacity and alleviate over-subscription to other components

Bandwidth usage and available remaining capacity data is available for individual ports, or collectively by role in the Aggregation Pools view. Aggregation pools are logical bundles of multiple physical network interfaces, commonly known as a port channels. For more information about Aggregation pools, see *Cisco UCS Performance Manager Administration Guide*

Network Congestion

Network congestion occurs when an increase in data transmissions results in a proportionately smaller increase or throughput reduction across the network. Congestion can result from more data being sent across a network than it can handle. Applications send the data as packets across the network, traversing network devices such as FEXs, FI, Ethernet ports, routers, and switches. The buffers on over-subscribed devices can fill up and overflow so data packets are lost. This state can cascade into even greater congestion because applications must retransmit lost packets that result in additional data traffic across the network. If this cyclic cascade continues, the network can become paralysed and fall into a state of congestive collapse. This is the state that ensues when congestion increases to the point that throughput drops to and remains at very low levels and adversely impacts the performance of applications and devices.

The Cisco UCS Performance Manager provides tools to help you identify active network congestion issues and address them. It can also provide data (both historical and projected) to plan and prevent potential network congestion issues in the future.

Exploring Options to Correct Congestion

Correcting or preventing congestion is important to keeping a network running smoothly for users and applications. The tools provided by the Cisco UCS Performance Manager enable you to analyze collected data to make informed decisions about how to correct the issue(s). The available data includes performance data, both current and historical, component, connection and provisioning data. When these are analyzed, potential inadequacies or pinch points in your network can be identified and isolated for rehabilitation.

The options available to you to address network congestion issues include:

- Identifying and reconfiguring service profiles that contribute to low performance - or moving service profiles between servers to enhance server performance.
- Identifying and rectifying server provisioning, including processor and memory configurations.
- Locating and correcting bandwidth inequities. This means identifying those network components with critically small available remaining capacity and bringing the network in-balance by redistributing bandwidth between components with appropriate available remaining capacity - or adding additional equipment.
- Using historical data from the various performance logs to determine patterns and cycles to plan for future network stress.

Components Affect Congestion

Because the Cisco UCS Performance Manager provides a view into the network fabric, it enables you to view performance data that network management tools cannot access. This includes performance data for server ports, Ethernet links, FC uplinks, etc. The data returned from these types of sources can be analyzed and used to determine if congestion exists and what additional effects the congestion is generating. Congestion can be detected by observing the performance data of specific network components that show low throughput or exceptionally high usage rates.

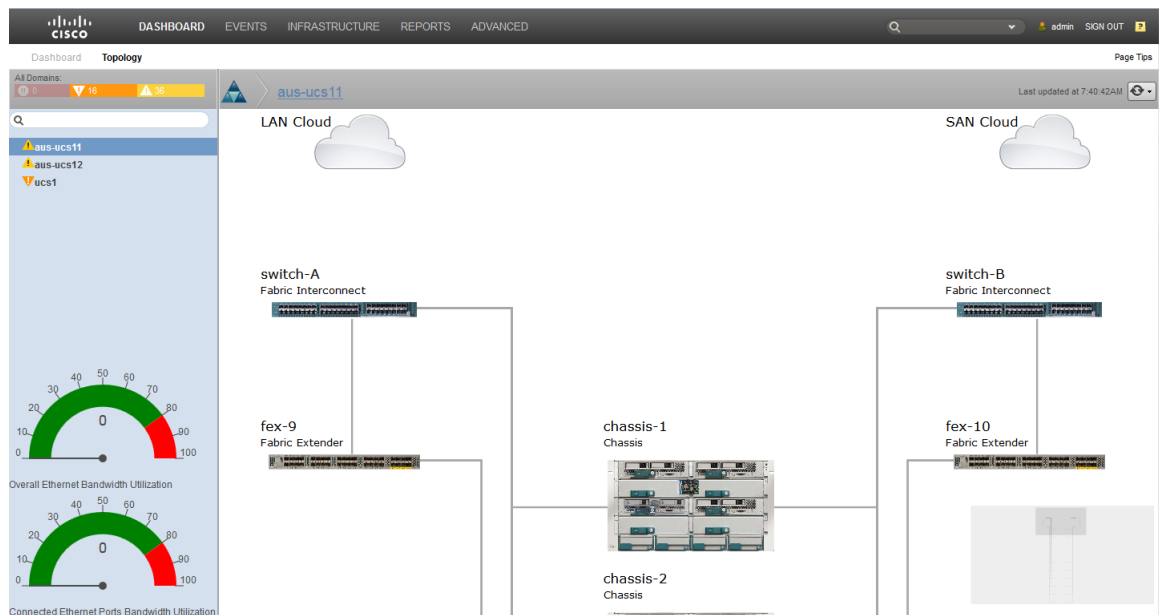
Low performing or over-subscribed components can contribute to or be the result of congestion.

How to Determine the Effects of Congestion on a Network Component

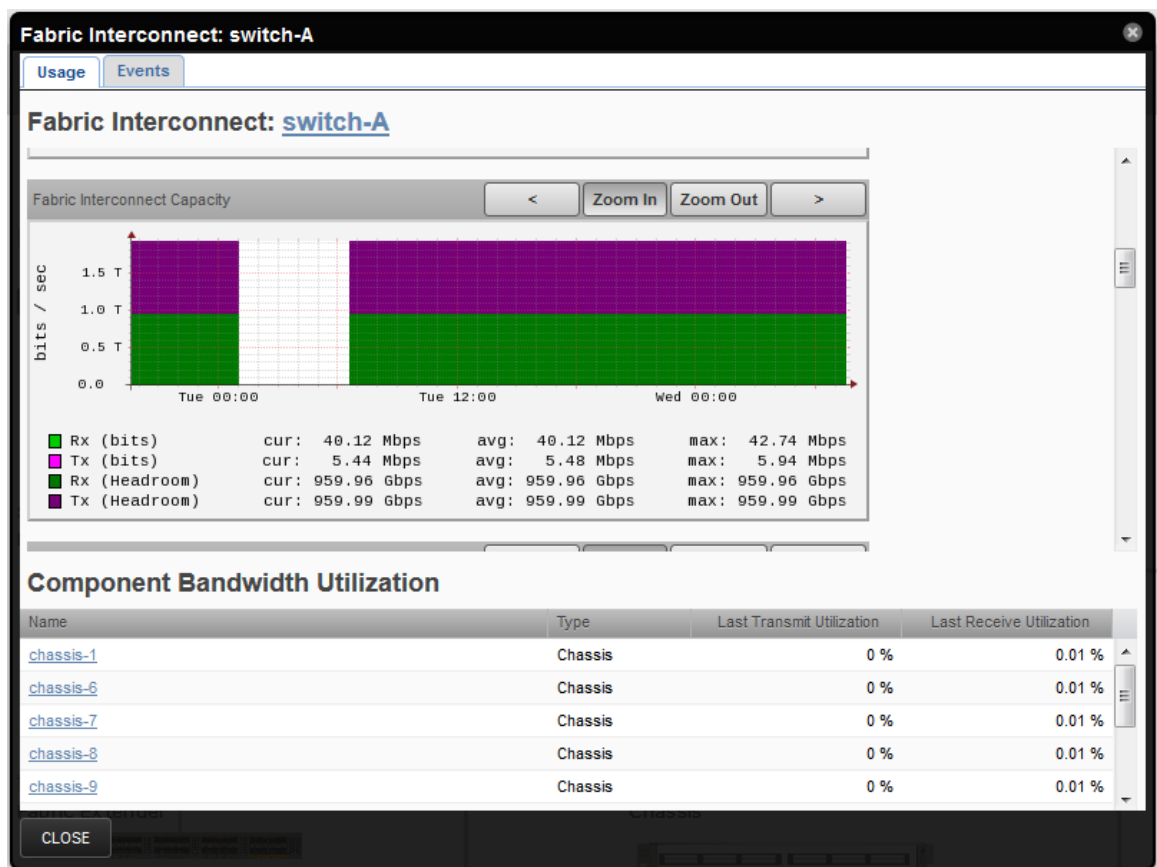
The following example shows how to select a component, in this case switch-A, and drill down into the performance data for its Ethernet ports. The display shows a graphical interpretation of the switch performance and tabular data for each Ethernet port. The tabular data includes the port slot location, bandwidth and utilization information. If additional information is required, in this example, click on the port name to display the Infrastructure data page for that port.

Perform the following steps to view the performance information for example switch-A and its Ethernet ports:

- 1 Navigate to **DASHBOARD > Topology**. This displays the Topology view, for example:

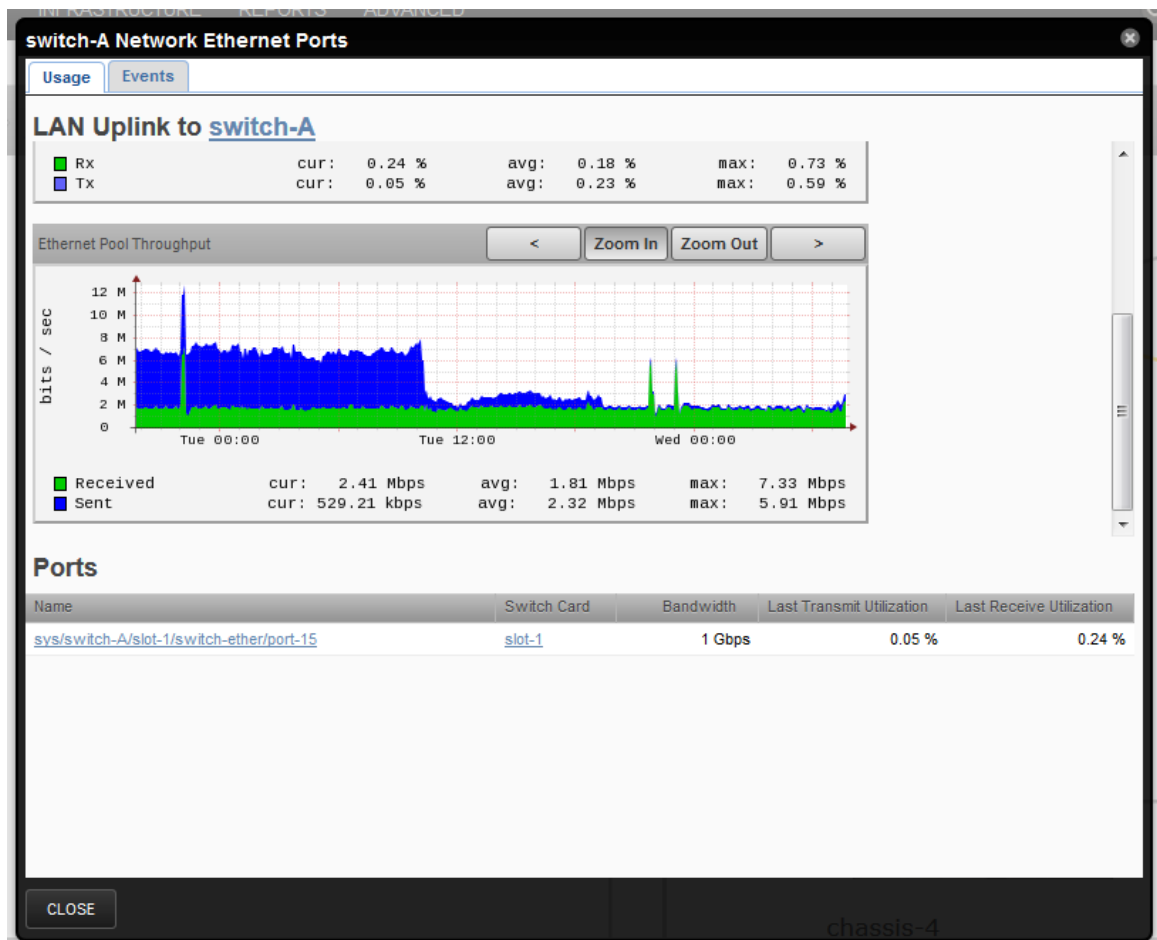


- 2 In the right-hand pane, click a component name, in this case **switch-A Fabric Interconnect**, to display the pop-up information window. For example:

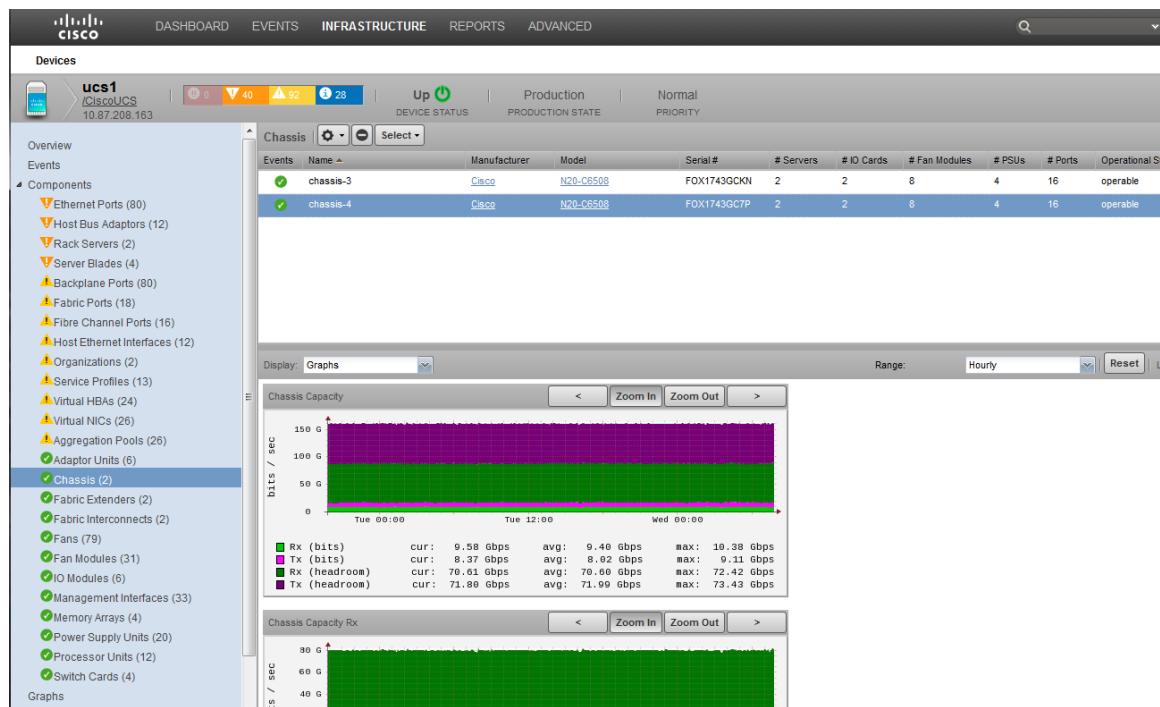


Analyze the data to determine if the component and its associated connections are performing appropriately. Identifying and correcting components that do not perform as required helps to prevent and/or alleviate congestion in the network.

For reference, the following example shows the relative congestion of the LAN Uplink to switch-A connection. Because the current values are ~7.3Mbps for received and 5.9Mbps for sent data, they are not yet close to the maximum available bandwidth of 10Gbps so congestion is very low. If these values increase to approach the 10Gbps maximum available bandwidth, congestion increases and will eventually lead to network issues.



- If you require additional information about a component, click the name of a component in the pop-up information window to display the Infrastructure information page for that component. For example, click on **Chassis4** to display the **Infrastructure** view:



How to Display Reports to View Historical Congestion

The Cisco UCS Performance Manager provides usage and performance data. The data can be current or data that stored within historical logs. The historical logs are used by the Cisco UCS Performance Manager to generate reports to display various data, depending on the type of report. Additional report options depend on the style of report. For example, to view the historical log for Interface Utilization, perform the following:

- 1 From the Cisco UCS Performance Manager UI, navigate to: **Reports > (left pane) Reports > Cisco UCS Capacity Reports > Interface Utilization**.
- This displays the Report Parameters pane on the right.
- 2 In the Report Parameters pane:
 - a Define the **Root Organizer**. Select **/Devices/Network** from the drop-down list.
 - b Define the **Start Date** and **End Date** values for the report. You must use the **Select** button to launch a selection calendar and chose from available dates.
 - c Click **Update** to display the report in the lower pane. For example:

Q

REPORTS (41)

- Cisco UCS Capacity Reports (7)
 - Aggregate Bandwidth Utilization
 - Aggregate Port Pool Utilization
 - Bandwidth Utilization vs Capacity
 - Interface 95th Percentile

Report Parameters

Root Organizer:

/Devices/Network

Device Filter:

Start Date:

07/07/2014

select

End Date:

07/14/2014

select

Update

Show All Interfaces

Interface Utilization

Q

Device	Interface	Description	Speed	In Avg	Out Avg	In Max	Out Max	In Min	Out Min
Interface Utilization	10.171.100.102	Ethernet107_1_1	22.6Kb	1.8b	1.4b	N/A	N/A	0.4b	0.2b
Interface Volume	10.171.100.102	Ethernet107_1_10	23.1Kb	1.6b	1.4b	N/A	N/A	0.5b	0.3b
Port Utilization	10.171.100.102	Ethernet107_1_11	23.2Kb	1.4b	1.4b	N/A	N/A	0.3b	0.4b
	10.171.100.102	Ethernet107_1_12	23.0Kb	1.8b	1.5b	N/A	N/A	0.8b	0.5b
Cisco UCS Reports (2)	10.171.100.102	Ethernet107_1_13	1000.0Mb	1.5b	1.5b	N/A	N/A	0.4b	0.4b
Enterprise Reports (17)	10.171.100.102	Ethernet107_1_14	1.0Gb	1.4b	1.7b	N/A	N/A	0.5b	0.6b
Performance Reports (7)	10.171.100.102	Ethernet107_1_15	1000.0Mb	1.8b	1.6b	N/A	N/A	0.5b	0.4b
	10.171.100.102	Ethernet107_1_16	10.0Mb	1.6b	1.6b	N/A	N/A	0.6b	0.5b
Storage (3)	10.171.100.102	Ethernet107_1_17	1.0Gb	1.5b	1.6b	N/A	N/A	0.4b	0.4b
	10.171.100.102	Ethernet107_1_18	1.0Gb	1.5b	1.6b	N/A	N/A	0.4b	0.6b
vSphere (5)	10.171.100.102	Ethernet107_1_19	1.0Gb	1.6b	1.6b	N/A	N/A	0.8b	0.7b
	10.171.100.102	Ethernet107_1_2	1000.0Mb	1.7b	1.6b	N/A	N/A	0.6b	0.6b
	10.171.100.102	Ethernet107_1_20	1.0Gb	1.8b	1.7b	N/A	N/A	0.5b	0.4b
	10.171.100.102	Ethernet107_1_21	22.6Kb	1.4b	1.4b	N/A	N/A	0.3b	0.4b
	10.171.100.102	Ethernet107_1_22	23.5Kb	1.5b	1.4b	N/A	N/A	0.3b	0.3b
	10.171.100.102	Ethernet107_1_23	22.7Kb	1.6b	1.8b	N/A	N/A	0.5b	0.4b

Fabric Constraints Affect Congestion

The network fabric consists of the collection of components and their interconnects and interfaces that make up your network. For the network to function at its theoretical maximum, efficient performance, all components/parts must function effectively individually and together as a cooperative unit. Constraints are any limitations within the fabric that affects performance of the network, measured as throughput or relative available remaining capacity. Constraints that affect data flow within the network can result in network congestion and potentially network paralysis or collapse. These constraints can take the form of component over-subscription, component misuse, inadequate provisioning or configuration, or failing component(s) or architecture.

How to Determine Fabric Constraint Effects on Virtual & Physical Workloads

Note This functionality is only available with a Cisco UCS Performance Manager license.

Perform the following steps to display the Fabric Interconnect information for an example component, 10.87.208.163:

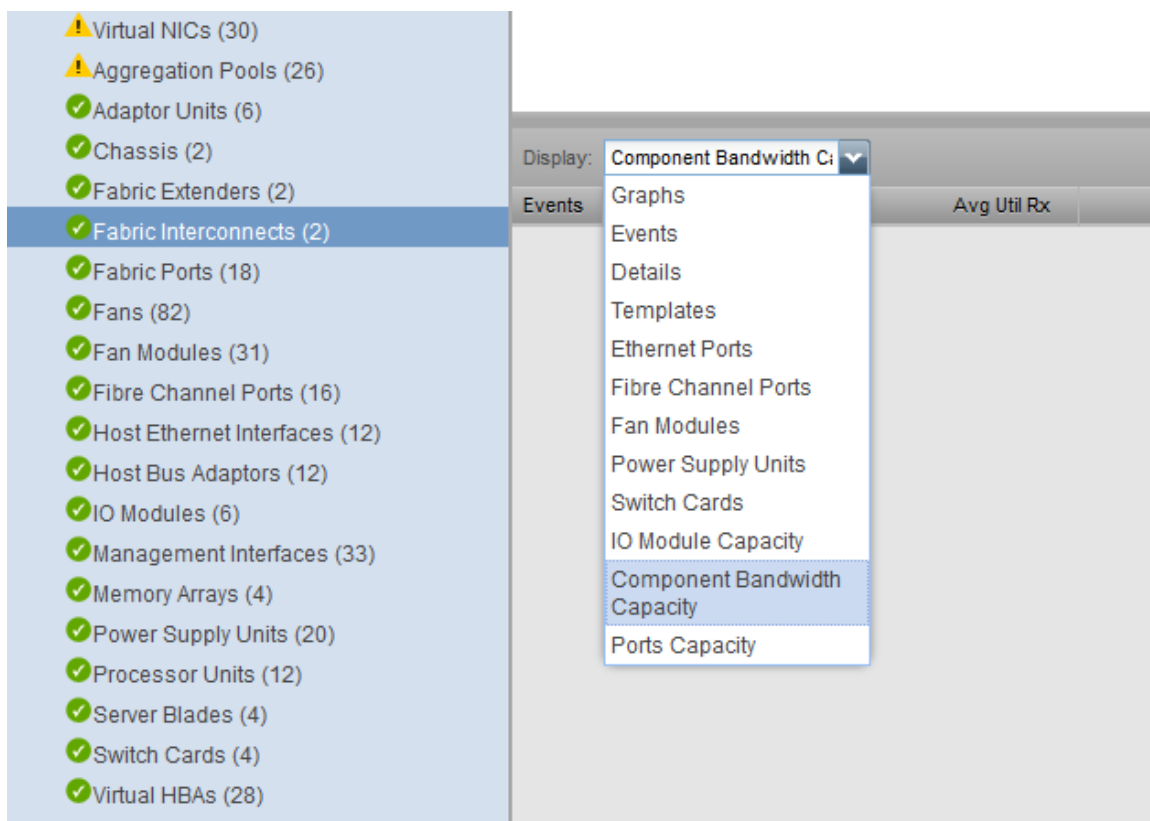
1. Navigate to **Infrastructure > Components**.
2. Click a component name in the right pane, 10.87.208.163, for example.
3. Navigate to **Components > Fabric Interconnects** to display the Fabric Interconnects pane, for example:

The screenshot shows the Cisco UCS Performance Manager interface. The left sidebar lists various components, with 'Fabric Interconnects (2)' selected. The main pane displays a table of Fabric Interconnects for the selected component (10.87.208.163). The table has columns for Name, Mgmt IP Addr, Manufacturer, Model, Total Memory, # Switch Cards, # PSUs, # Fans, # Ports, and Status. Below this, there is a section for Component Bandwidth Usage, which includes a table showing data for rack-unit-2, flex-1, chassis-3, and chassis-4. The bandwidth usage table has columns for Name, Distinguished Name, Type, Avg USB Rx, Avg USB Tx, Max USB Rx, and Max USB Tx.

Events	Name	Mgmt IP Addr	Manufacturer	Model	Total Memory	# Switch Cards	# PSUs	# Fans	# Ports	Status
✓	switch-A	10.87.208.161	Cisco	UCS-FL6248UP	15.9GB	2	2	2	48	Up
✓	switch-B	10.87.208.162	Cisco	UCS-FL6248UP	15.9GB	2	2	2	48	Up

Events	Name	Distinguished Name	Type	Avg USB Rx	Avg USB Tx	Max USB Rx	Max USB Tx
✓	rack-unit-2	sys/rack-unit-2	Rack Server	1Mbps (0.01%)	10Mbps (0.10%)	17Mbps (0.17%)	12Mbps (0.12%)
✓	flex-1	sys/flex-1	Fabric Extender	6Gbps (7.14%)	7Gbps (8.63%)	7Gbps (8.67%)	8Gbps (10.01%)
✓	chassis-3	sys/chassis-3	Chassis	7Gbps (8.51%)	6Gbps (7.11%)	8Gbps (9.94%)	7Gbps (8.86%)
✓	chassis-4	sys/chassis-4	Chassis				

4. Use the drop-down menu to select the type of display you require:



If you select **Component Bandwidth Capacity**, or **Ports Capacity** you can view and analyze the current graphs for those capacities.

How to Display Dynamic Views

The Cisco UCS Performance Manager enables you to display a dynamic view of network component interconnections. This dynamic view is automatically updated. It helps you to understand the interrelationships between all network components, from the operating system through the chassis.

To display a Dynamic view for a device, perform the following:

- 1 In the Cisco UCS Performance Manager Express interface, click **INFRASTRUCTURE**.
- 2 Click a device name in the **Device** pane, for example **CiscoUCS**.
- 3 Click a device name in the right-hand pane, for example **ucs1**.
- 4 Click **Dynamic View** in the left pane to display the Dynamic View.

How to Determine Fabric Constraint Effects on Application Performance

The Cisco UCS Performance Manager enables you to create application groups. These application groups can be used to identify sources of congestion that affect application performance. Perform the following to create an application group:

- 47

Device	IP Address	Device Class	Production State	Events
10.175.211.0	10.175.211.0	/Server/Unix	Production	0 1
10.87.207.96	10.87.207.96	/Server/Unix	Production	0 1
calcs550a.zenoss.loc	10.175.211.2	/Server/Unix	Production	0 1
esxwin2.zenoss.loc	10.175.211.4	/Server/Unix	Production	0 1
galcoib.zenoss.loc	10.175.211.1	/Server/Unix	Production	0 1
kvm.zenoss.loc	10.175.211.5	/Server/SSH/Unix	Production	0 3
phone.zenoss.loc	10.175.211.11	/Server/Microsoft/Windows...	Production	0 1
pa-as-gst1-zen.zenoss.loc	10.175.210.172	/Server/SSH/Unix	Production	0 1
test-cent4-64-1.zenoss.loc	10.175.211.112	/Server/Unix	Production	0 1
test-sles11-64-1.zenoss.loc	10.175.211.15	/Server/Microsoft/Windows...	Production	0 1
hile.zenoss.loc	10.175.211.10	/Server/Microsoft/Windows...	Production	0 1
train-cent5-1.zenoss.loc	10.175.211.13	/Server/Microsoft/Windows...	Production	0 1
train-cent5-2.zenoss.loc	10.175.211.14	/Server/Microsoft/Windows...	Production	0 1
vpn-client1.zenoss.loc	10.175.211.6	/Server/SSH/Unix	Production	0 7
vpn-client2.zenoss.loc	10.175.211.7	/Server/SSH/Unix	Production	0 5
vpn-client3.zenoss.loc	10.175.211.8	/Server/SSH/Unix	Production	0 7
vpn-client4.zenoss.loc	10.175.211.9	/Server/SSH/Unix	Production	0 4
vpn.zenoss.loc	10.175.211.3	/Server/Unix	Production	0 1
win2003.zenoss.loc	10.175.211.12	/Server/Microsoft/Windows...	Production	0 1

- 4 To add additional devices to this group, click the **(+)** (plus sign) to launch the **Add Device** dialog.
- 5 Enter the appropriate information for your device. For example, name the device **esxwin2.zenoss.loc**
- 6 Click **OK** to save and Exit the dialog. Your new device should display in the list.
- 7 Click the device name, for example **esxwin2.zenoss.loc**, to display the edit/informational panel for the device:

esxwin2.zenoss.loc
/Server/Unix
10.175.211.4

Up DEVICE STATUS | Production | Normal PRIORITY

Overview
Events
Components
Processors (4)
Interfaces (23)
Graphs
Dynamic View
Administration

Device ID: 10.175.211.4
Connection Information [edit](#): public
Uptime: Unknown
First Seen: 2014/08/18 06:39:55
Last Change: 2014/08/20 00:47:34
Model Time: 2014/08/20 00:47:37
Locking: Unlocked
Memory/Swap: 16.0GB/Unknown

Device Title:
Production State:
Priority:
Tag:
Serial Number:
Rack Slot:
[Save](#) [Cancel](#)

Collector [edit](#): localhost
Hardware Manufacturer [edit](#): Microsoft
Hardware Model [edit](#): 1.3.6.1.4.1.311.1.1.3.1.2
OS Manufacturer [edit](#): Unknown
OS Model [edit](#): Windows Version 6.1

Systems [edit](#): None
Groups [edit](#): [test](#)
Links:
Comments:

SNMP SysName: esxwin2
SNMP Location:
SNMP Contact:
SNMP Description: Hardware: Intel® Family 6 Model 23 Stepping 6 AT/AT COMPATIBLE - Software: Windows Version 6.1 (Build 7600 Multiprocessor Free)
SNMP Community: public
SNMP Version: v2c

4

Network Capacity Scenarios

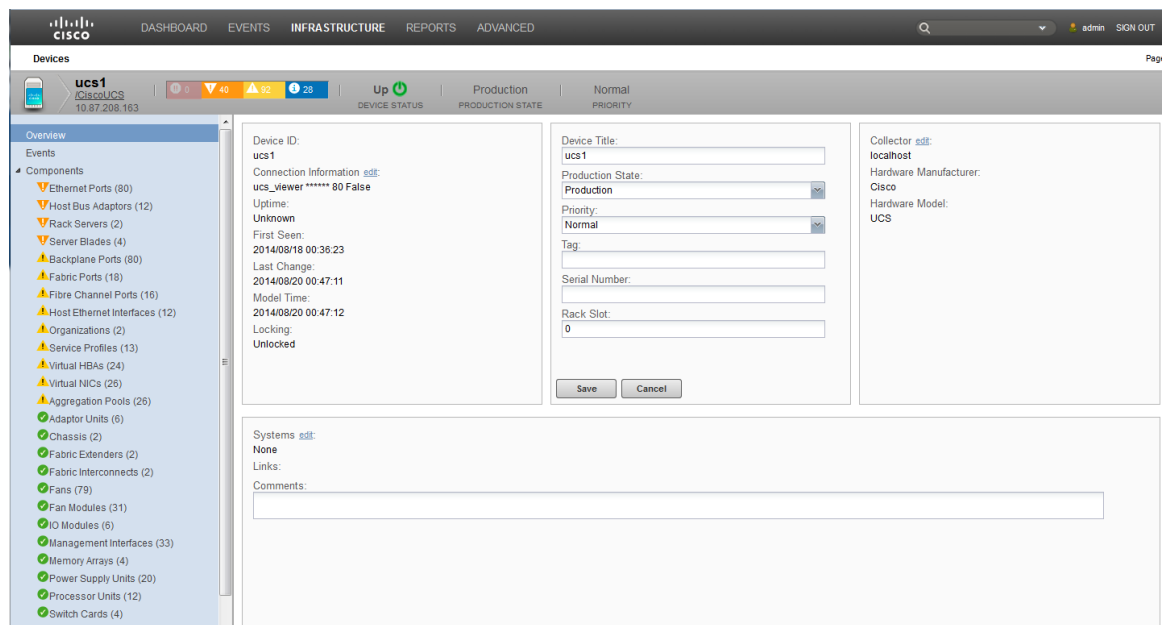
The following scenarios show you how to perform capacity related tasks. The scenarios are examples and show just one of potentially many ways to perform a task.

How to Identify Available Remaining Capacity for a Component

You can determine available remaining capacity values for most system components. The following example shows how to determine capacity for a particular Ethernet port:

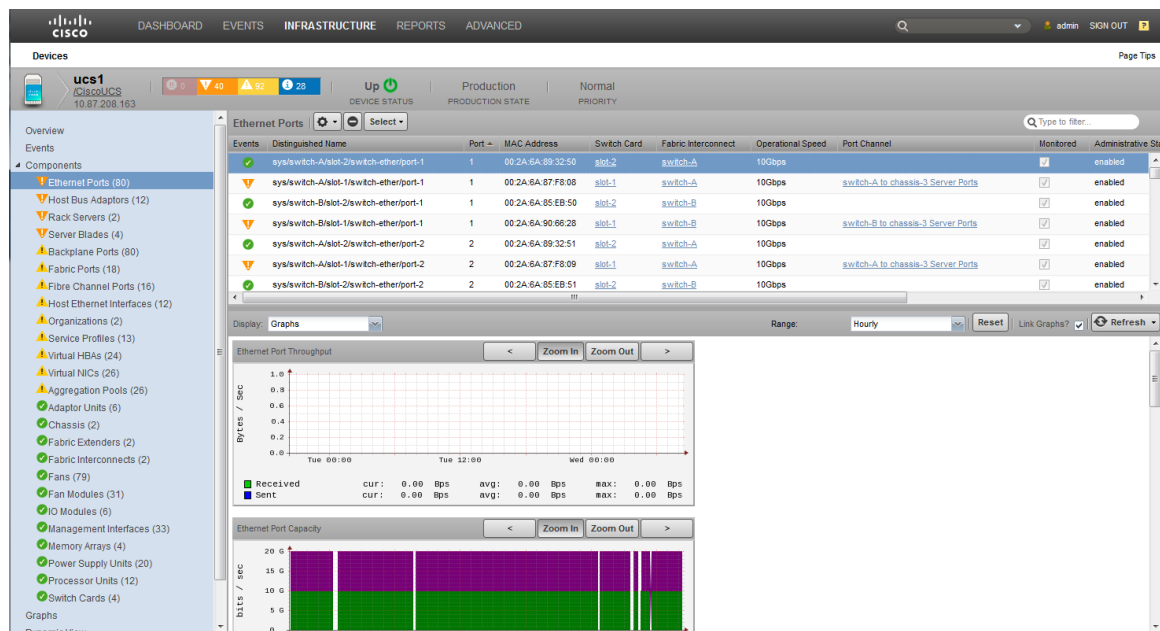
- 1 Navigate to **Infrastructure > Device** {a component, for example } **CiscoUCS**.
- 2 In the right pane click a device name from the list, **ucs1**, for example.

The information pane for that device displays:



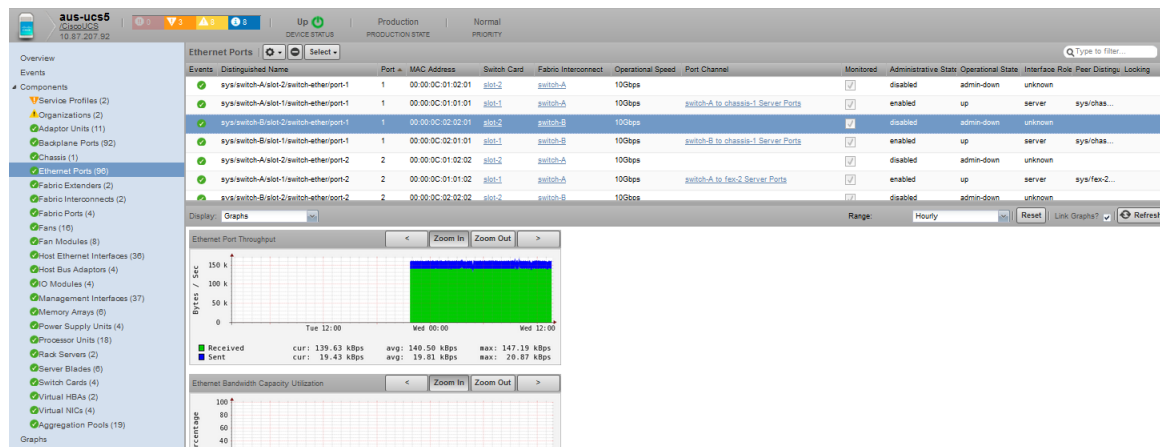
- 3 In the left pane, click **Ethernet Ports (nn)**.

The **Ethernet Ports** information pane for that device displays:



- 4 Click a port name that has a value listed in the **Port Channel** column.
- 5 Select **Graphs** from the **Display:** drop-down to display graphs that include total bandwidth usage, available remaining capacity and throughput values.

For example, the following screen displays:

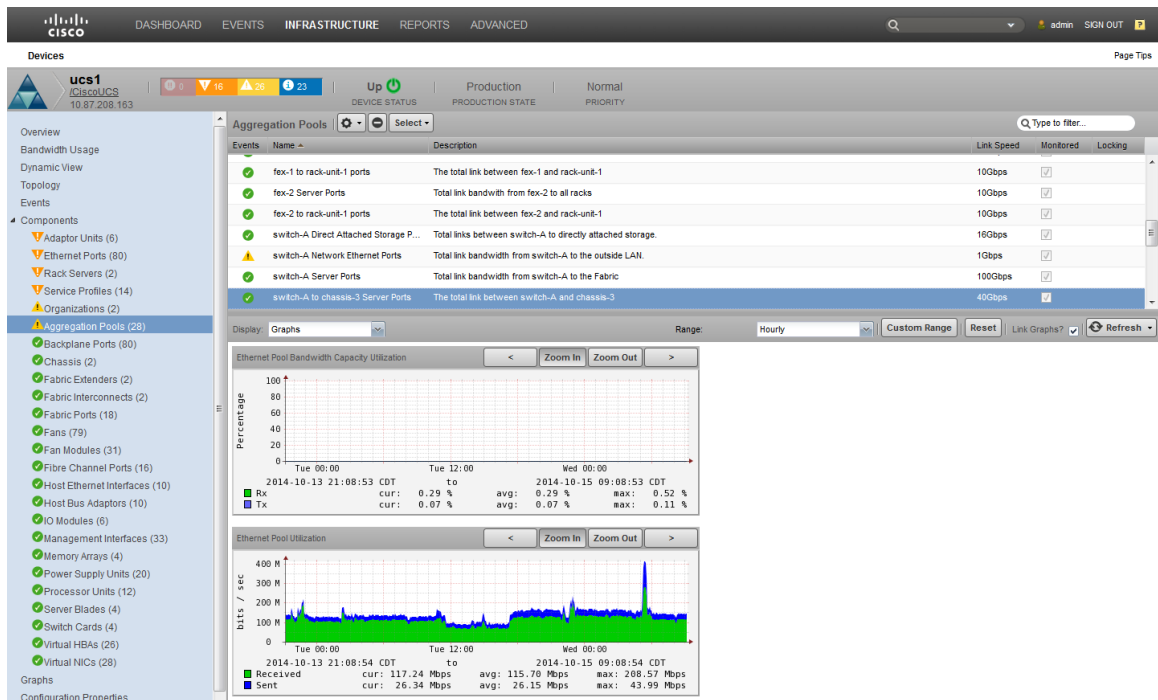


How to Identify Available Remaining Capacity for an Aggregate Pool

The following example shows how to determine capacity for an Aggregation Pool:

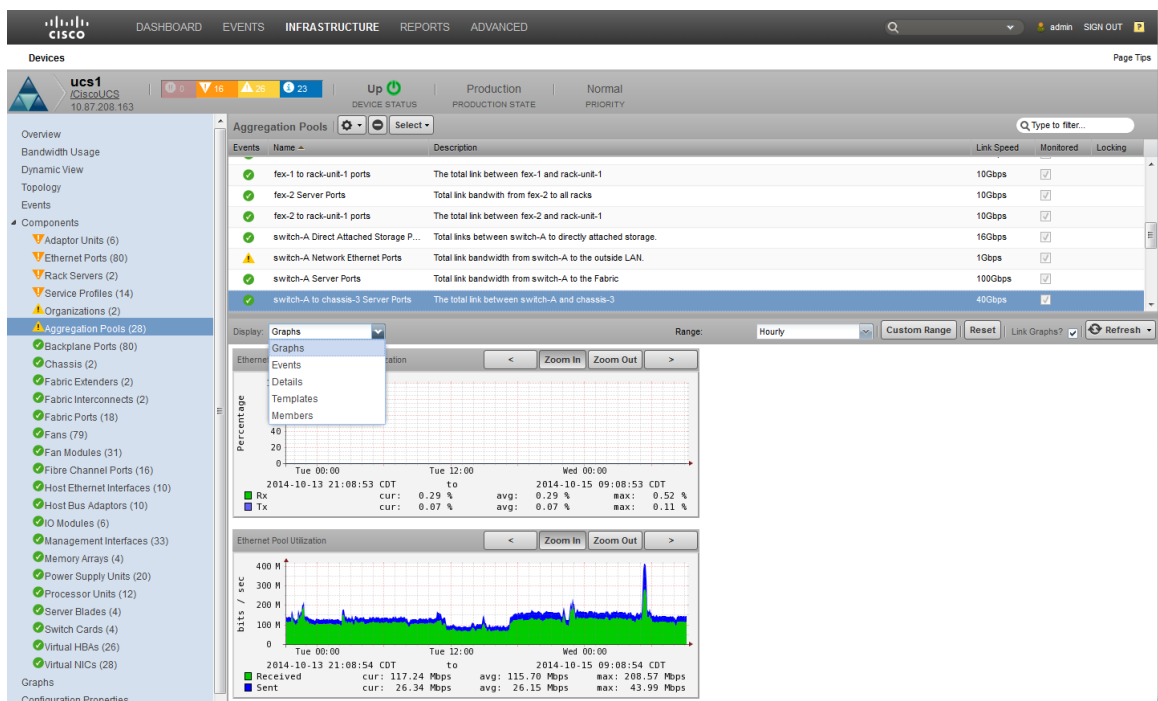
- 1 Navigate to **Infrastructure > Device** {a component, for example } **CiscoUCS..**
- 2 In the right pane click a device name from the list, **ucs1**, for example.
- 3 In the left pane, click **Aggregation Pools (nn)**.

The Aggregation Pools information pane displays:

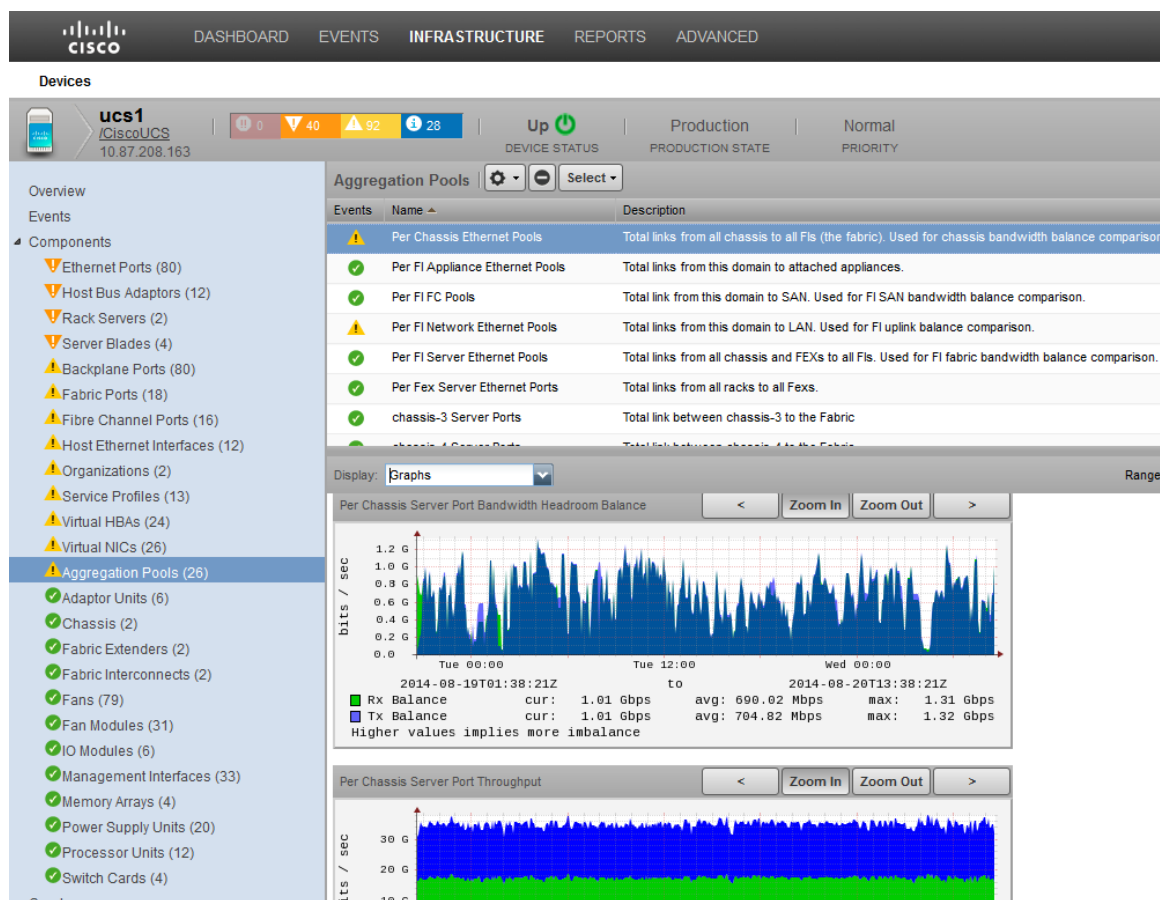


- 4 Select Graphs from the **Display:** drop-down to display the graphs that include the total bandwidth usage, available remaining capacity and throughput.

For example, the following example displays:



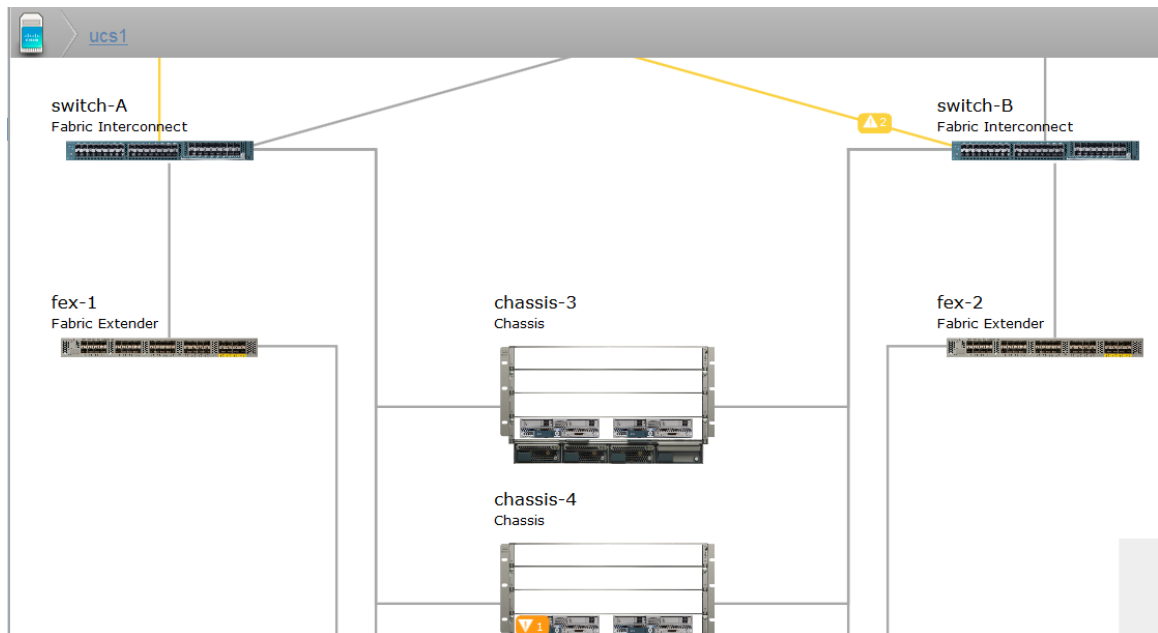
- 5 Scroll through the graphs in the lower pane to view the **Per Chassis Bandwidth Remaining Capacity Balance** graph. For example:



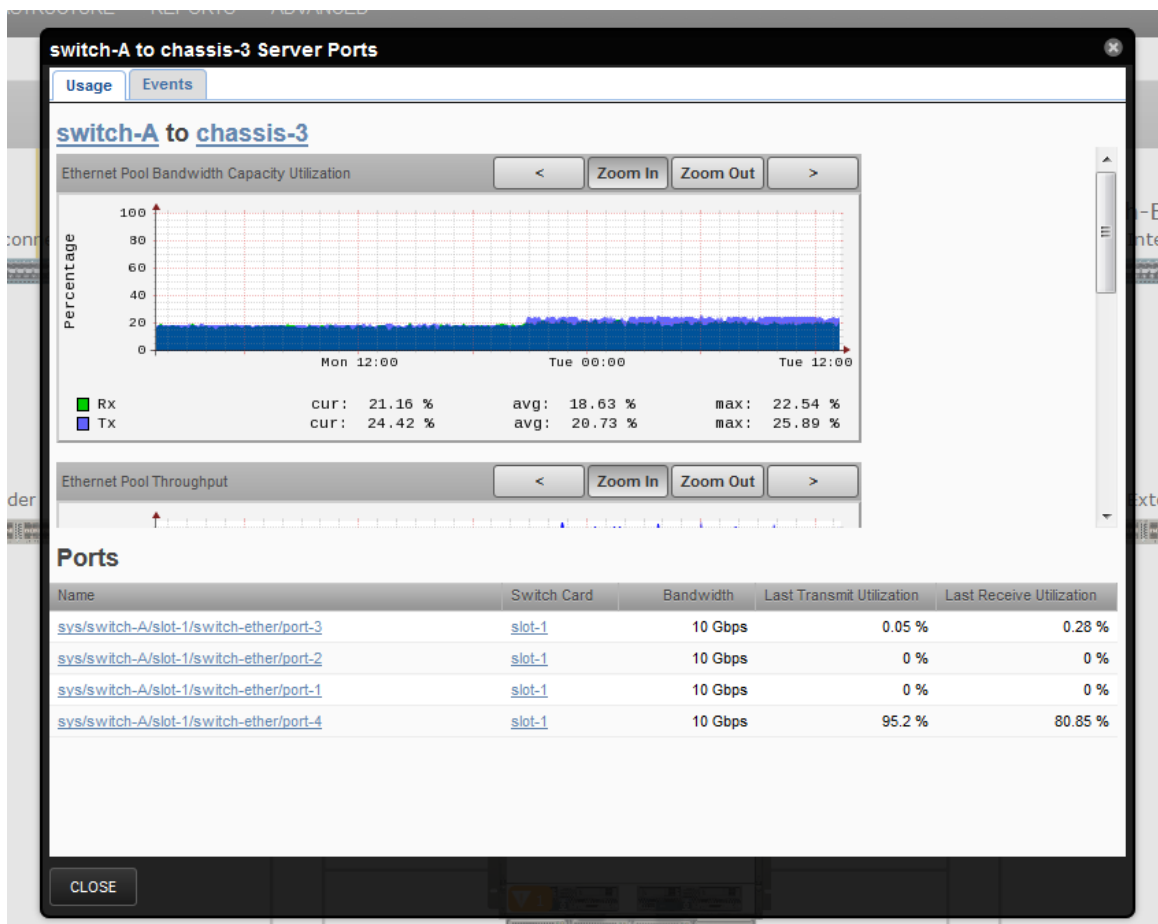
How to Determine if a Chassis is Used to Full Capacity

If you want to determine if a selected chassis is being used to its full capacity, you can use the **Topology** view and explore the chassis information.

- 1 From within the UI, click **Topology**.

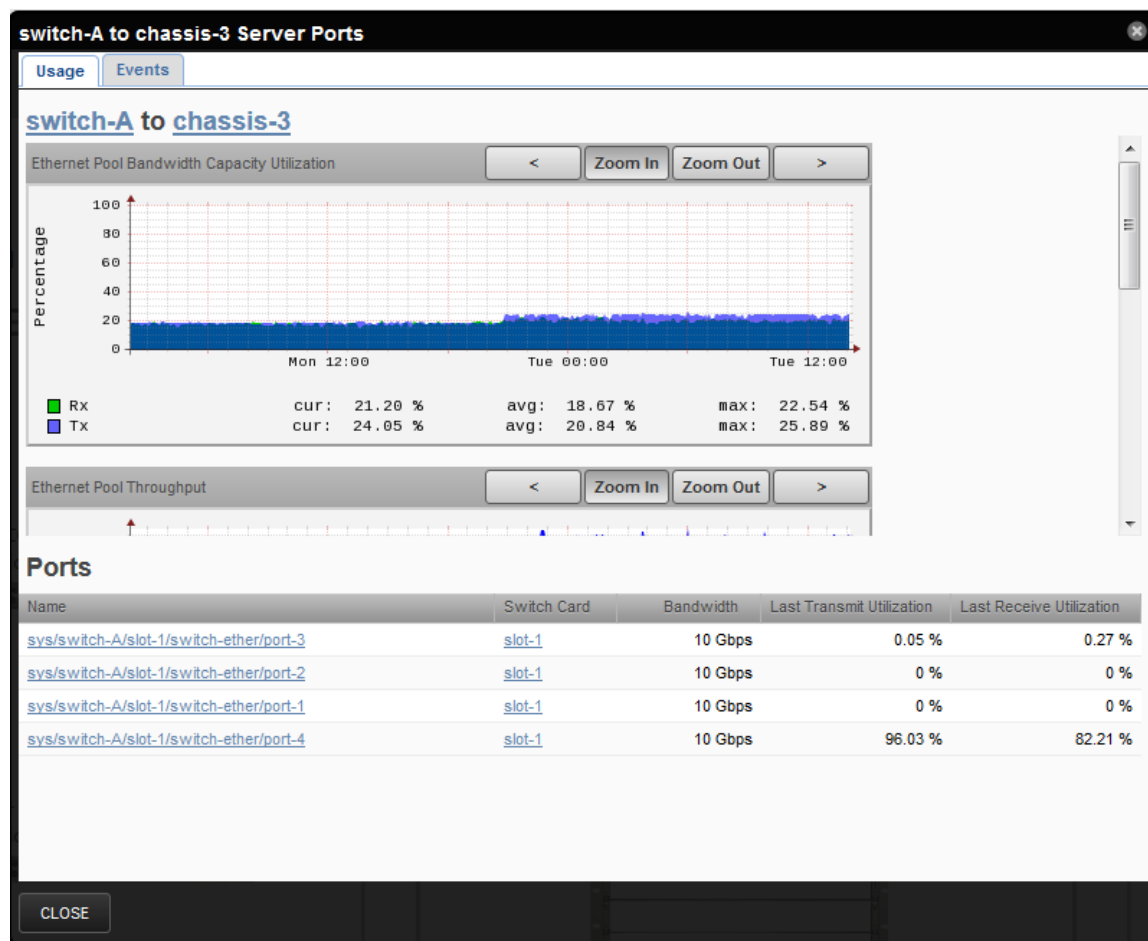


- 2 Within the **Topology** view, double-click your component or connection. For example, **switch-A Fabric Interconnect** is connected to **Chassis3**. Click the connection to display the pop-up information window.

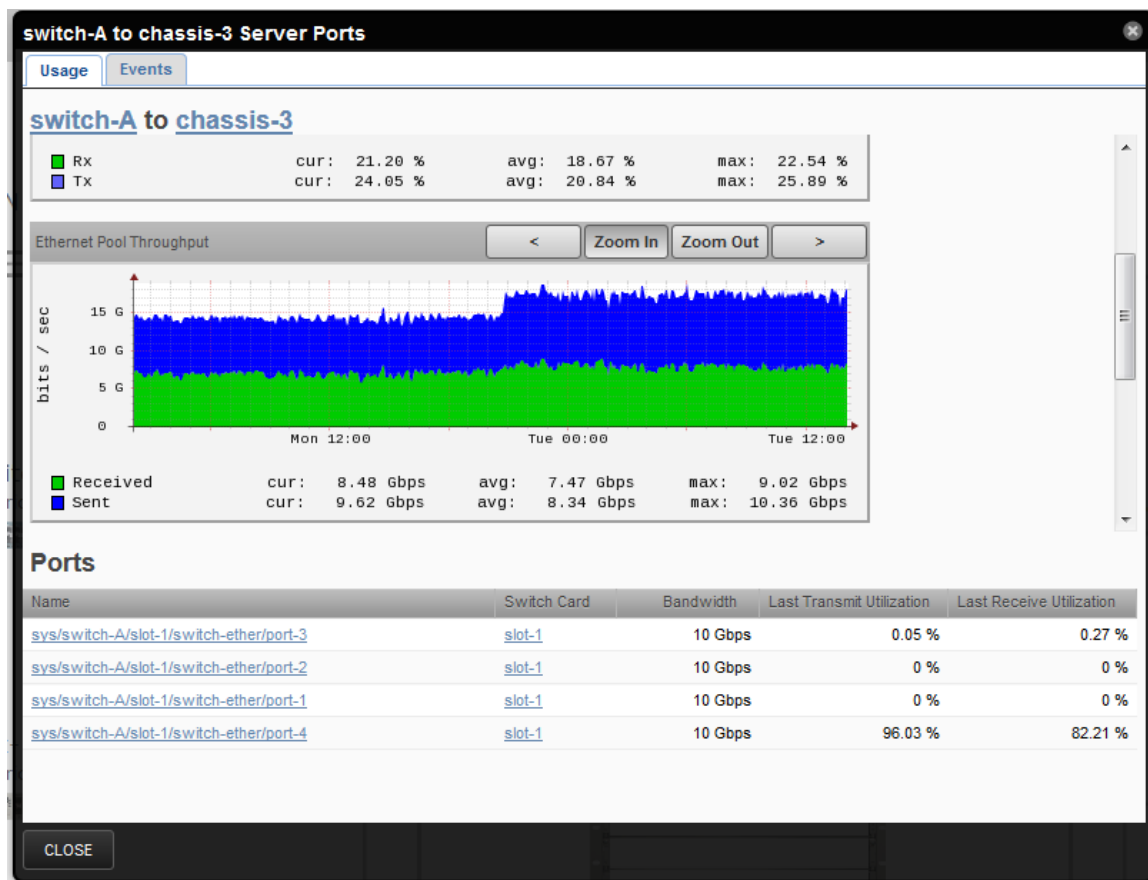


The pop-up window displays various graphs that show information such as capacity utilization (%), data transferred (in Gbps) and relative remaining capacity. In this example, there are four ports connected from Switch-A to Chassis-3. The information shows each port has a maximum capacity of 10Gbps or a total capacity of 4 x 10Gbps to yield a maximum capacity of 40 Gbps for both receiving and sending data.

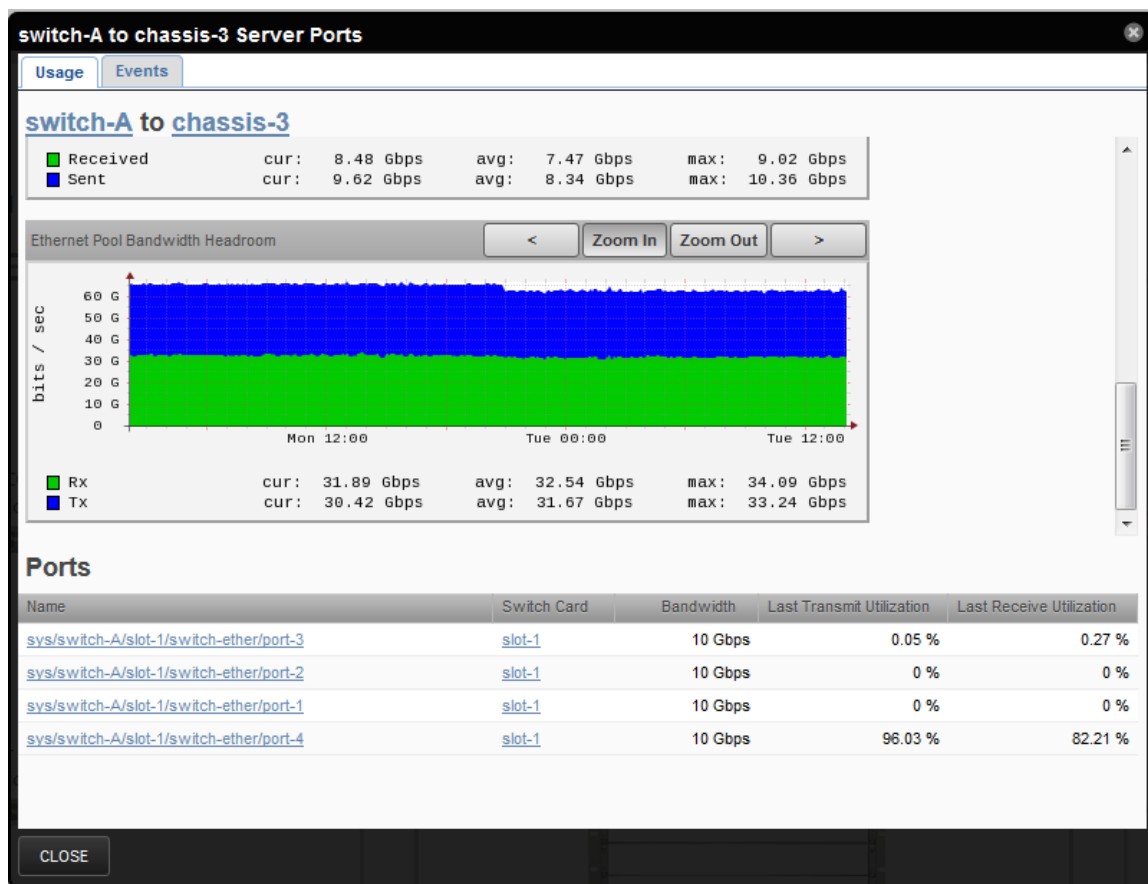
If the RX value shows 100%, then all 40 Gbps is used and there is no additional capacity available. If the Rx value shows 15%, then the ports have available bandwidth to support additional transactions.



Other graphs in the information pop-up provide the number of bits transferred. For example, the **Ethernet Pool Throughput** graph shows if the Rx value is 9.02 Gbps and the Tx value is 10.35 Gbps, then out of the total available 40 Gbps, only 10.35 Gbps is used.



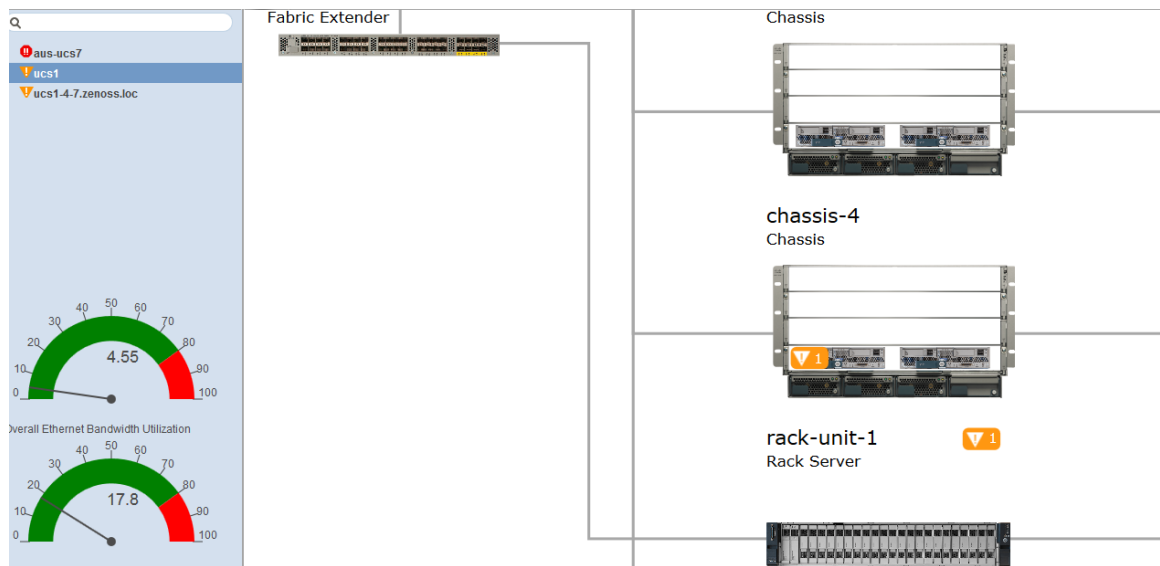
The remaining capacity value can also be determined. In general, the greater the remaining capacity value, the better. In this example, the **Ethernet Port Bandwidth Remaining Capacity** graph shows if the remaining capacity is very low, for example 0.1 Gbps, and the Rx and Tx values are ~34.0 Gbps, then the chassis is being used at 85%% capacity.



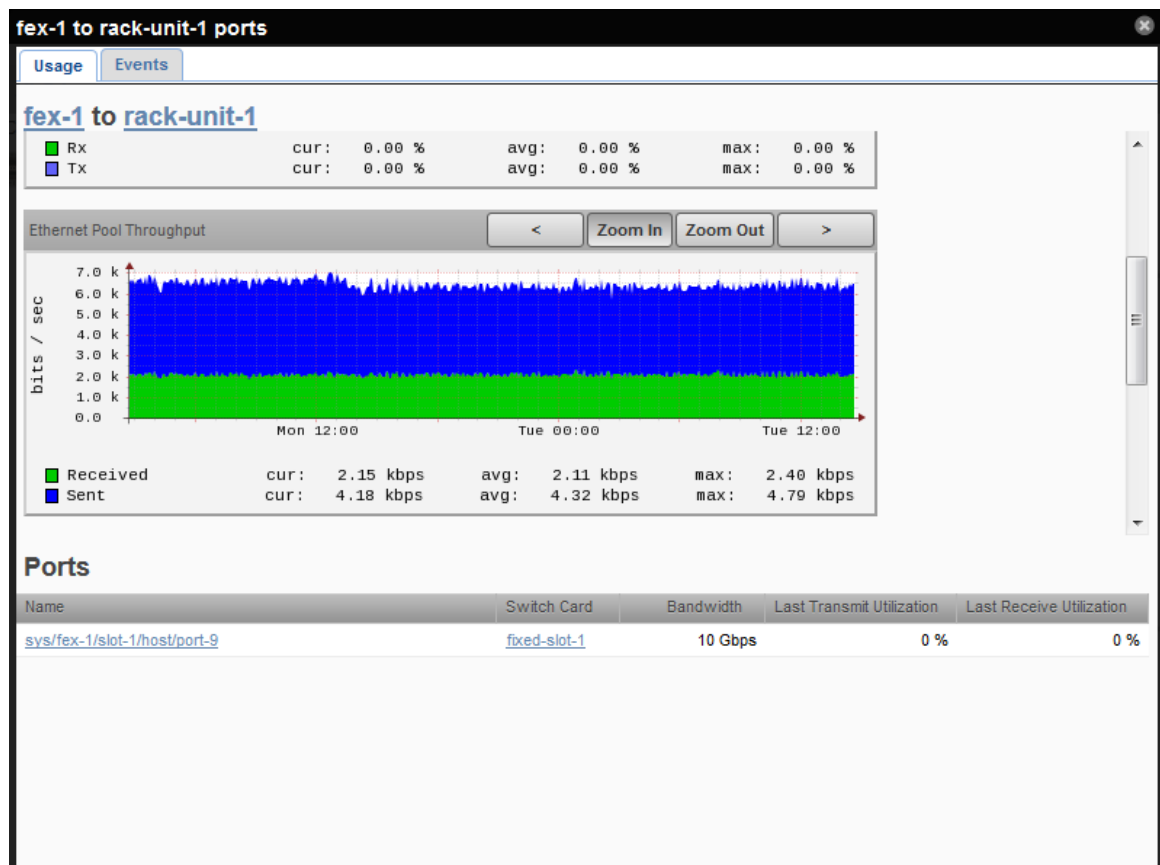
How to Determine Congestion between a Fabric Extender and a Rack Server?

If you want to determine if there is congestion between a FEX and a Rack Server, you can use the **Topology** view and analyze the *throughput*, *capacity* and *remaining capacity* values. For example:

- 1 From within the UI, click **Topology**.
- 2 Click **UCS1** in the left-pane to display the topographical layout for *UCS1* in the right-hand pane.
- 3 To view the connection between Fex-1 and Rack-Server - 1, click on the connection line between the two.

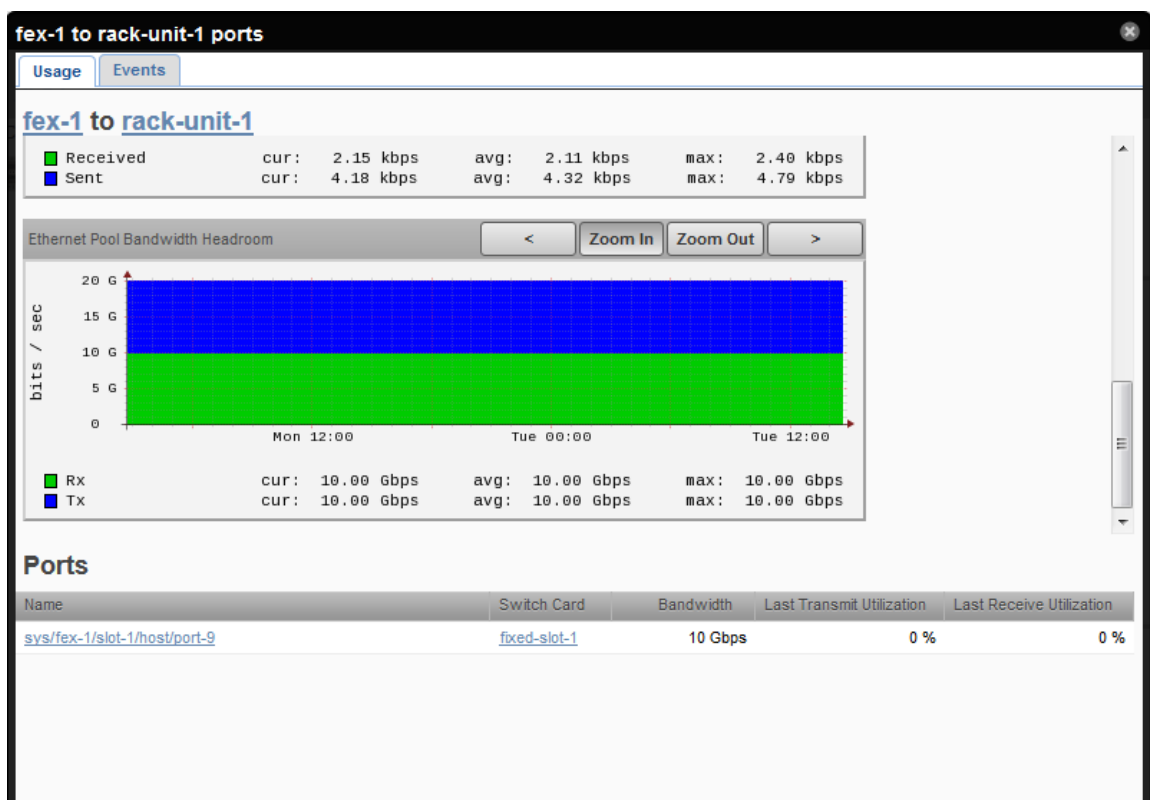


The following information pop-up displays:



This shows the connecting port and its capacity is 10 Gbps. This link supports 10 Gbps for both receiving and sending data

- 4 Scroll through the graphs in the pop-up window until you find the **Ethernet Pool Bandwidth Remaining Capacity** graph.



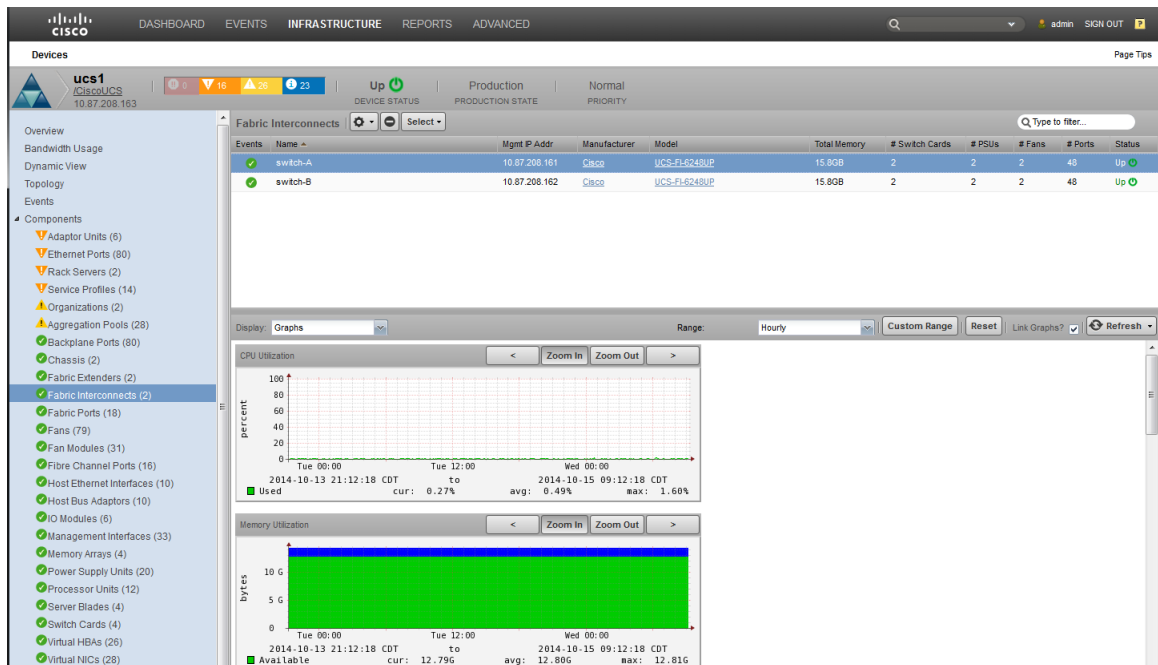
In our example, the RX and TX values are ~10Gbps. This implies the connection is operating at maximum capacity and there is no additional remaining capacity or bandwidth available.

In another example, if the remaining capacity value for receiving is 9 Gbps, it would imply that only 10% of available capacity is used for receiving data. If the remaining capacity value for transmission (sending) is 8 Gbps, it would imply that 20% of the available bandwidth is used to send data and there is room in both cases to accommodate additional data.

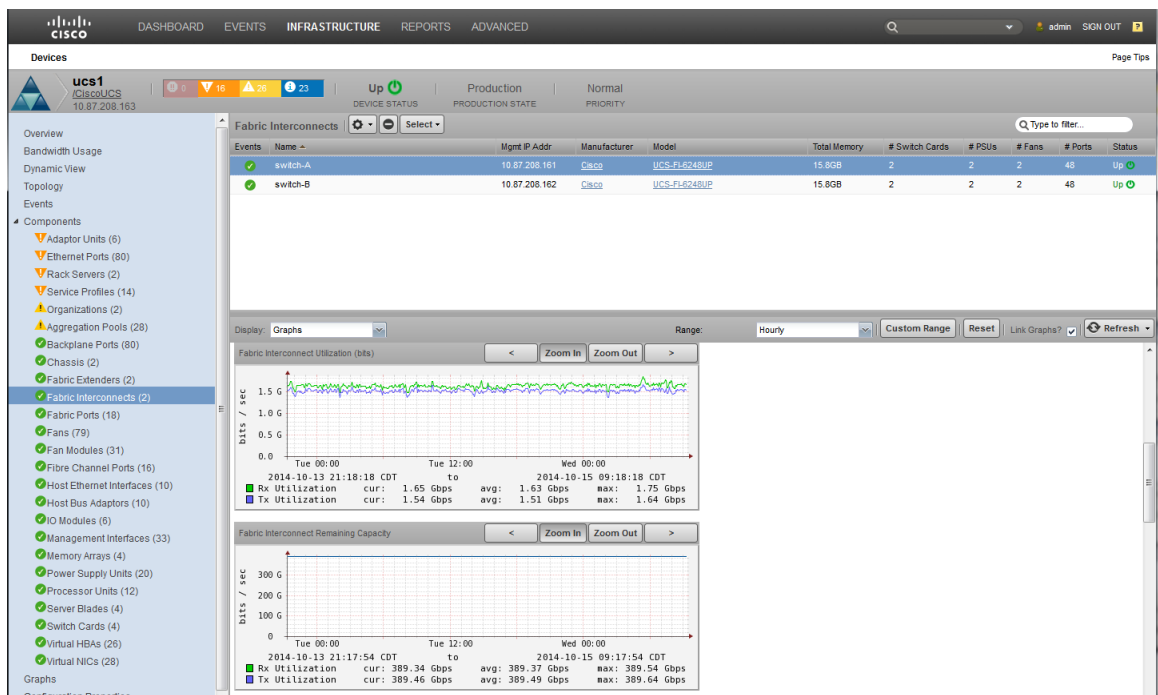
How to Display Fabric Usage Data

The Fabric Interconnects panel enables you to display graphs that show total bandwidth use against the capability of the FI and various switch/chassis capacities to help you identify the heaviest consumers of bandwidth in the domain. Remaining capacity data is also available that indicates how much unused bandwidth capacity is available for each chassis.

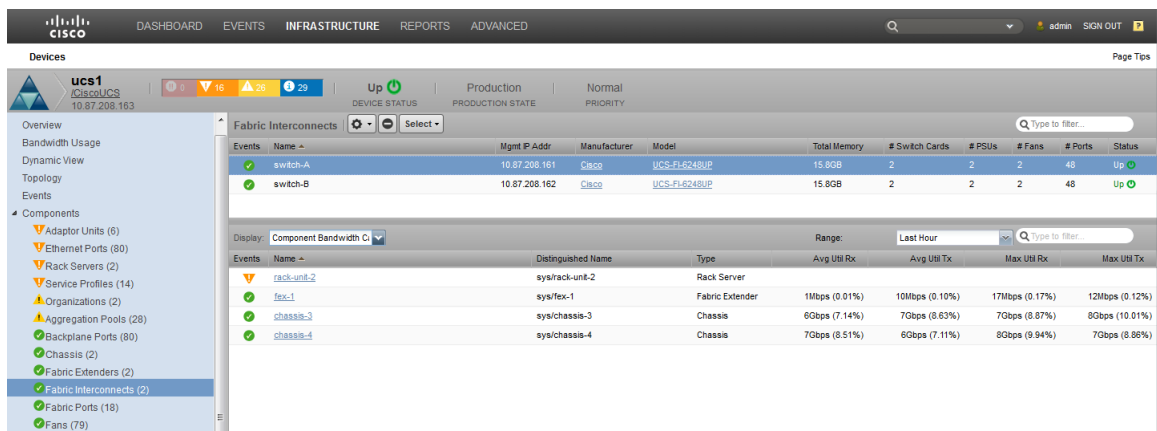
- 1 Navigate to **Infrastructure > Device** {a component, for example } **CiscoUCS**.
- 2 In the right pane click a device name from the list, **ucs1**, for example.
- 3 In the left pane, click **Fabric Interconnects (nn)**. The Fabric Interconnects information pane displays:



- 4 Click a switch name, for example **switch-A**.
- 5 Select **Graphs** from the **Display:** drop-down and browse down to the **Fabric Interconnect Capacity Utilization** graph. This graph shows the total bandwidth use against the capability of the FI. For example:



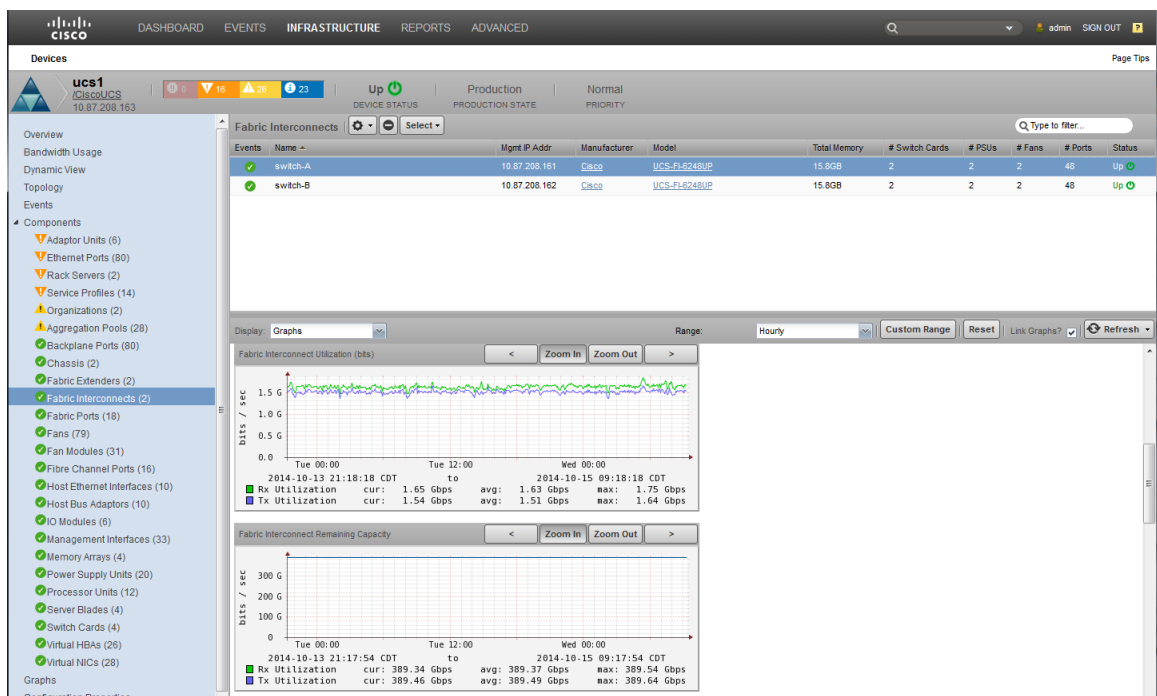
- 6 Select **Component Bandwidth Capacity** from the **Display:** drop-down to display data for the components within the switch. The Remaining Capacity columns indicate how much unused bandwidth capacity is available for each chassis, based on the configured connections.



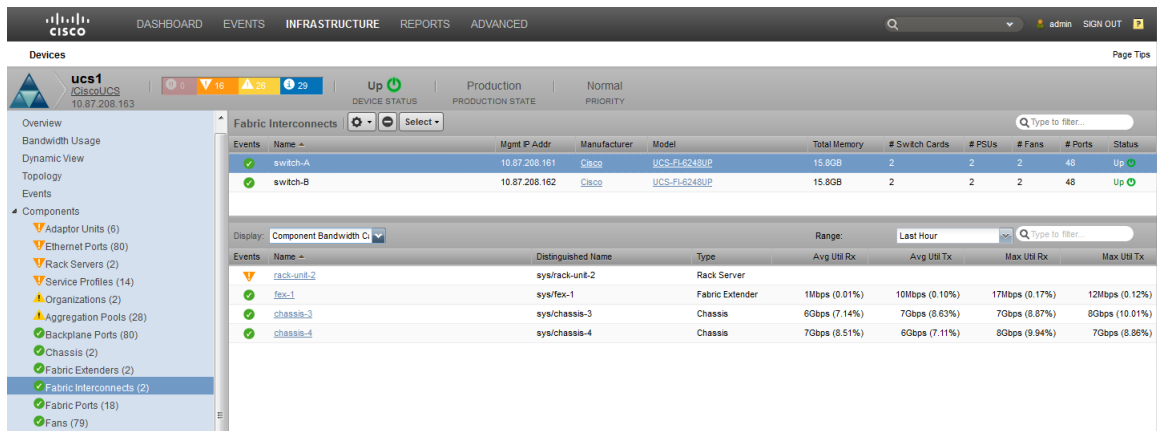
How to Determine Blade Server Capacity

The Chassis panel enables you to display graphs that identify which blade servers are the heaviest users of chassis bandwidth within a chassis

- 1 Navigate to **Infrastructure > Components > Chassis**.
- 2 Click a chassis name.
- 3 Select Blade Server from the **Display:** drop-down and browse down to the Fabric Capacity Utilization graph. This graph shows the total bandwidth use against the capability of the FI. For example:



- 4 Select Chassis Capacity from the **Display:** drop-down to display data for chassis within the switch. The Remaining Capacity columns indicate how much unused bandwidth capacity is available for each chassis, based on the configured connections.



How to Find the Server Using the Most Bandwidth in a Domain

To find the server with the highest bandwidth usage within a domain, you can consult the dashboard and its portlets. By default the dashboard provides current usage views for the following:

- Domains
- Fabric Interconnects
- Fabric Extenders
- Servers
- Service Profiles

The default dashboard includes the following portlets:

Domain Overview portlet -

Shows utilization and open event counts.

Service Profiles portlet -

Shows current fabric utilization across all domains (or any single domain).

Chassis Capacity portlet -

Shows utilization by chassis for a single domain.

UCS Inventory portlet -

Shows total number of blades and how many are associated with service profiles.

The screenshot displays the Cisco UCS Performance Manager dashboard. The top navigation bar includes links for DASHBOARD, EVENTS, INFRASTRUCTURE, REPORTS, and ADVANCED. The main content area is divided into several portlets:

- Welcome to Cisco UCS Performance Manager:** A introductory text block explaining the tool's purpose.
- Chassis Capacity:** A table showing utilization for different chassis.

Events	Name	Avg Util Rx	Avg Util Tx
chassis...	chassis...	0.01 %	0.00 %
chassis...	chassis...	0.01 %	0.00 %
chassis...	chassis...	0.01 %	0.00 %
chassis...	chassis...	0.01 %	0.00 %
chassis...	chassis...	0.01 %	0.00 %
chassis...	chassis...	0.01 %	0.00 %
- Domain Overview:** A table showing utilization for different domains.

Name	24-hour Utilization %	Current Utilization	Uplink Events	Switch Events	Chassis Events
aus-ucs13		NaN %			
aus-ucs12		NaN %			
ucs1		2.17 %	2	6	
aus-ucs11		0.03 %			
- Service Profiles:** A table showing service profiles and their utilization.

Events	Name	Oper	State	Domain	Server	Organization	Avg Util Rx	Avg Util Tx
▲	Ausi	unassoci...	ucs1			/org-Austin Lab	0.00 %	0.00 %
▲	Esxi	unassoci...	ucs1			/org-Austin Lab	0.00 %	0.00 %
▲	ESXi	unassoci...	ucs1			/org-Austin Lab	0.00 %	0.00 %
▲	ESXi	ok	ucs1		chassis-3/blade-7	/org-Austin Lab	4.53 %	4.38 %
▲	ESXi	ok	ucs1		chassis-4/blade-8	/org-Austin Lab	4.41 %	4.51 %
▲	ESXi	ok	ucs1		rack-unit-1	/org-Austin Lab	0.00 %	0.02 %
▼	ESXi	inaccessible	ucs1		rack-unit-2	/org-Austin Lab	0.00 %	0.00 %
- UCS Inventory:** A section titled "Currently Monitoring 4 UCS Domains" and "Servers Allocated (6 / 152)". It includes a table showing allocated and free servers.

Name	Allocated	Free
aus-ucs11	0	
ucs1	6	
aus-ucs13	0	

You can add additional portlets to enhance the dashboard capabilities.

To discover the server that is using the most bandwidth in a domain, perform the following:

- 1 Add the *Server Capacity* portlet to the dashboard:
 - a On the dashboard, click **Add Portlet**. This displays the Add Portlet dialog.
 - b Within the Add Portlet dialog, click the arrow to access the drop-down list.

The screenshot shows the Cisco UCS Performance Manager interface. The top navigation bar includes Dashboard, Events, Infrastructure, Reports, and Advanced. The main content area is divided into several sections:

- Welcome to Cisco UCS Performance Manager:** A introductory text block explaining the tool's purpose.
- Domain Overview:** A table listing domains and their utilization.

Name	24-hour Utilization %	Current Utilization
aus-ucs13		NaN
aus-ucs12		NaN
ucs1		2.17
aus-ucs11		0.03
- Service Profiles:** A table listing service profiles and their status.

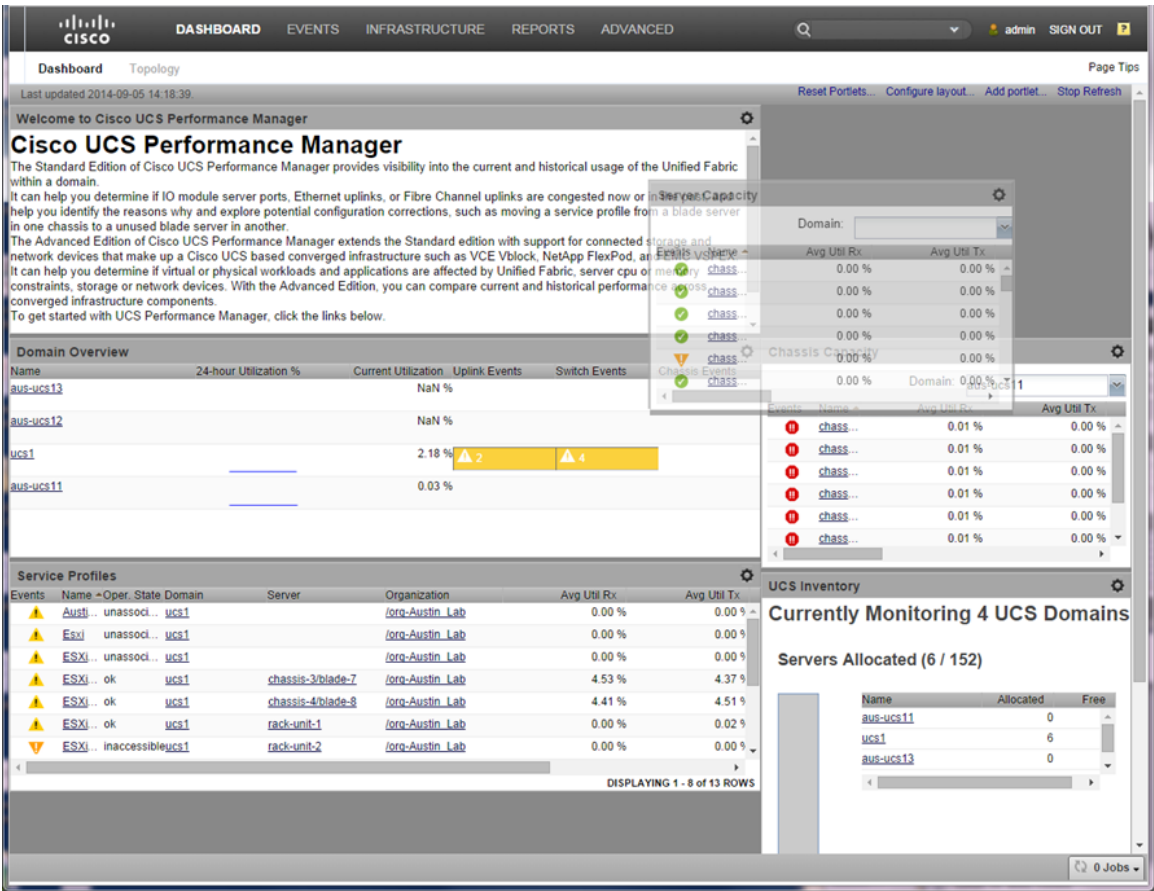
Events	Name	Oper.	State	Domain	Server	Organization
▲	Austi...	unassoci...	ucs1			/org-Austin L...
▲	Exxi...	unassoci...	ucs1			/org-Austin L...
▲	ESXi...	unassoci...	ucs1			/org-Austin L...
▲	ESXi...	ok	ucs1		chassis-3/blade-7	/org-Austin L...
▲	ESXi...	ok	ucs1		chassis-4/blade-8	/org-Austin L...
▲	ESXi...	ok	ucs1		rack-unit-1	/org-Austin L...
▼	ESXi...	inaccessib...	ucs1		rack-unit-2	/org-Austin L...
- Chassis Capacity:** A table showing chassis utilization.

Events	Name	Avg Util Rx	Avg Util Tx
▲	chass...	0.01 %	0.00 %
▲	chass...	0.01 %	0.00 %
▲	chass...	0.01 %	0.00 %
▲	chass...	0.01 %	0.00 %
▲	chass...	0.01 %	0.00 %
- UCS Inventory:** A section titled 'Currently Monitoring 4 UCS Domains' showing 'Servers Allocated (6 / 152)'.

Name	Allocated	Free
aus-ucs11	0	
ucs1	6	
aus-ucs13	0	

An 'Add Portlet' dialog box is open, showing a list of available portlets. The 'Server Capacity' portlet is selected.

- c Select **Server Capacity** from the drop-down list. The added portlet displays at the top of the right hand column in the dashboard. You can click the title bar of the portlet to drag it to another location, for example the top of the left hand column.



- d To configure the portlet layout that best suits your needs, click *Configure Layout* on the dashboard to display the Configure Layout dialog.

The screenshot displays the Cisco UCS Performance Manager interface. The top navigation bar includes links to Dashboard, Events, Infrastructure, Reports, and Advanced. The main content area is divided into several portlets:

- Server Capacity:** A table showing utilization for domain 'aus-ucs11'. Columns include Avg Util Rx, Avg Util Tx, Max Util Rx, Max Util Tx, and Avg Headroom Rx. All values are 0.00% except for Avg Headroom Rx, which is 20.00 Gbps.
- Chassis Capacity:** A table showing utilization for domain 'aus-ucs11'. Columns include Avg Util Rx and Avg Util Tx. All values are 0.01%.
- Domain Overview:** A table showing utilization for domain 'aus-ucs11'. Columns include Name, 24-hour Utilization %, Current Utilization, Uplink Events, Switch Events, and Chassis Events. The 'ucs1' server is highlighted with a yellow bar indicating 2.18% utilization.
- Service Profiles:** A table showing utilization for domain 'aus-ucs11'. Columns include Name, Oper, State, Domain, Server, Organization, Avg Util Rx, and Avg Util Tx. The 'Austi... unassoci... ucs1' profile is highlighted with a yellow bar indicating 0.00% utilization.
- UCS Inventory:** A section titled 'Currently Monitoring 4 UCS Domains' showing 'Servers Allocated (6 / 152)'. A table lists the domains and their allocated/free server counts.

A 'Column Layout' dialog box is open in the center, showing a grid of icons for different layout configurations. The 'Single Column' layout is selected, which maximizes space for the portlet.

- e Choose the layout that presents the portlets the way you want. For example, chose the single column layout to maximize space for the portlet.
- 2 Focus on the domain of interest:
 - a Click the domain name within the Server Capacity portlet. Note that all servers in the domain, both blade and rack, are shown together with their current utilization information.
 - b Mouse over a column heading to display column options. Click on the arrow.
 - c Choose to **Sort Descending** to bring the servers using most bandwidth to the top. This enables you to determine which server has the heaviest bandwidth consumption. Note that columns can be resized, selected and/or removed for your convenience.

Dashboard Topology

Last updated 2014-09-05 14:33:10. [Reset Portlets...](#) [Configure layout...](#) [Add portlet...](#) [Stop Refresh](#)

Server Capacity

Domain: ucs1

Events	Name	Avg Util Rx	Avg Util Tx	Max Util Rx	Max Util Tx	Avg Headroom Rx	Avg Headroom Tx	Max Headroom Rx	Max Headroom Tx
▼	rack-unit-2	0.00 %	0.00 %	0.00 %	0.00 %	0.00 Bps	0.00 Bps	0.00 Bps	0.00 Bps
▼	rack-unit-1	0.00 %	0.00 %	0.00 %	0.02 %	20.00 Gbps	20.00 Gbps	20.00 Gbps	20.00 Gbps
●	chassis-4blade-8	4.36 %	4.44 %	4.56 %	19.12 Gbps	19.10 Gbps	19.14 Gbps	19.11 Gbps	19.11 Gbps
▼	chassis-4blade-7	0.00 %	0.00 %	0.00 %	20.00 Gbps	20.00 Gbps	20.00 Gbps	20.00 Gbps	20.00 Gbps
●	chassis-3blade-8	0.00 %	0.00 %	0.00 %	20.00 Gbps	20.00 Gbps	20.00 Gbps	20.00 Gbps	20.00 Gbps
●	chassis-3blade-7	4.50 %	4.34 %	4.40 %	19.10 Gbps	19.13 Gbps	19.13 Gbps	19.16 Gbps	19.16 Gbps

Service Profiles

Events	Name	Oper. State	Domain	Avg Util Rx	Avg Util Tx	Max Util Rx	Max Util Tx
▲	Austin	unassoci...	ucs1	0.00 %	0.00 %	0.00 %	0.00 %
▲	ESXi	unassoci...	ucs1	0.00 %	0.00 %	0.00 %	0.00 %
▲	ESXi_3_7_old	unassoci...	ucs1	0.00 %	0.00 %	0.00 %	0.00 %
▲	ESXi_3_7_SAN (Aifaifa)	ok	ucs1	4.50 %	4.34 %	4.56 %	4.40 %
▲	ESXi_4_8_SAN	ok	ucs1	4.39 %	4.50 %	4.44 %	4.56 %
▲	ESXi_RackServer1_SAN (Buckinheat)	ok	ucs1	0.00 %	0.02 %	0.00 %	0.02 %
▼	ESXi_RackServer2_SAN	inaccessible	ucs1	0.00 %	0.00 %	0.00 %	0.00 %

DISPLAYING 1 - 8 of 13 ROWS

Welcome to Cisco UCS Performance Manager

Cisco UCS Performance Manager

The Standard Edition of Cisco UCS Performance Manager provides visibility into the current and historical usage of the Unified Fabric within a domain. It can help you determine if IO module server ports, Ethernet uplinks, or Fibre Channel uplinks are congested now or in the past, and help you identify the reasons why and explore potential configuration corrections, such as moving a service profile from a blade server in one chassis to a unused blade server in another.

The Advanced Edition of Cisco UCS Performance Manager extends the Standard edition with support for connected storage and network devices that make up a Cisco UCS based converged infrastructure such as VCE Vblock, NetApp FlexPod, and EMC VSPX.

It can help you determine if virtual or physical workloads and applications are affected by Unified Fabric, server cpu or memory constraints, storage or network devices. With the Advanced Edition, you can compare current and historical performance across converged infrastructure components.

To get started with UCS Performance Manager, click the links below.

[Add Domains](#) | [Explore Domains](#) | [View Domain Topology](#)

Domain Overview

Name	24-hour Utilization %	Current Utilization	Uplink Events	Switch Events	Chassis Events
jenkins-tb1.zenoss.loc8080/zport/dmd/Dashboard#					

0 Jobs

How to Explore Current and Historical Capacity of Domain Port Channels

You can explore both current and historical data to analyze and forecast various cycles and trends within your infrastructure. For example you access both current and historical data about capacity usage of domain port channels. You can use the domain details information to investigate and drill down into each component with a domain:

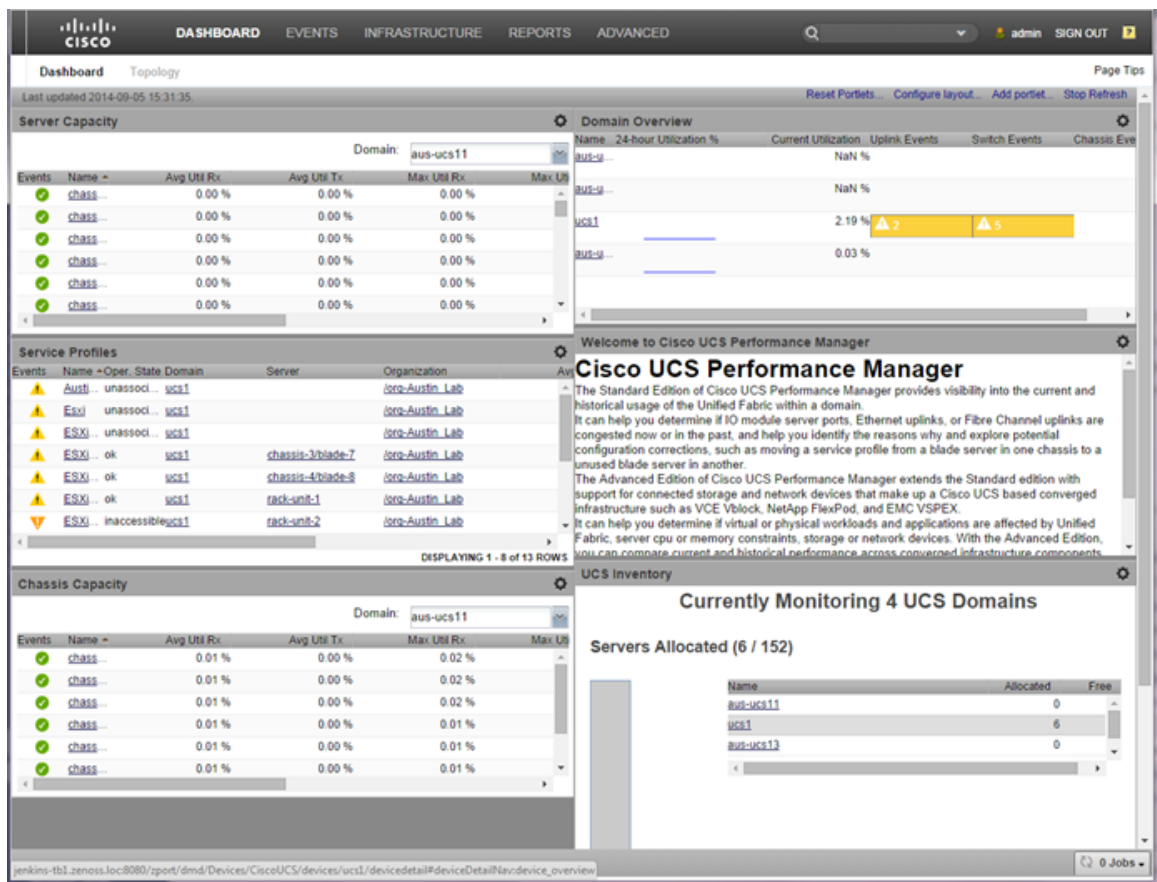
- 1 Navigate to the **Domain Details**. You can either click the domain name on the **Infrastructure** tab or within a dashboard portlet.

Clicking the **Infrastructure** tab displays:

The screenshot displays the Cisco Prime Infrastructure 'Devices' page. The left sidebar contains a hierarchical view of device groups. The main table lists 24 devices with the following columns: Device, IP Address, Device Class, Production State, and Events. The table shows various Cisco UCS and Network devices, some with warning icons indicating issues. The bottom status bar shows 'DISPLAYING 1 - 24 of 24 ROWS'.

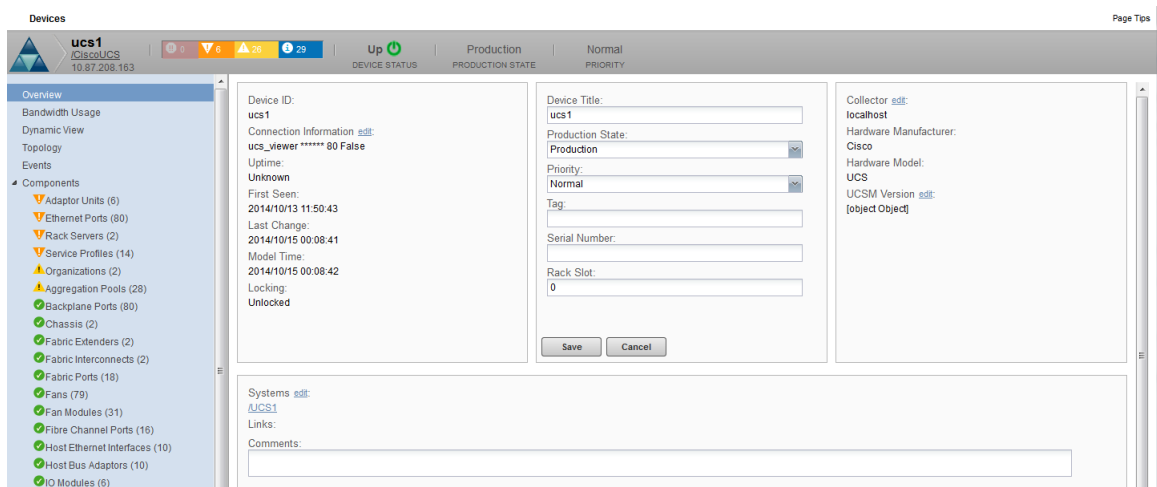
Device	IP Address	Device Class	Production State	Events
10.87.110.135	10.87.110.135	/Server/Linux	Production	1
aus-ucs11	10.87.208.11	/CiscoUCS	Production	1
aus-ucs12	10.87.208.12	/CiscoUCS	Production	40
aus-ucs13	10.87.208.13	/CiscoUCS	Production	38
device_10_171_100_107	10.171.100.107	/Network/Cisco/Nexus/9000	Production	
device_10_171_100_109	10.171.100.109	/Network/Cisco/Nexus/9000	Production	
device_10_171_100_14	10.171.100.14	/Network/Cisco/9500	Production	1
device_10_171_100_47	10.171.100.47	/Network/Cisco	Production	
device_10_171_100_88	10.171.100.88	/Network/Cisco/Nexus/1000V	Production	
device_10_171_54_9	10.171.100.47	/Network/Cisco	Production	2
jenkins-tb1.zenoss.loc	10.87.208.222	/Server/Linux	Production	
perf2-switch	10.87.207.10	/Network/Cisco	Production	
perf2-switch	10.171.100.46	/Network/Cisco	Production	2
perf2-vcenter		/vSphere	Production	2
sunward-vcenter1		/vSphere	Production	1
ucs1	10.87.208.163	/CiscoUCS	Production	29
ucs1-4-7.zenoss.loc	10.87.208.168	/Server/Microsoft/Windows	Production	
ucs1-linux1	10.87.208.175	/Server/Linux	Production	
ucs1-rs1-1.zenoss.loc	10.87.208.185	/Server/Linux	Production	
ucs1-rs1-3.zenoss.loc	10.87.208.187	/Storage/EMC/VNX	Production	
ucs1-vcenter		/vSphere	Production	1
ucsv-16GB.zenoss.loc	10.87.208.172	/Server/Linux	Production	
ucsv-24GB.zenoss.loc	10.87.208.171	/Server/Linux	Production	
ucsv-32GB.zenoss.loc	10.87.208.170	/Server/Linux	Production	

Viewing the Dashboard portlets:

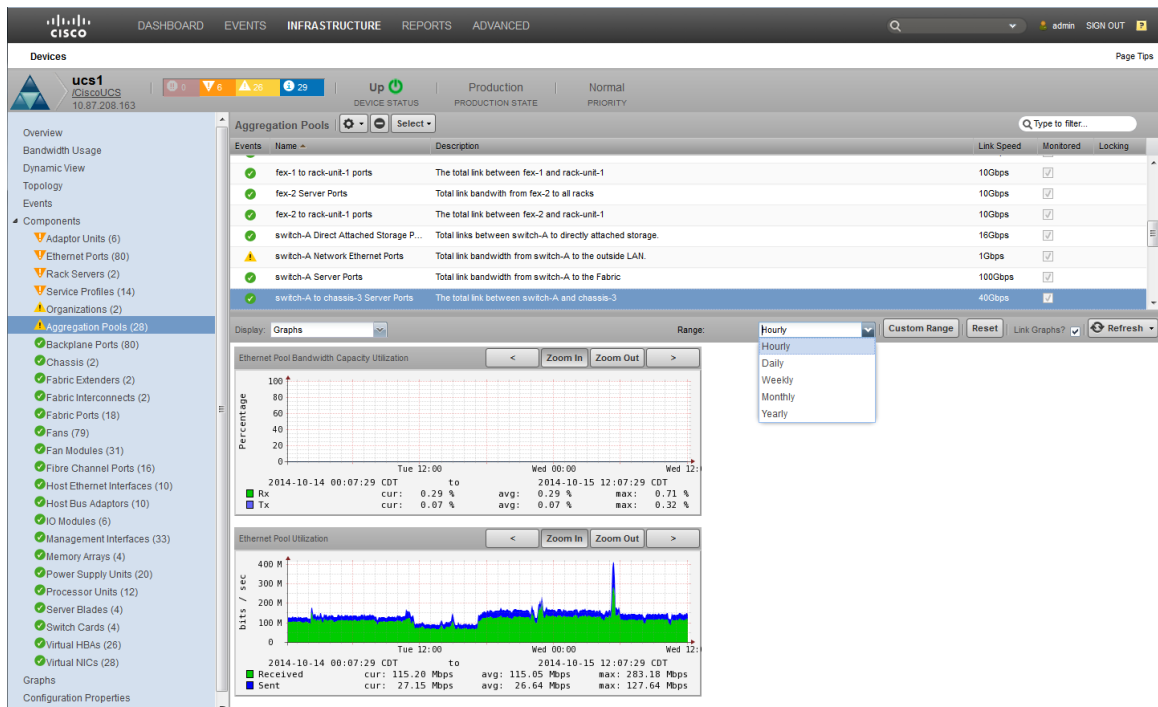


The **Domain Details** view includes:

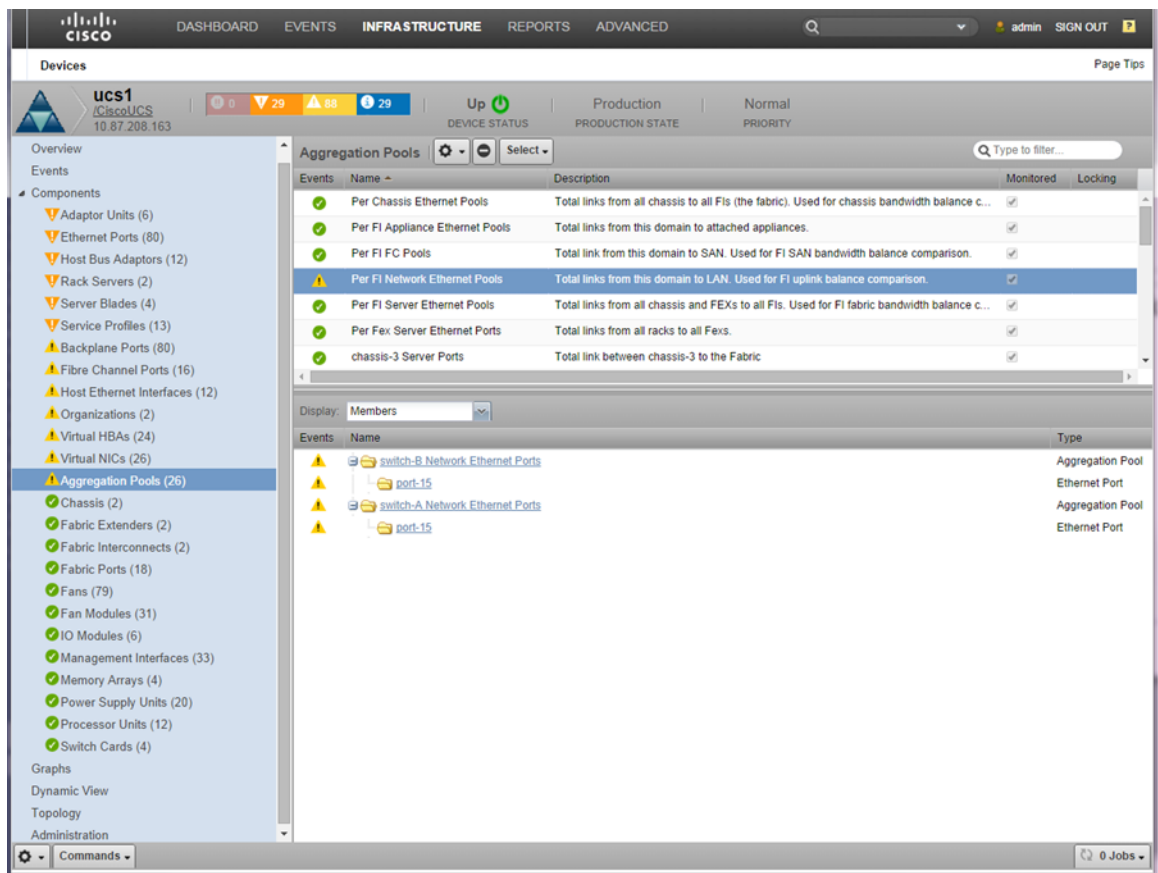
- A top bar that provides domain status information.
- An overview pane that provides general information about your selected domain.
- The ability to view events specific to the selected domain by clicking **Events** in the left column.
- A component list that enables you to navigate to all parts of the domain model.



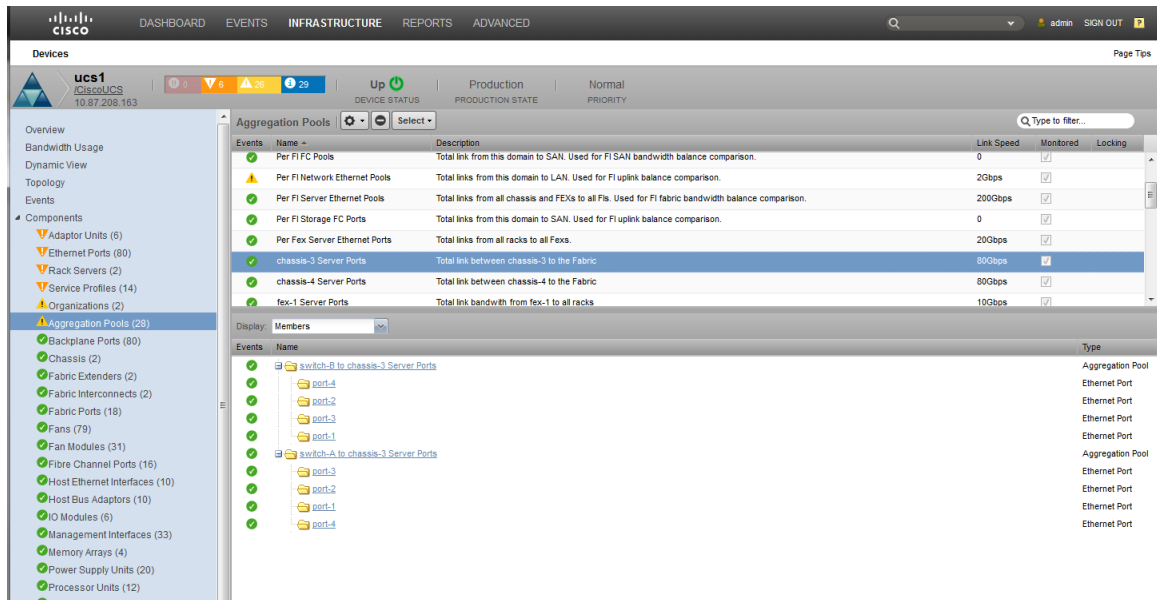
- 2 Click **Aggregation Pools** in the left column to view **LAN Uplink** information. Note that you can select which data you want view from the drop-down list.



- 3 You can view the aggregation pool uplink members and their information. Select **Members** from the drop-down list in the right pane.



- 4 You can view information about aggregation pool chassis members. Select a chassis name from the top right pane, for example **Chassis-3 Server Ports** and select **Members** from the drop-down list in the right pane. This displays the chassis member info in the bottom right pane.



The various graphs that are available to you include:

- **Capacity Utilization** – Utilization % of configured capacity
- **Capacity Utilization Balance** – the degree to which usage of different ports in the pool is not equal
- **Remaining Capacity** – Available capacity less amount used – useful in identifying spare capacity
- **Remaining Capacity Balance** – Inverse of Capacity Utilization Balance
- **Port Pool Throughput** – utilization in bits/second of entire port pool

How to Determine Virtual Adapter Capacity

The UI provides you with tools that enable you to view information about virtual adapters in your infrastructure, including associated service profiles and historical capacity data. Perform the following to view the historical capacity information for a virtual adapter:

- 1 View adapter capacity:
 - a Navigate to **Infrastructure > Device** (for example *UCS1*)
 - b Expand **Components** in the left pane.
 - c Select **Service Profiles(n)** from the list to display the Service Profiles associated with the device (in this example, *ucsf*) in the right pane.
 - d While viewing the right pane with the service profile information, for **ucs1** for example, click the **down arrow** next to **Display** to expand the drop-down list of display options.
 - e Select **vHBA Capacity** from the options list to display usage by vHBA for this service profile.

DASHBOARD
EVENTS
INFRASTRUCTURE
REPORTS
ADVANCED

Devices

UCS1
Cisco UCS
10.87.208.163

0

29

91

29

Up

DEVICE STATUS

Production

PRODUCTION STATE

Normal

PRIORITY

Overview

Events

Components

Adaptor Units (6)

Ethernet Ports (80)

Host Bus Adaptors (12)

Rack Servers (2)

Server Blades (4)

Service Profiles (13)

Backplane Ports (80)

Fibre Channel Ports (16)

Host Ethernet Interfaces (12)

Organizations (2)

Virtual HBAs (24)

Virtual NICs (26)

Aggregation Pools (26)

Chassis (2)

Fabric Extenders (2)

Fabric Interconnects (2)

Fabric Ports (18)

Fans (79)

Fan Modules (31)

IO Modules (6)

Management Interfaces (33)

Memory Arrays (4)

Power Supply Units (20)

Processor Units (12)

Switch Cards (4)

Graphs

Dynamic View

Topology

Service Profiles

Events	Distinguished Name	User Label	Type	Server	Organization	Logical Server
	org-root/org-Austin_Lab/Is-Austin		initial-template		org-Austin_Lab	
	org-root/org-Austin_Lab/Is-ESXi_3_7_SAN	Alfalfa	instance	chassis-3/blade-7	org-Austin_Lab	10.87.208.166
	org-root/org-Austin_Lab/Is-ESXi_3_7_old		instance		org-Austin_Lab	
	org-root/org-Austin_Lab/Is-ESXi_4_8_SAN		instance	chassis-4/blade-8	org-Austin_Lab	10.87.208.169
	org-root/org-Austin_Lab/Is-ESXi_RackServer1...	Buckwheat	instance	rack-unit-1	org-Austin_Lab	10.87.208.183
	org-root/org-Austin_Lab/Is-ESXi_RackServer2...		instance	rack-unit-2	org-Austin_Lab	ucs1-4-7.zenoss
	org-root/org-Austin_Lab/Is-Esxi		initial-template		org-Austin_Lab	

Display: vHBA Capacity

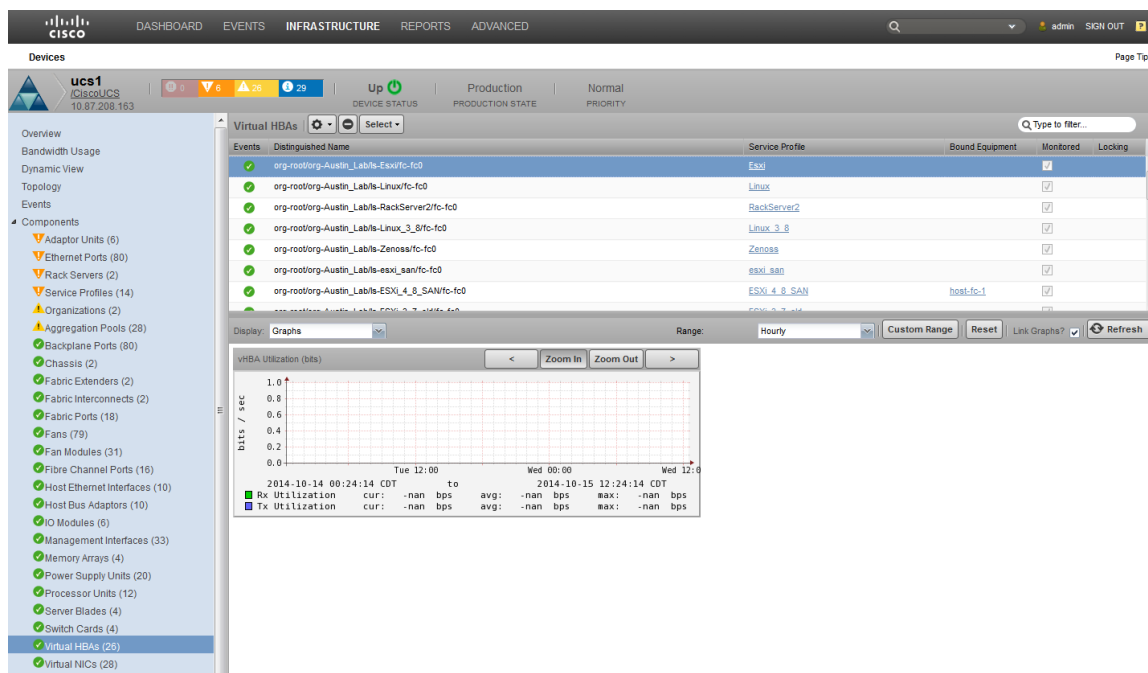
Range: Last Hour

Events	Name	Avg Util Rx	Avg Util Tx	Max Util Rx	Max Util Tx	Avg Headroom Rx	Avg Headroom Tx	Max
	fc0	0.03 %	0.23 %	0.04 %	0.92 %	9.98 Gbps	9.98 Gbps	
	fc1	0.00 %	0.00 %	0.00 %	0.00 %	10.00 Gbps	10.00 Gbps	

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- a Expand **Components** in the left pane.
- b Select **Virtual HBAs(n)** from the list to display the Virtual HBAs associated with the device (in this example, *ucs1*) in the right pane.

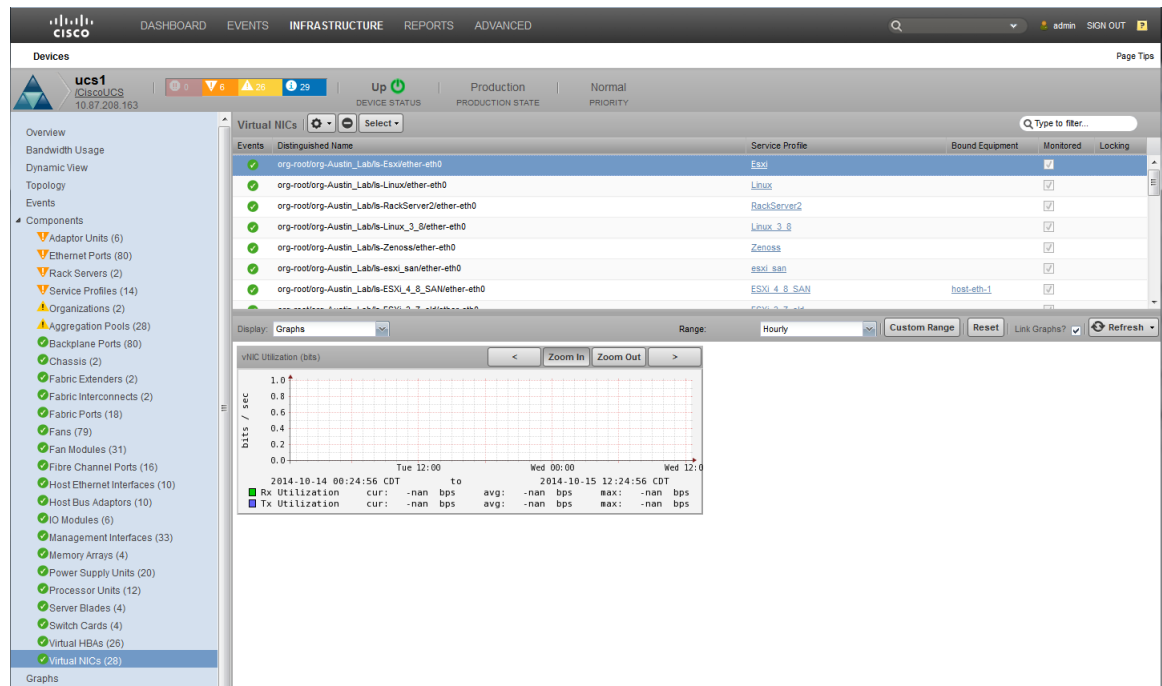


The right hand pane provides overview information about the selected domain. If you want to view events that are specific to the selected domain, click **Events** in the left-hand pane.

3 View virtual NIC (vNIC) use:

- a Expand **Components** in the left pane.
- b Select **Virtual NICs(n)** from the list to display the vNICs associated with the device (in this example, *ucs1*) in the right pane.

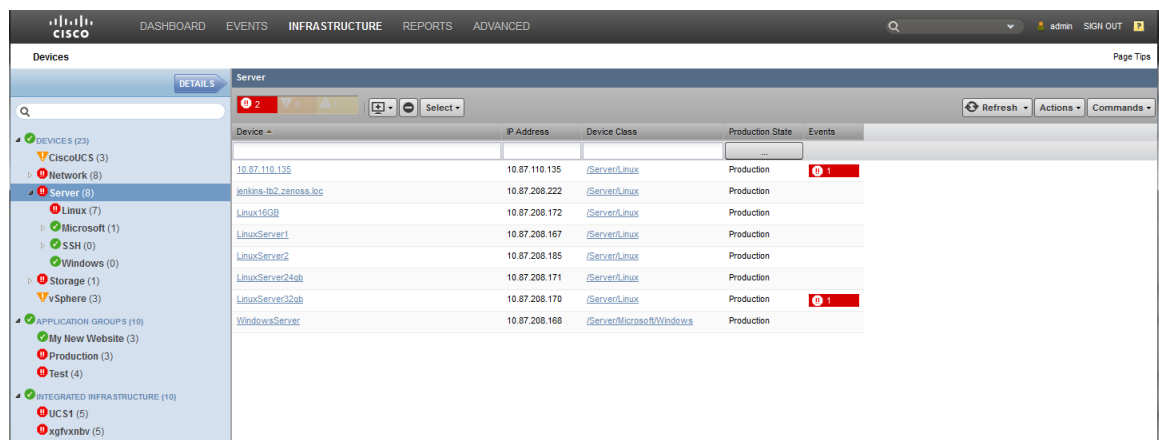
The right-hand pane displays usage information for each vNIC. You can sort the **Service Profile** column to conveniently group the vNICs.



How to Display Operating System Performance

The Cisco UCS Performance Manager UI enables you to survey and monitor your operating system performance. You can use it to review historical and real time performance and usage data of components such as CPU and memory. The following example scenario describes how to review the OS performance information for your system.

- 1 Within the Cisco UCS Performance Manager UI, navigate to **Infrastructure > Devices > Server (n)** to display the **Server Device** pane on the right.



- 2 Select a device name that you want to learn details about. In this example, **LinuxServer1** is selected.
- 3 Double-click the device name, in this case, **LinuxServer1** to display the **Overview** pane for that device.

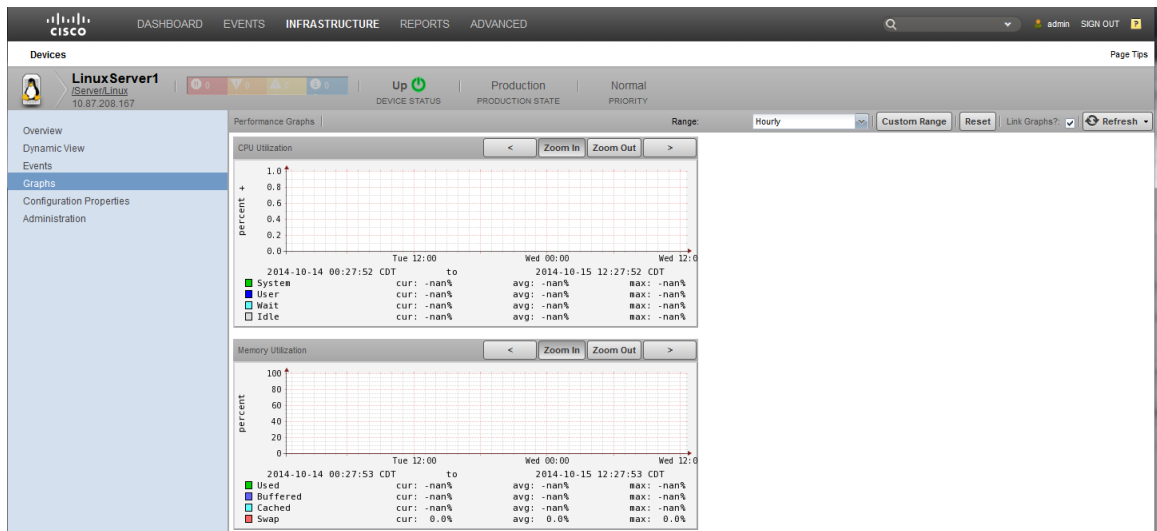
The screenshot shows the Cisco UCS Performance Manager interface for a device named **LinuxServer1** (IP: 10.87.208.167). The interface is divided into several sections:

- Overview:** A sidebar on the left with links to Overview, Dynamic View, Events, Graphs, Configuration Properties, and Administration.
- Device Information:**
 - Device ID: ucs1-3-8
 - Connection Information [edit](#): public
 - Uptime: Unknown
 - First Seen: 2014/10/13 11:10:18
 - Last Change: 2014/10/13 11:10:35
 - Model Time: Not Modeled
 - Locking: Unlocked
 - Memory/Swap: Unknown/Unknown
- Configuration Fields:**
 - Device Title: LinuxServer1
 - Production State: Production
 - Priority: Normal
 - Tag:
 - Serial Number:
 - Rack Slot:
- SNMP Configuration:**
 - Collector [edit](#): localhost
 - Hardware Manufacturer [edit](#): None
 - Hardware Model [edit](#): None
 - OS Manufacturer [edit](#): None
 - OS Model [edit](#): None
 - SNMP SysName:
 - SNMP Location:
 - SNMP Contact:
 - SNMP Description:
 - SNMP Community: public
 - SNMP Version: v2c
- Links and Comments:**
 - Systems [edit](#): None
 - Groups [edit](#): [Add New Website](#)
 - Links:
 - Comments:

Buttons for **Save** and **Cancel** are located at the bottom of the configuration fields.

Within this pane you can view details such as the OS version and links to service profiles.

- To view CPU and memory usage, click **Graphs** in the left pane. This displays the **Performance Graphs** pane on the right side. This pane includes information about CPU and memory usage reported directly by the operating system. You can also specify which data to display and what time frame to use.



Integrated Infrastructure

Note This functionality is only available with a Cisco UCS Performance Manager license.

If you have integrated infrastructure, the Cisco UCS Performance Manager UI enables you to view your integrated infrastructure (or many) and analyze collected data about each one as a unit. Because each integrated infrastructure is a collection of hardware that functions as a server, it is convenient to view its information as a whole instead of as individual resources. For example, an integrated infrastructure can provide information about such included device types as:

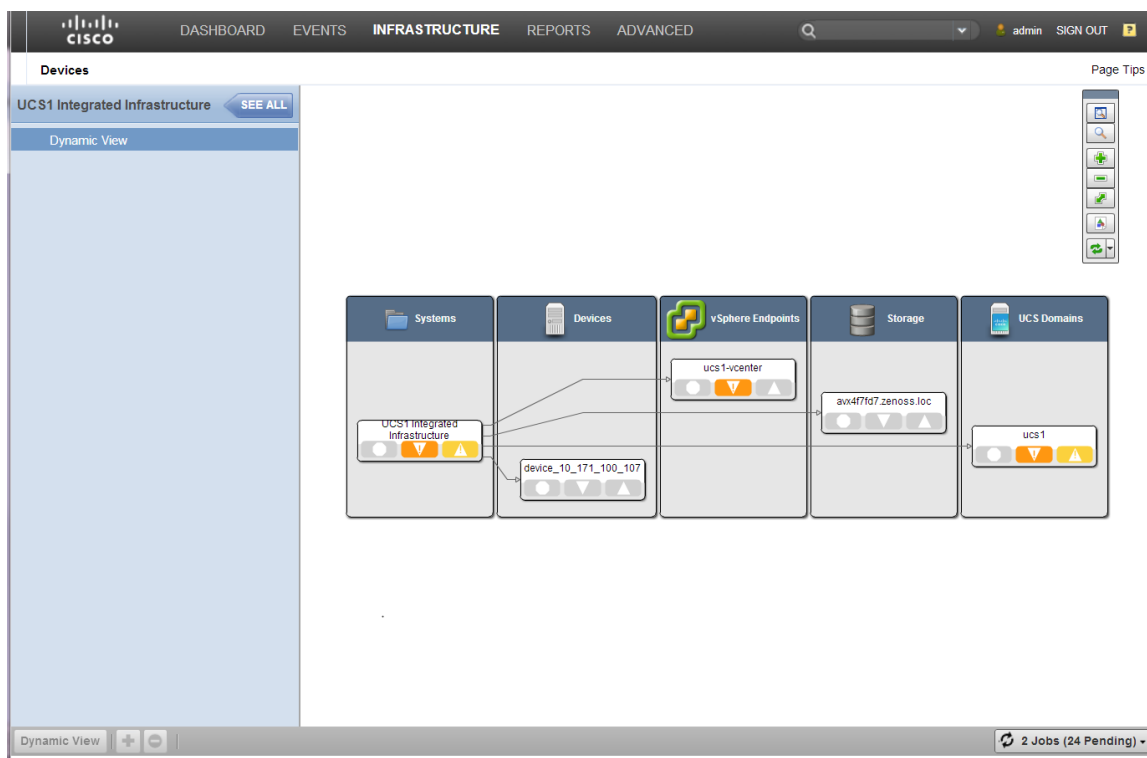
- computation
- network
- storage
- virtual

Using Cisco UCS Performance Manager with Integrated Infrastructure Components

The Cisco UCS Performance Manager can automatically discover your integrated infrastructure(s), or you can manually define them. The Cisco UCS Performance Manager can provide views into your integrated infrastructure KPIs (key performance indicators) and applications running within the integrated infrastructure. This enables you to quickly determine and identify constraints in the system that are contributing to or will eventually result in performance degradation. Historical data can be defined in terms of scope and time frame so you can quickly arrive at useful data.

The Cisco UCS Performance Manager also enables you to view service profiles, virtual machines, and operating systems running within each integrated infrastructure. This means you can quickly identify and evaluate resource derived constraints and component faults, either current or historical. You can access finer detail in terms of the resources consumed by individual CPUs, interfaces, and memory. This means you can detect/identify for example, if a particular virtual machine in your integrated infrastructure is using either the most resources or too much of the available resources. Using historical data in this case enables you to evaluate the severity, longevity, and periodicity of issues. This enables you to reassign resources or make changes to profiles to prevent or fix potential issues.

The Cisco UCS Performance Manager UI has the **Topology** view that also extends to the integrated infrastructure. This means you can view a graphical display of the LAN and SAN devices associated with your integrated infrastructure(s) and access historical data by clicking links associated with each integrated infrastructure.

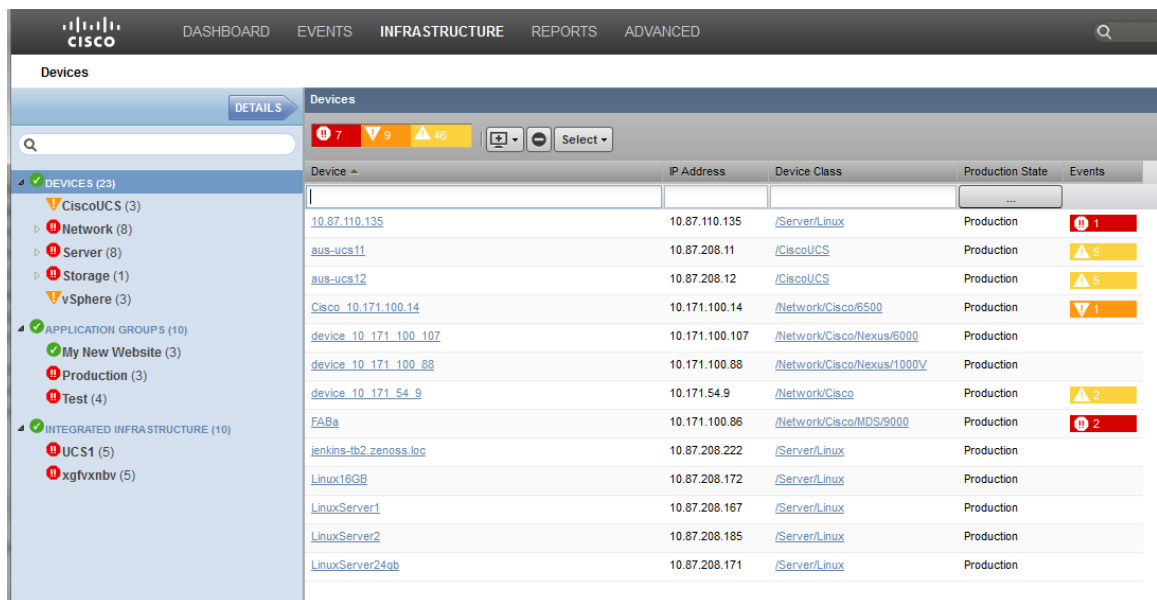


Historical data enables you to determine cyclic and periodic trends within your system. Using historical data together with an integrated infrastructure enables you to leverage the data for a complete collection of components and services. This extends your problem detection and analysis very quickly and efficiently.

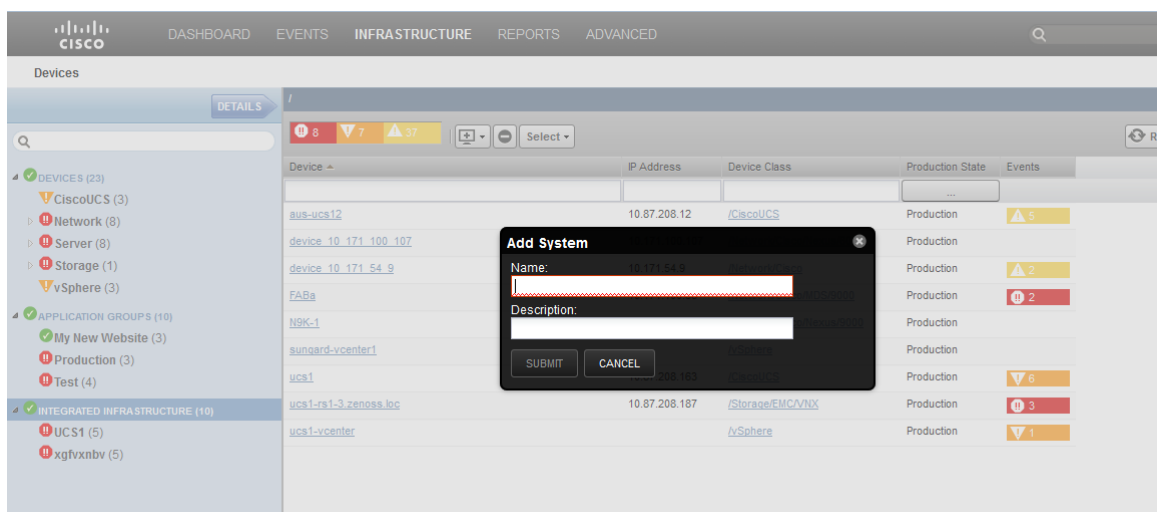
Creating Integrated Infrastructure Views

The Cisco UCS Performance Manager UI enables you to create specialized views of your integrated infrastructure that enable you to understand and detect issues within the infrastructure. Perform the following to create an example integrated infrastructure view:

- 1 Click the **Infrastructure** tab to display the **Infrastructure** view.



- 2 In the left hand *Devices* pane, click **Integrated Infrastructure(n)** to highlight it.
- 3 In the left-hand pane, at the bottom, click the plus sign (+) to display the **Add System** dialog.



- 4 Enter a name and description for the new system, for example:

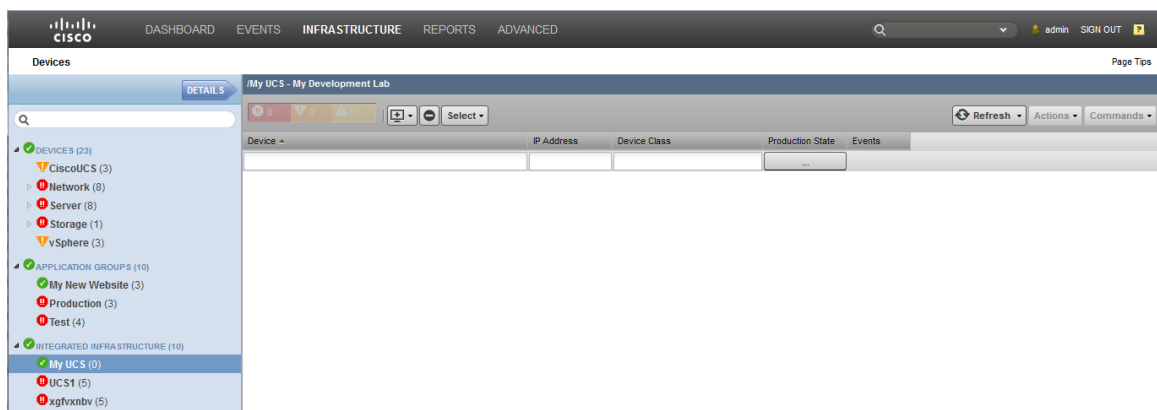
Name = My UCS

Description = My Development Lab

- 5 Click **Submit** to save and dismiss the dialog box. Your new system name displays in the left pane under **Integrated Infrastructure(n)**.



Your new system and its contents display in the right hand pane. It is empty because no members are defined yet.



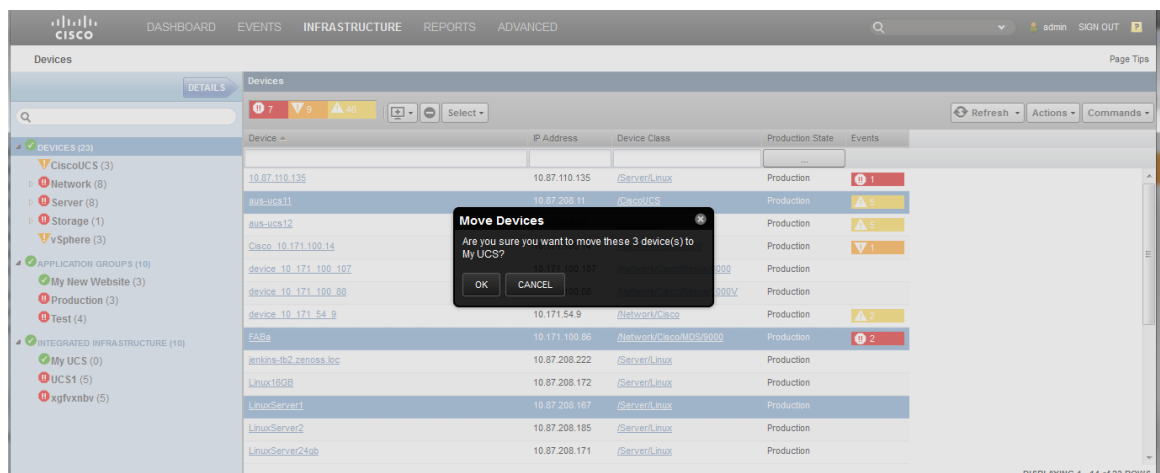
6 Add members to your new system:

- a Navigate to **Infrastructure > Devices** to display available devices in the right hand pane.

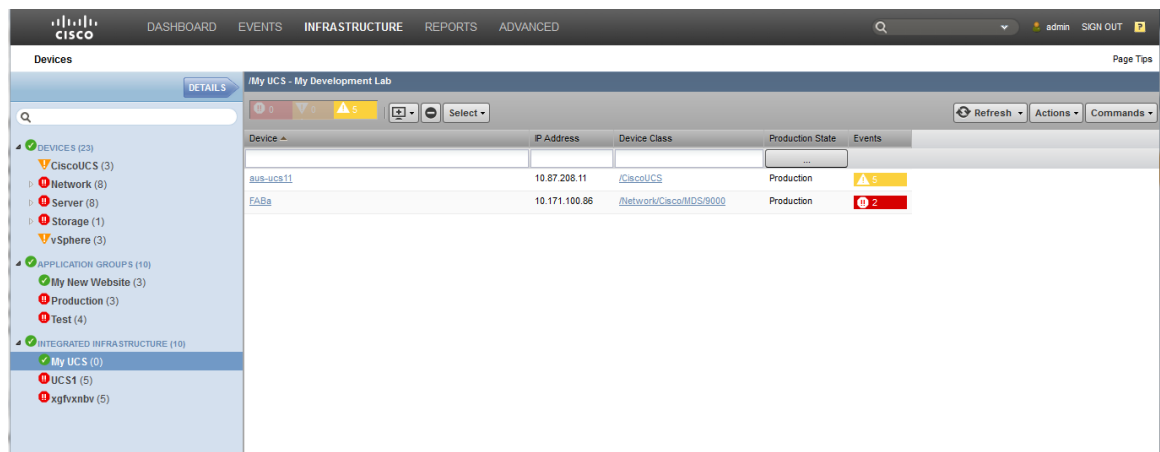
- b Select the devices you want to add to your new system. Drag and drop them onto the new system name in the left hand pane. For example, the following graphic shows several selected devices being dragged over and dropped on the system called **My UCS**.



- c When you drop the selected device(s) on the target system, the **Move Devices** confirmation dialog displays. Click **OK** to confirm and close the dialog.

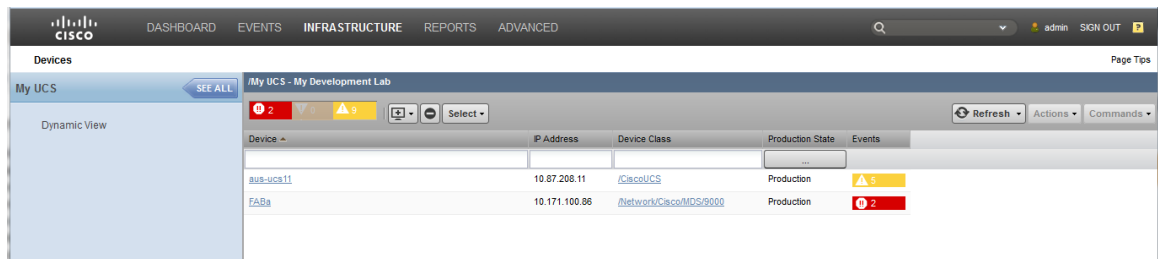


- d Your system now displays the devices as they are added. The right hand pane includes the devices and various types of information, including a listing of open events and their severity.

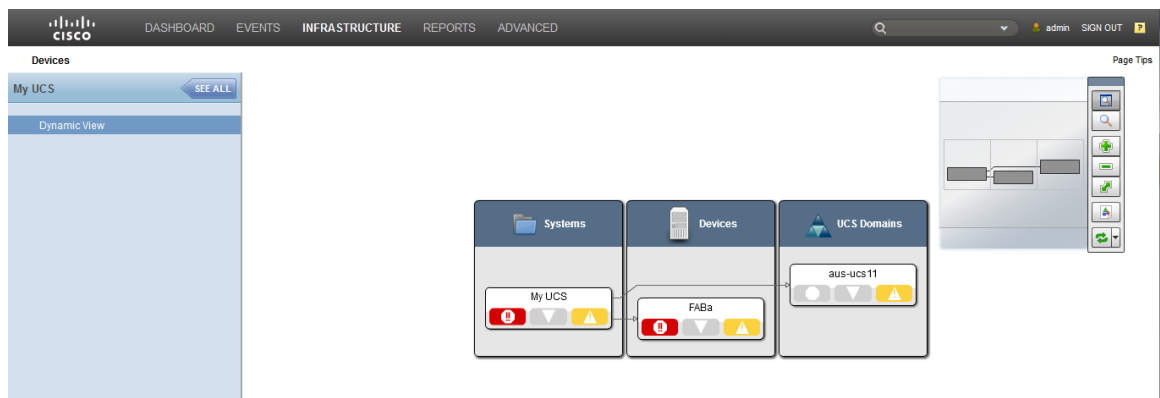


Note that you can refresh the view as necessary by right clicking the new system name in the left hand pane and selecting **Refresh Tree**.

- 7 View your new system devices. Highlight the system name in the left hand pane, for example *My UCS* and click the **Details** arrow at the top to display the Device pane that shows all the devices that are part of your new system.



- 8 View the integrated infrastructure dynamic view. When you have successfully created and populated your new system, there are various useful views and displays you can use. One of these is the dynamic view. To view the dynamic view for your new system:
 - a Highlight the system name in the left hand pane, for example *My UCS* and click the **See All** arrow at the top to display the new system listed in the left pane.
 - b Click **Dynamic View** to display the dynamic view of your new system in the right hand pane.



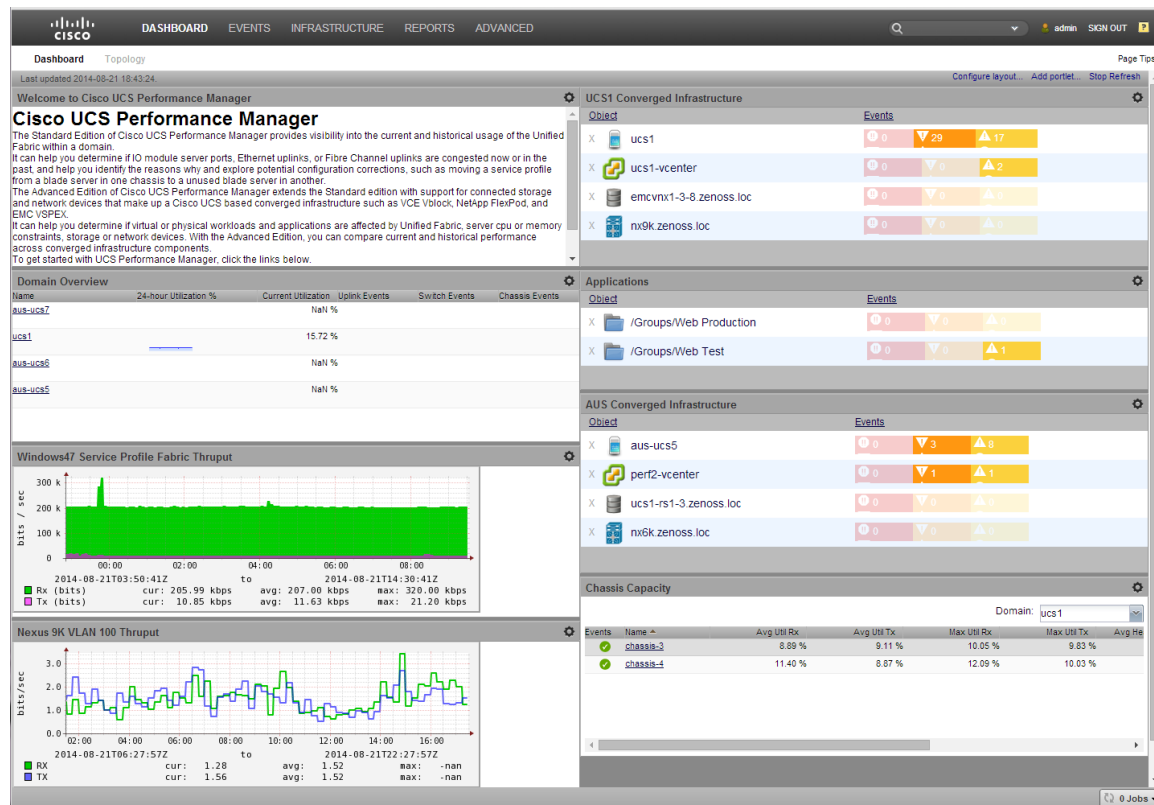
The dynamic view enables you to view components organized by type. You can click on a name to bring up a navigation pop-up dialog and components that have open events display an event rainbow.

How to View Performance Data for Integrated Infrastructures

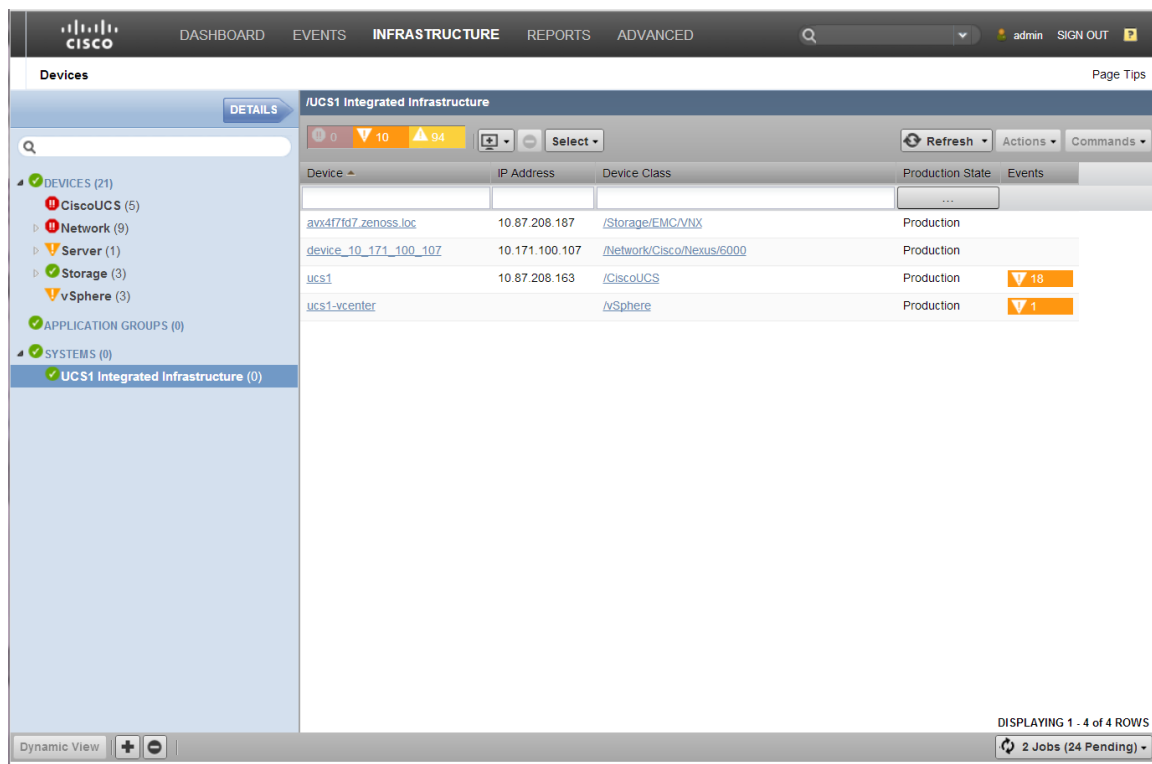
Note This functionality is only available with a Cisco UCS Performance Manager license.

The Cisco UCS Performance Manager UI enables you to unify performance and capacity management across all components of a UCS integrated infrastructure and eliminate the need for multiple investigation tools. This means you can detect infrastructure issues quickly and efficiently and reduce your time to repair. The following scenario describes how to use the Cisco UCS Performance Manager UI integrated infrastructure portlet.

The dashboard portlet provides a quick status overview that identifies critical events that affect each device. It provides a unified view of the various components that make up your integrated infrastructure. It enables you to quickly drill down to any of the component data.



The Cisco UCS Performance Manager UI enables you to view your integrated infrastructure. It displays various information together with clickable links that enable you to drill down for more specific, granular information.



The following scenarios describe how to use the Cisco UCS Performance Manager UI Integrated Infrastructure portlet.

Using the Cisco UCS Performance Manager Integrated Infrastructure Portlet

To view the information for an integrated infrastructure, for example **UCS1**, perform the following:

- 1 From the Cisco UCS Performance Manager UI Dashboard view a portlet. For example, the **UCS1 portlet**. The information that displays for this integrated infrastructure includes its components and such things as:
 - a UCS domain
 - a VMware farm
 - EMC storage
 - a Nexus 6000
- 2 Click on a component of the integrated infrastructure to navigate to and view information about it, for example **emcwnx**. This displays information about the storage array for this integrated infrastructure.
- 3 To display statistics and performance information for data devices such as LUNs (logical unit number), batteries, hard disks, and power supplies, click **Data Devices**.
- 4 To display informational statistics and performance information for storage pools, click **Storage Pools**.
- 5 To display information about your storage processors, for example the number of operations per second, click **Storage Processors** and scroll through the list to **op throughput**.

The Cisco UCS Performance Manager UI provides access to this historical data for a generalized integrated infrastructure administrator to quickly identify unusual behavior without the need to become a specially trained storage administrator.

Using the Cisco UCS Performance Manager Integrated Infrastructure Events Portlet

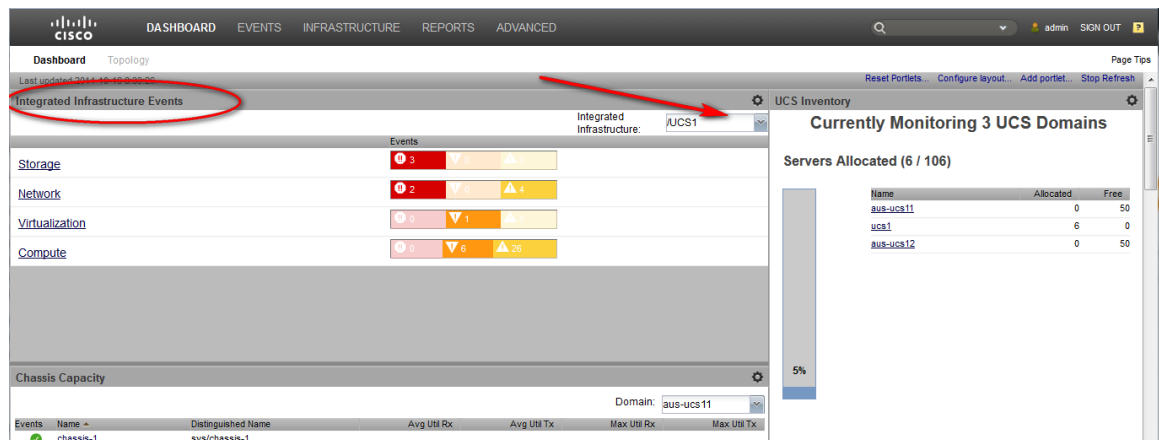
The Cisco UCS Performance Manager UI includes various specialized portlets that can be added to the dashboard to view various kinds of information. The **Integrated Infrastructure Events** portlet enables you to quickly access

information concerning events that are monitored for your integrated infrastructure. The event information that displays for an integrated infrastructure includes:

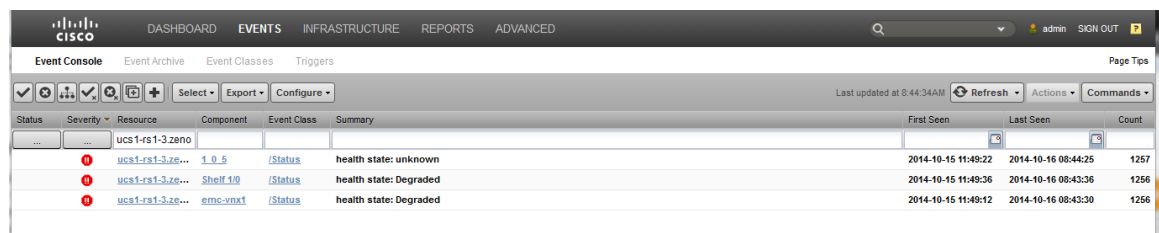
- Storage Events
- Network Events
- Virtualization Events
- Compute Events

You can use the **Integrated Infrastructure Events** portlet to view and drill down into event information for an integrated infrastructure, for example **UCS1**.

- 1 From the Cisco UCS Performance Manager UI Dashboard view the **Integrated Infrastructure Events** portlet.



- 2 Click on an event type to navigate to and view information about it, for example **Storage**. This displays the Event Console window with information about storage related events for this integrated infrastructure.



From this console you can access additional information by clicking the various links, such as **Resource**, **Component**, or **Status**.

Viewing Switch Information

The Cisco UCS Performance Manager UI provides a consistent, similar look that enables an integrated infrastructure administrator to navigate between dissimilar devices to display statistics and data and drill down into the various devices. In the case of switches, the UI alleviates the need to telnet into the switch console and issue commands. To view switch information, perform the following.

- 1 From the Cisco UCS Performance Manager UI Dashboard view, locate and click on a switch name in the integrated infrastructure, for example, the **Nexus 6K**. This displays the information about the switch.
- 2 To display information about physical components in the switch, click the component name, for example:
 - Click **Supervisor Modules** to display module information.
 - Click an Ethernet interface name to display performance data for logical components, for example **VLAN** or **VLAN100**.

- 3 To view information about aggregated components such as port channels, click on the aggregated component name, for example click **Port Channels**.

Viewing VMware Farm Information

The Cisco UCS Performance Manager UI enables easy display of information about VMware farms. It is not necessary to use vSphere that requires credentials. This means it is not necessary to provide vSphere credentials to the entire integrated infrastructure operations team because they can immediately access the VMware farm information they require. The UI provides information that includes the *top datastores* (by percentage used) and the *top hosts* (based on CPU and memory usage).

- 1 To display the CPU and memory usage for each host, click on **hosts**.
- 2 To view the resource usage by each VM, click **VMs**. The information that displays can help you identify excessive resource usage by a VM that can lead to performance issues.
- 3 To display the OS information for a VM, scroll down and click on the device name, for example **ucs1-rs1-1**.

Viewing Application Performance

In addition to keeping the infrastructure performing at optimum, it is also important to ensure that customer applications are running efficiently. Underlying integrated infrastructure issues can contribute to application performance issues. The Cisco UCS Performance Manager UI enables you to view key performance metrics and critical system messages that relate to applications. Additionally the Cisco UCS Performance Manager provides *USCPM applications* that are a representations of groups of operating systems running together.

The Cisco UCS Performance Manager UI provides an **Application** portlet that can be added to the **Dashboard** view to provide quick access to application information. Within the portlet various applications display, for example **Groups/test** and **Groups/Production**.

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.
- 3 Click on a *device name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Graphs** to view various data, including **Events**.

Viewing Event Information

Viewing event information enables you to view events that affect a particular component and can have an effect on the performance of the associated application. To display event information about a particular component associated with your application:

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.
- 3 Click on a *device name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Display Events** to show events relating to the component.
- 5 Click the name of an event to display the details.

Viewing Service Profile Information

The Cisco UCS Performance Manager UI enables you to view either summary or detailed information for current and normal usage of service profiles. To display service profile information:

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.

- 3 Click on a *device name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Display Service Profile > Graph** to view various data, including **Capacity**. Use the drop-down to specify a date range to filter/define the information display.
- 5 To display greater detail about a particular service profile, click on the service profile *name* and select **Display Graph**.

Viewing Logical Server Information

Logical servers within the integrated infrastructure can affect application performance. The Cisco UCS Performance Manager UI enables you to view detailed performance information for logical servers. To display logical server information:

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.
- 3 Click on a *logical name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Graphs** to view various data, including **operating system** information. This enables you to determine how various logical servers and their components are performing and thus impacting associated application performance.

Viewing Performance Reports

The Cisco UCS Performance Manager UI enables you to view reports that display historical and current metrics across the application. This enables you to discover under- or over-provisioned systems that can affect performance. To display performance report information:

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.
- 3 Click on a *logical name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Reports** to view various report data options.
- 5 Select **Performance Reports** to display the report information pane.
- 6 Select various report options, including date ranges and, from the drop-down list, a report topic. For example, to view CPU usage:
 - a Click **CPU Utilization**.
 - b Select, for example: **Root organizer/groups/production**
 - c Click **Generate** to display the **CPU Utilization** report.

Viewing Memory Usage

The Cisco UCS Performance Manager UI enables you to view reports that display historical and current metrics across the application. This enables you to discover under- or over-provisioned systems that can affect performance. To display memory performance report information:

- 1 From the Cisco UCS Performance Manager UI Dashboard, view the **Application** portlet.
- 2 To view device information associated with an application group, click the name, for example **Production**. This displays the devices in the **Production** group.
- 3 Click on a *logical name* to view detailed information, for example **ucs1-4-8**.
- 4 Click **Reports** to view various report data options.
- 5 Select **Performance Reports** to display the report information pane.
- 6 Select various report options, including date ranges and, from the drop-down list, a report topic. For example, to view memory usage:

- a Click **Memory Utilization**.
- b Select, for example: **Root organizer/groups/production**
- c Click **Generate** to display the **Memory Utilization** report.

6

Integrated Infrastructure Scenarios

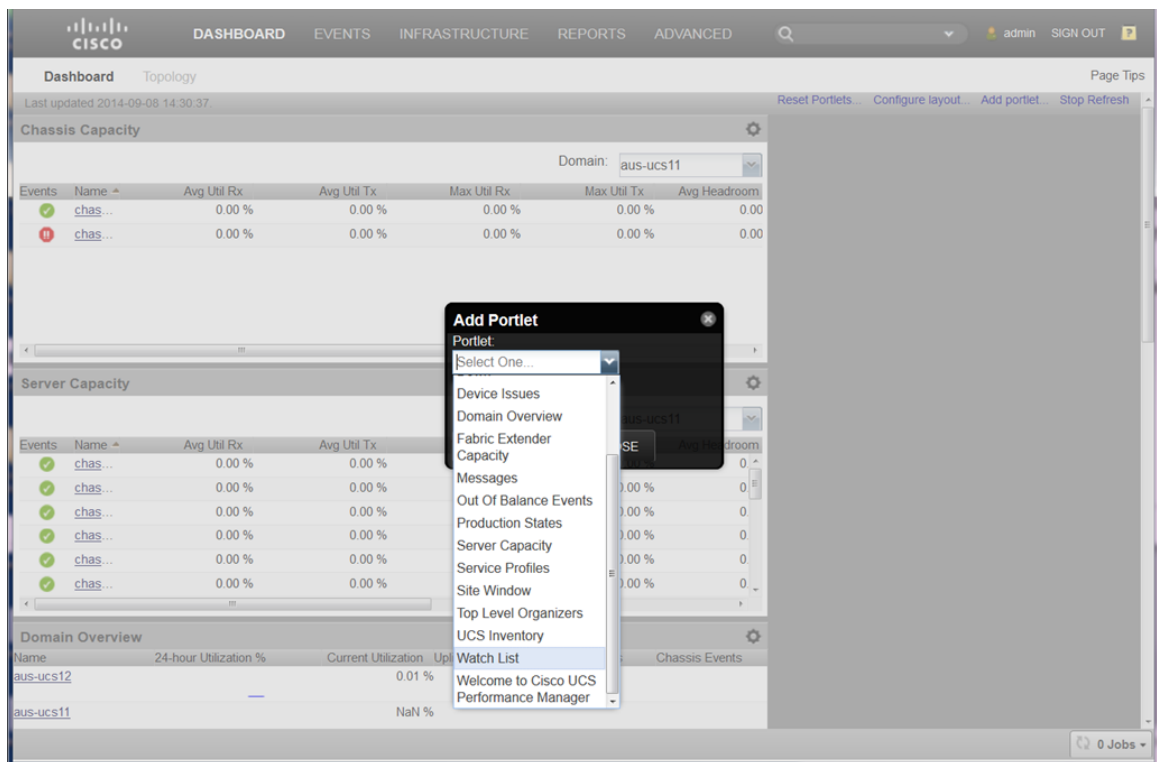
The following scenarios show you how to perform integrated infrastructure related tasks. The scenarios are examples and show just one of potentially many ways to perform a task.

Note This functionality is only available with a Cisco UCS Performance Manager license.

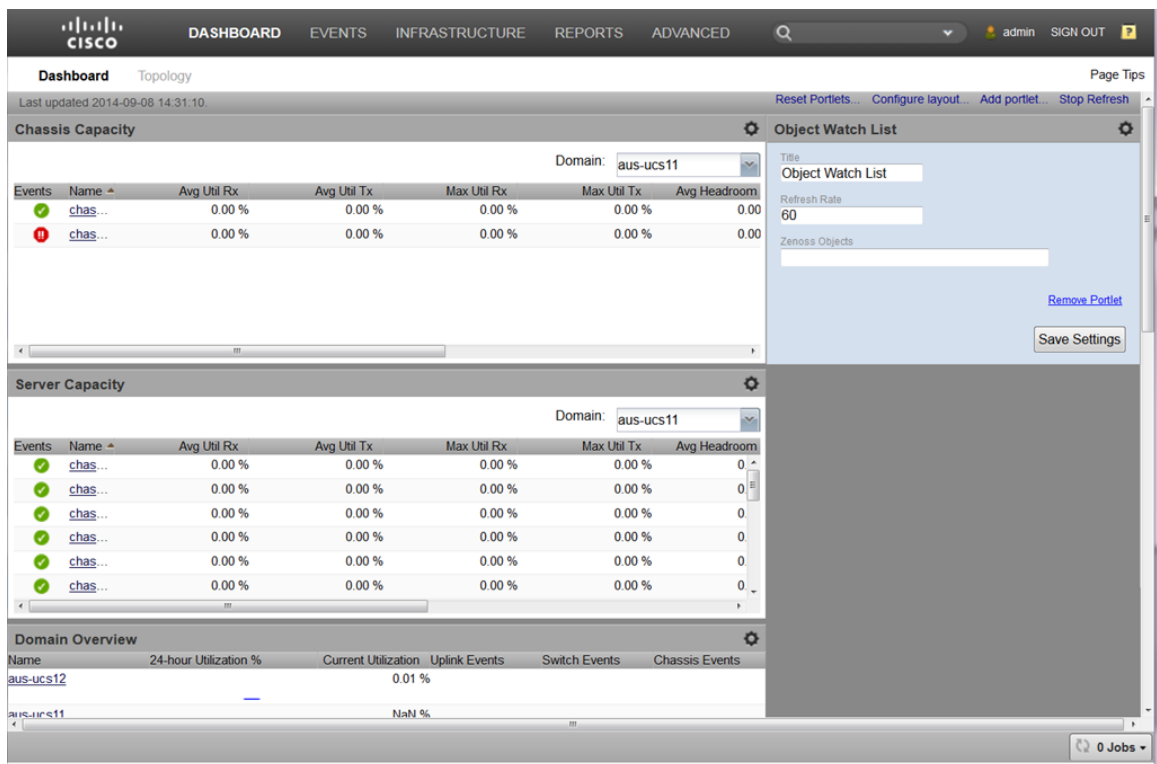
How to Configure a Watch List Dashboard Portlet to Check for Errors

The Cisco UCS Performance Manager UI enables you configure portlets that add functionality to the dashboard. The following example describes how to add a portlet and use it to check for errors within your integrated infrastructure.

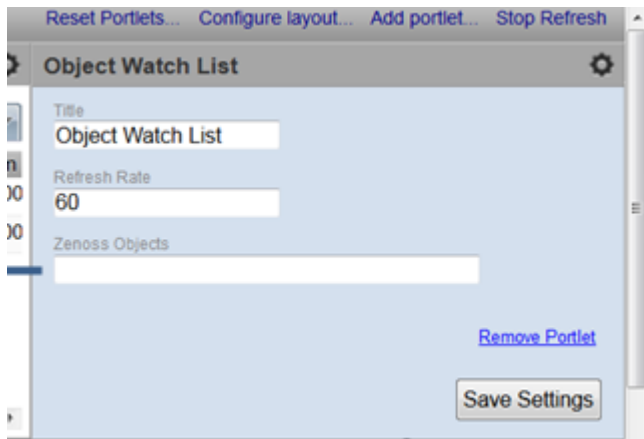
- 1 From the Cisco UCS Performance Manager UI dashboard view, click **Add Portlet** to display the **Add Portlet** dialog.
- 2 Click the down arrow on the dialog box to display the drop down list of options.



- 3 Select **Watch List** and click **Submit** to save and close the dialog. The new **Object Watch List** portlet displays in the top right hand pane. To display the settings, click the gear wheel icon at the top right of the pane.

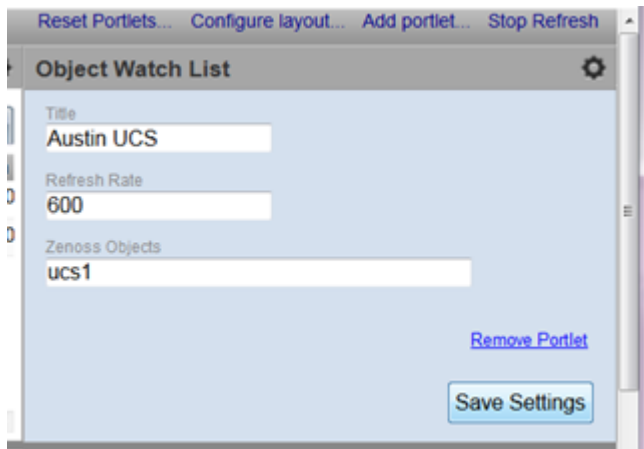


- 4 The settings dialog enables you to set your parameters and save the settings. You should change the default **Title**, confirm or change the **Refresh Rate**, and define **Zenoss Objects**, in this case the **UCS** domain.

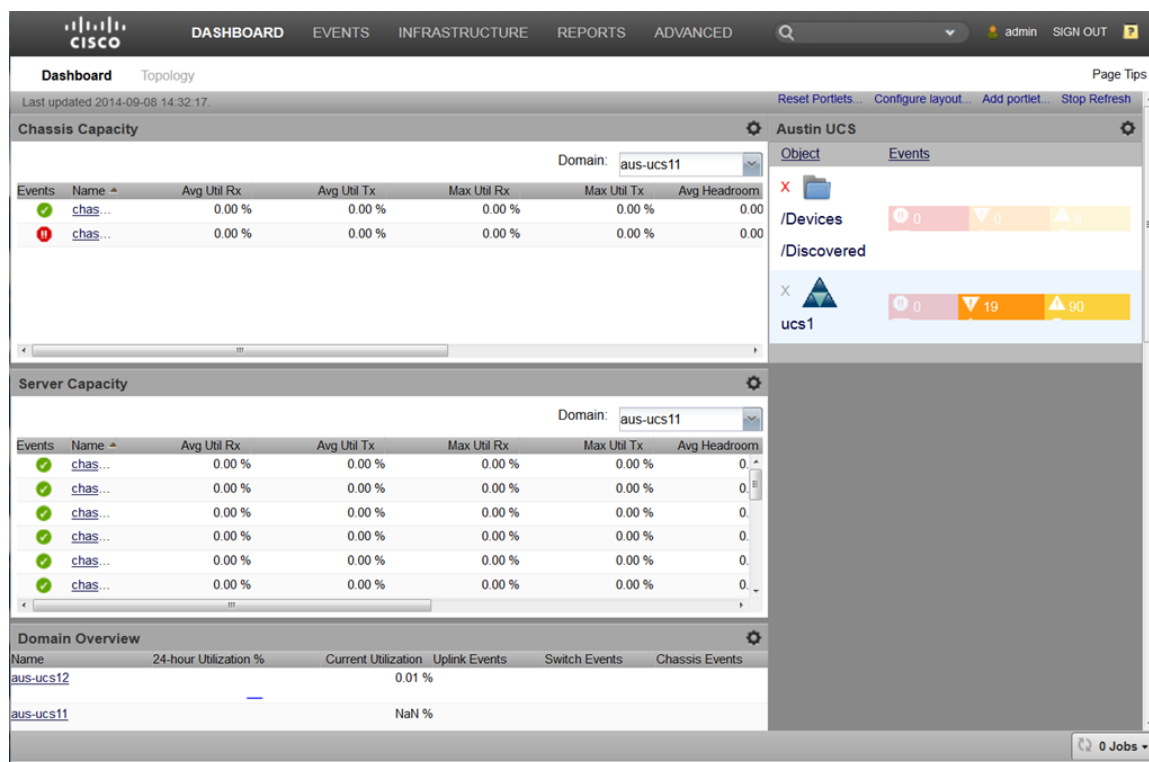


For example, set the following:

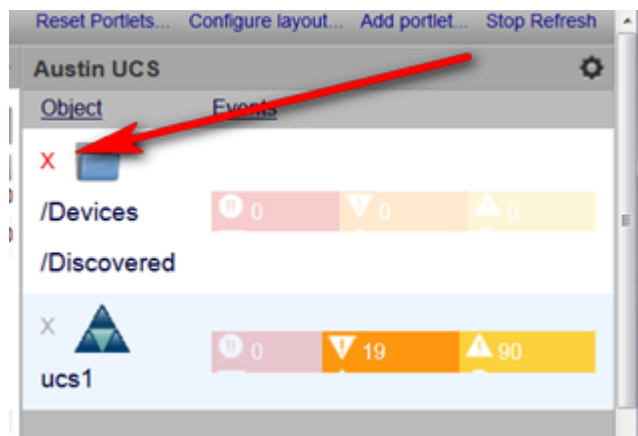
```
Title = Austin UCS  
Refresh Rate = 600  
Zenoss Objects = ucs1
```



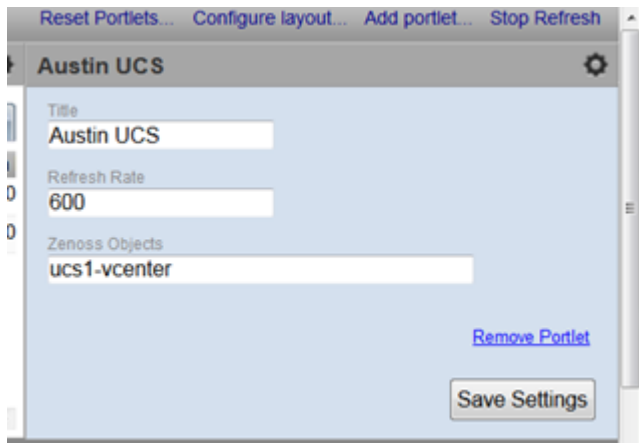
- 5 Click **Save Settings** to display your new Austin UCS domain.



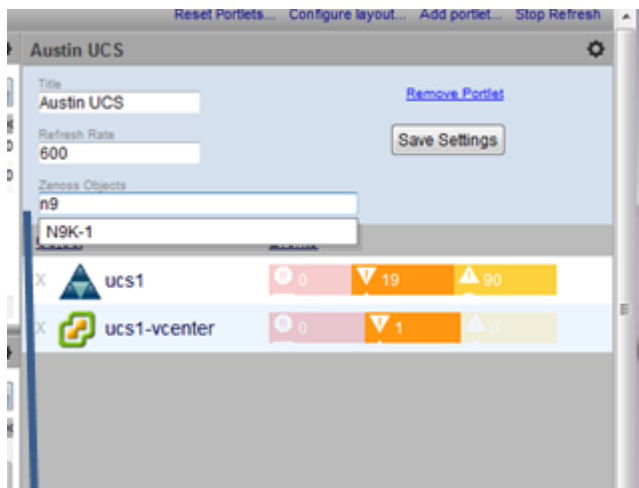
Note that you can remove the unnecessary **/Devices/Discovered** by clicking the red "x"



- To add additional objects, click the gear icon and enter the object information, such as *network name*. For example, to add a *VMware farm*, enter its network name, in this example **ucs1-vcenter**, in the **Zenoss Objects** field.

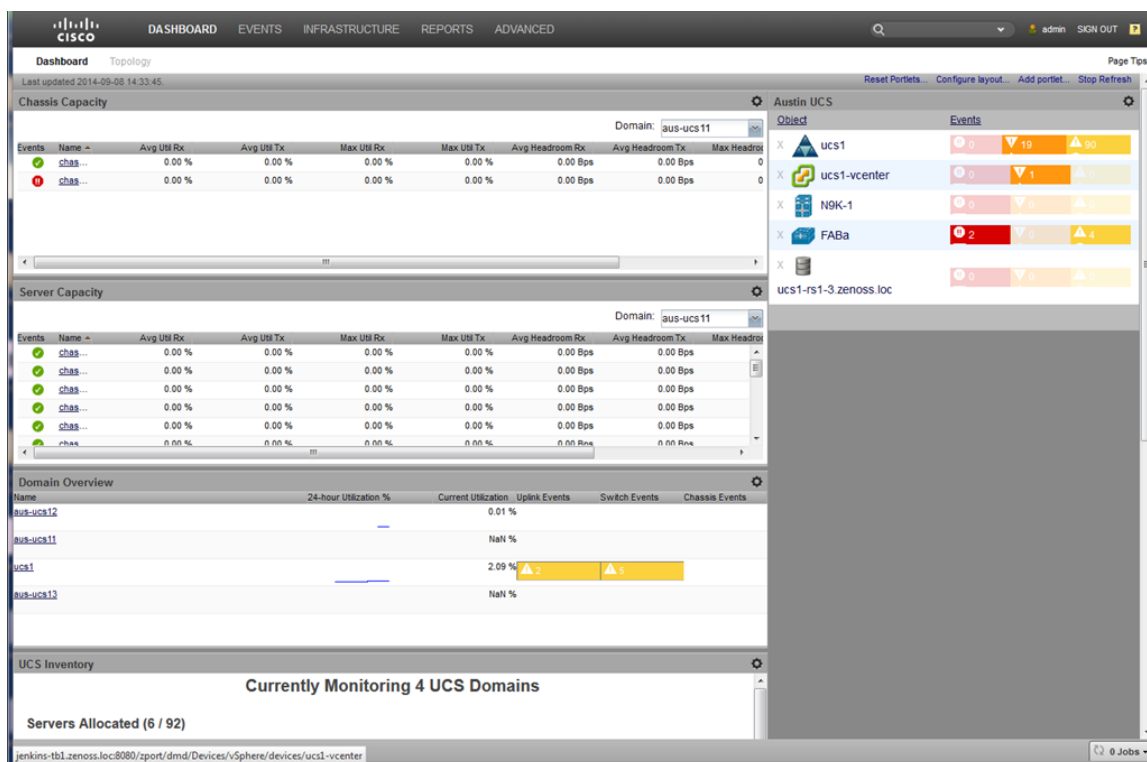


- 7 Click **Save Settings** to save the data and close the settings dialog. Your new object, in this example, **ucs1-vcenter** displays together with **ucs1** within the **Austin UCS** integrated infrastructure object.



Note that you can continue to add additional elements such as network and storage devices, as you require.

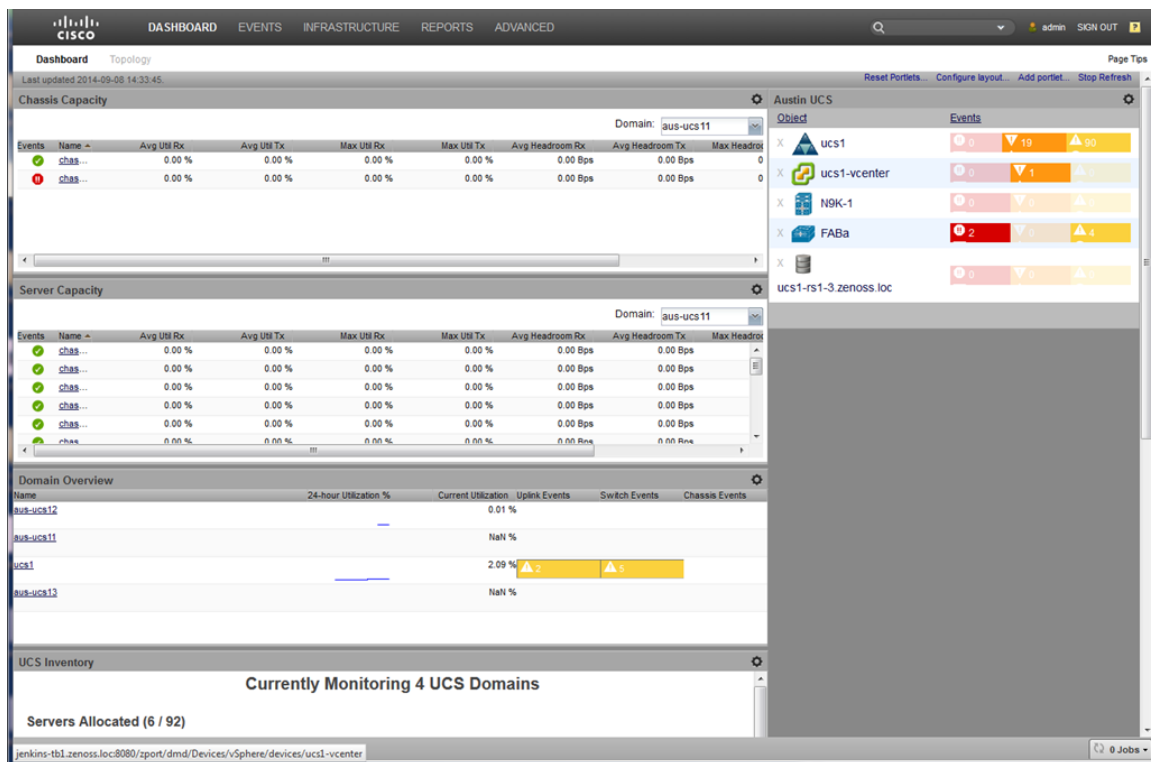
- 8 When you have completed your additions to the portlet, the dashboard displays the devices and event status for the **Austin UCS** integrated infrastructure components.



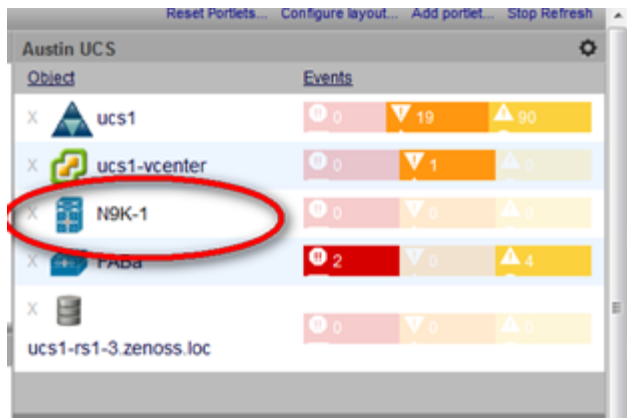
How to Review Network Device Performance with a Portlet

The Cisco UCS Performance Manager UI enables you to use dashboard portlets to quickly access information about components in your integrated infrastructure. The following example describes how to use the Watch List portlet on the dashboard to review network device performance within your integrated infrastructure.

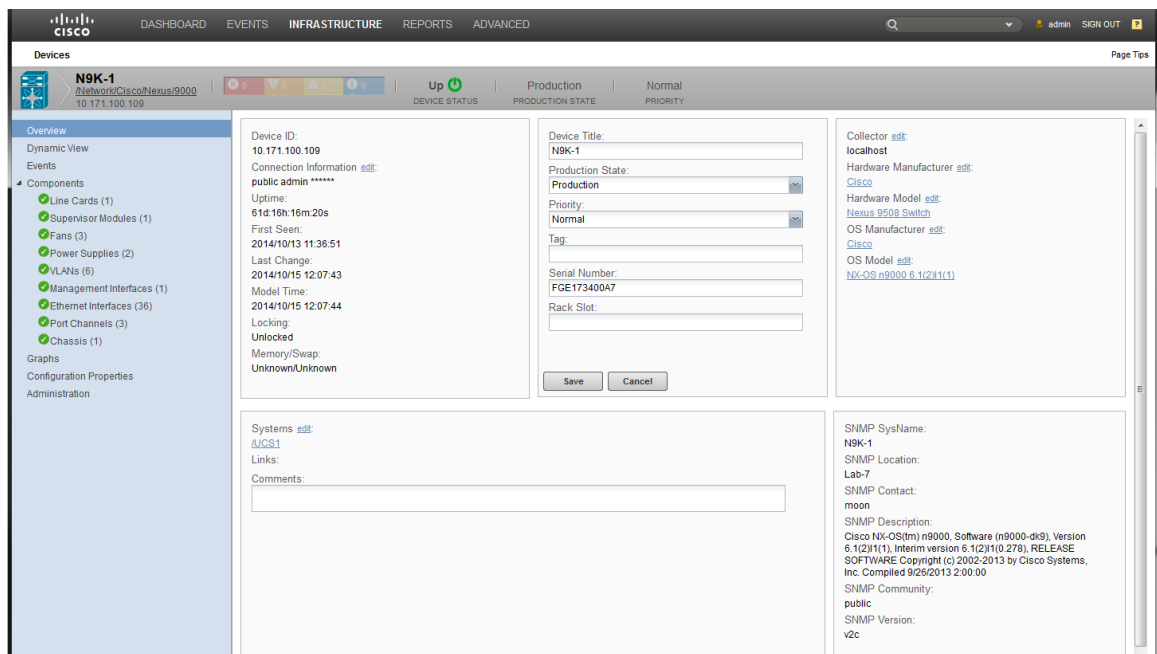
With the Watch List dashboard portlet configured, it displays the devices and event status for the example **Austin UCS** integrated infrastructure components, including network devices.



- 1 To drill down into network device information for our example **Austin UCS** integrated infrastructure, click the network object icon, for example **N9K-1**.

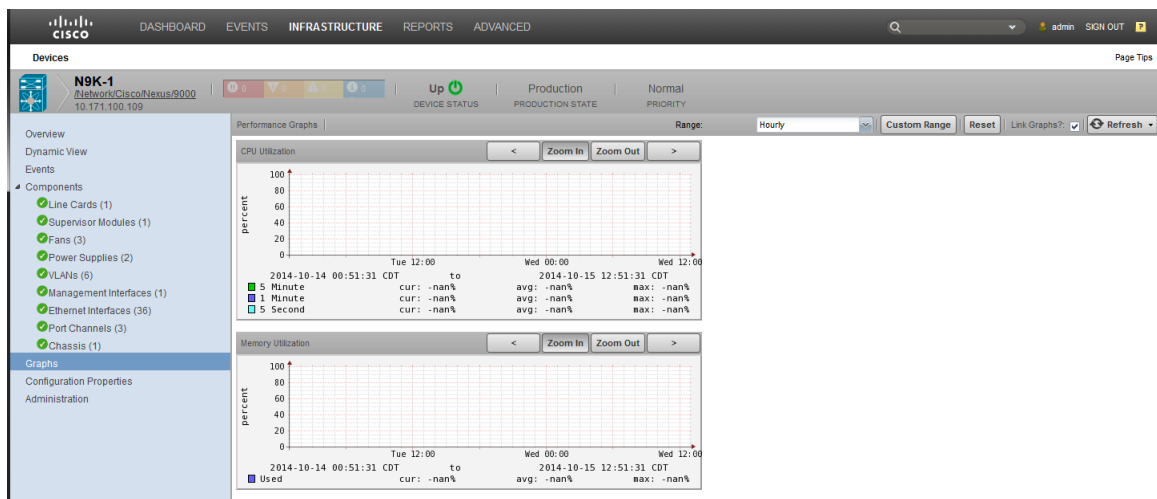


This displays the **Overview** page for the network device, in this example, **N9K-1**.

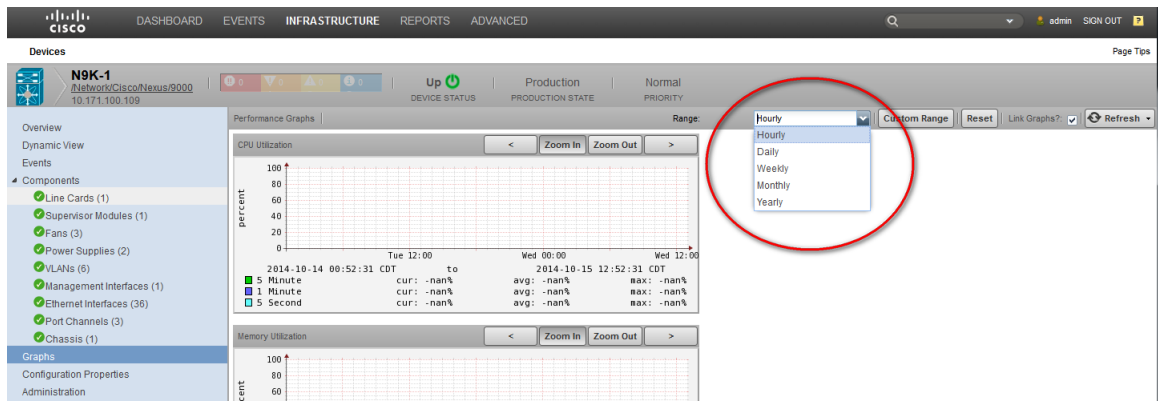


Note that the **Overview** page includes the right hand **Overview** pane that displays high level information. The information is populated when the device is loaded and refreshed automatically by default every 12 hours.

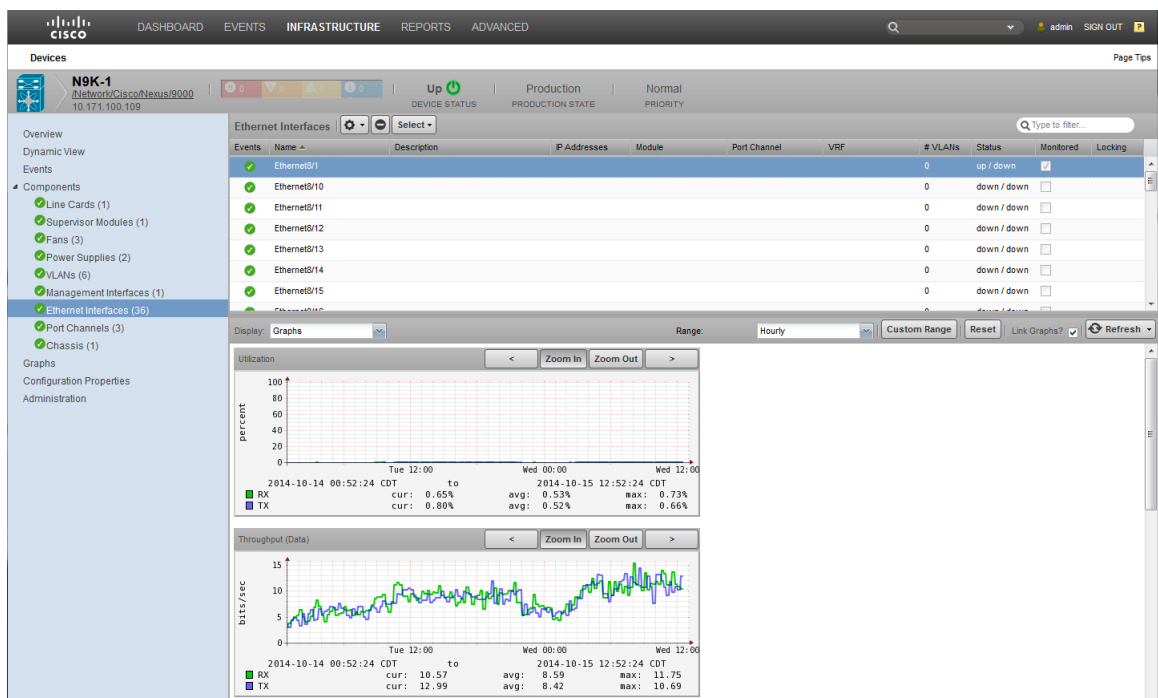
- 2 Click **Graphs** in the left pane to display the **Performance Graphs** pane on the right.



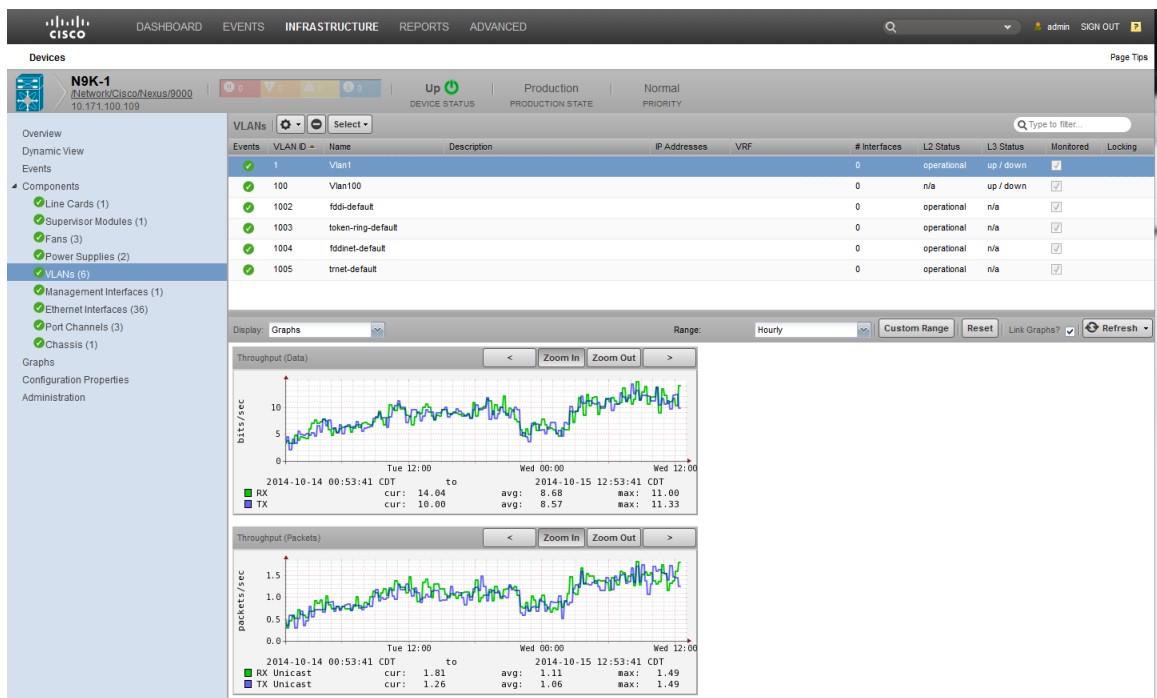
Note that you can select the time range for the graphical data by using the drop down list in the top right of the **Performance Graphs** pane.



- 3 To view details about your integrated infrastructure physical components, click the component name in the left hand **Overview** pane. For example, click **Ethernet Interfaces (n)** to display performance data:



- 4 To view details about your integrated infrastructure logical components, click the component name in the left hand **Overview** pane. For example, click **VLANs (n)** to display performance data:

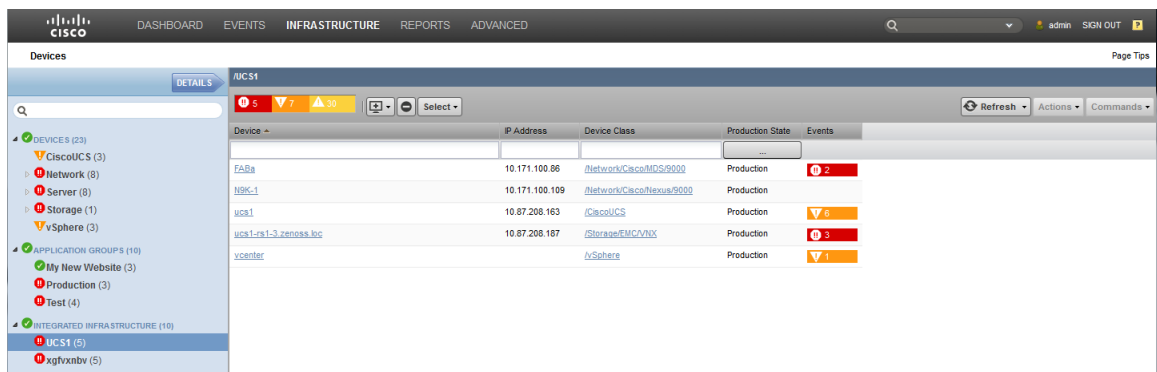


How to Review Storage Device Performance for an Integrated Infrastructure

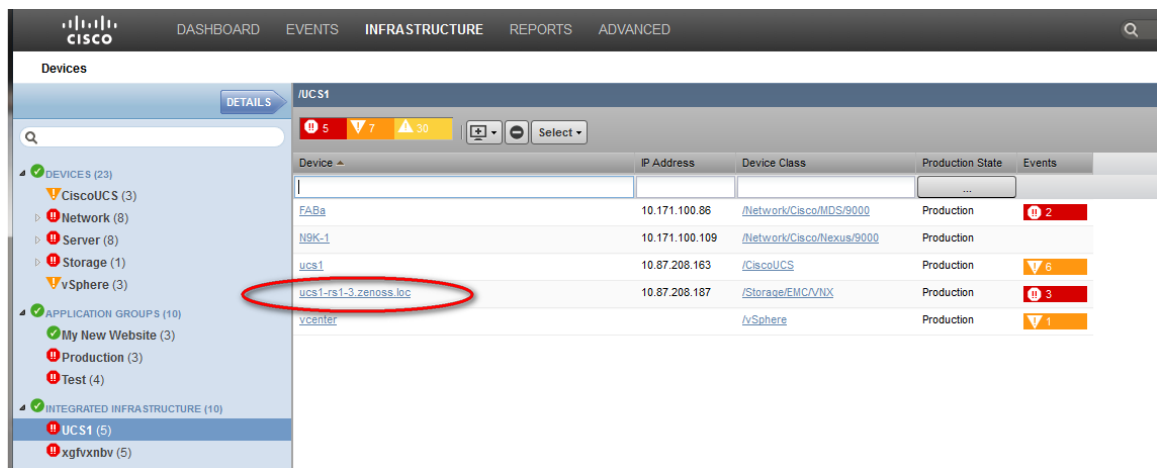
The Cisco UCS Performance Manager UI enables you to quickly access information about components in your integrated infrastructure. The following example describes how to review storage device performance within your integrated infrastructure.

With the integrated infrastructure configured, it displays the devices and event status for the example **Austin UCS** integrated infrastructure components, including storage devices.

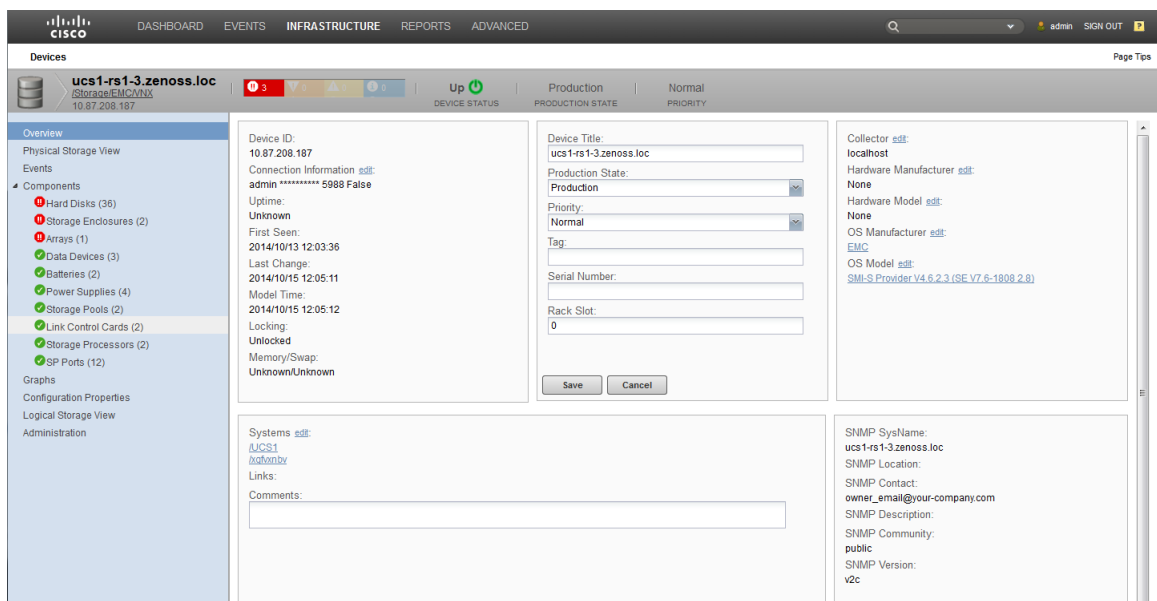
- 1 Navigate to **Infrastructure > Devices > *your_integrated_infrastructure_name***. In this example, **UCS1** to display the **Device** pane in the right hand side.



- 2 Click a storage device name to display its details. For example, click **ucs1-rs1-3.zenoss.loc**.



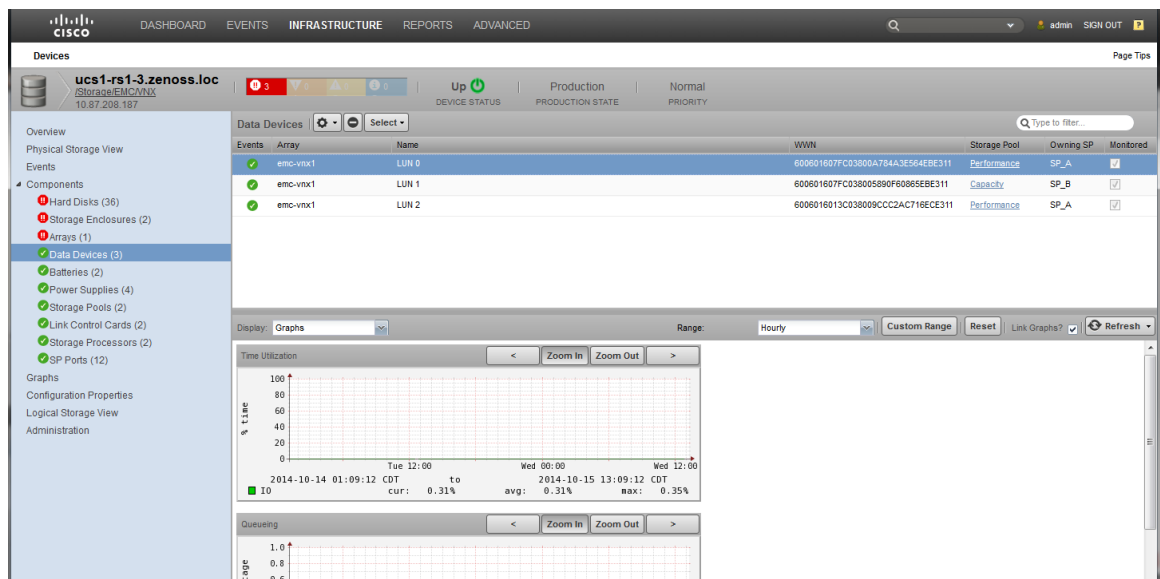
This displays the **Overview** page for that device. In this example, **ucs1-rs1-3.zenoss.loc**.



- 3 From the **Overview** page for the device you can select various components to view their performance data. For example:

- a **To View Data Device Information:**

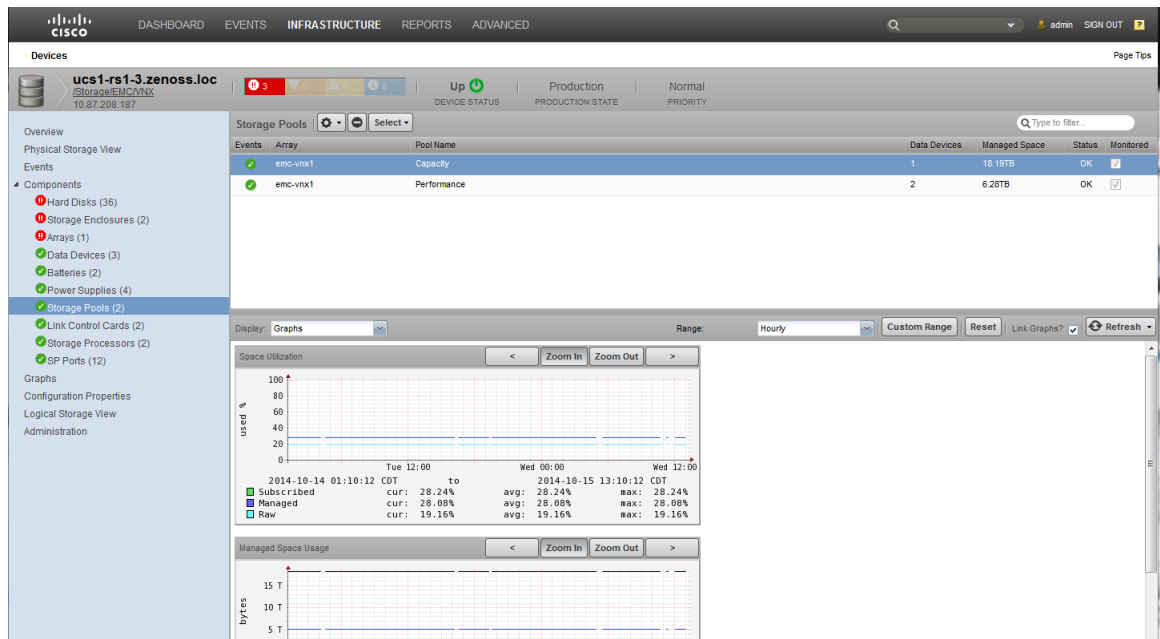
For the storage device **ucs1-rs1-3.zenoss.loc**, click **Data Devices (n)** in the left pane to display the **Data Devices** pane on the right.



Within this pane you can select a **Data Device** from the list and view performance for each individual LUN, including which data to display and what time frame to use. This example shows the performance information for the **emc-vnx1 LUN** device.

b To View Storage Pool Information:

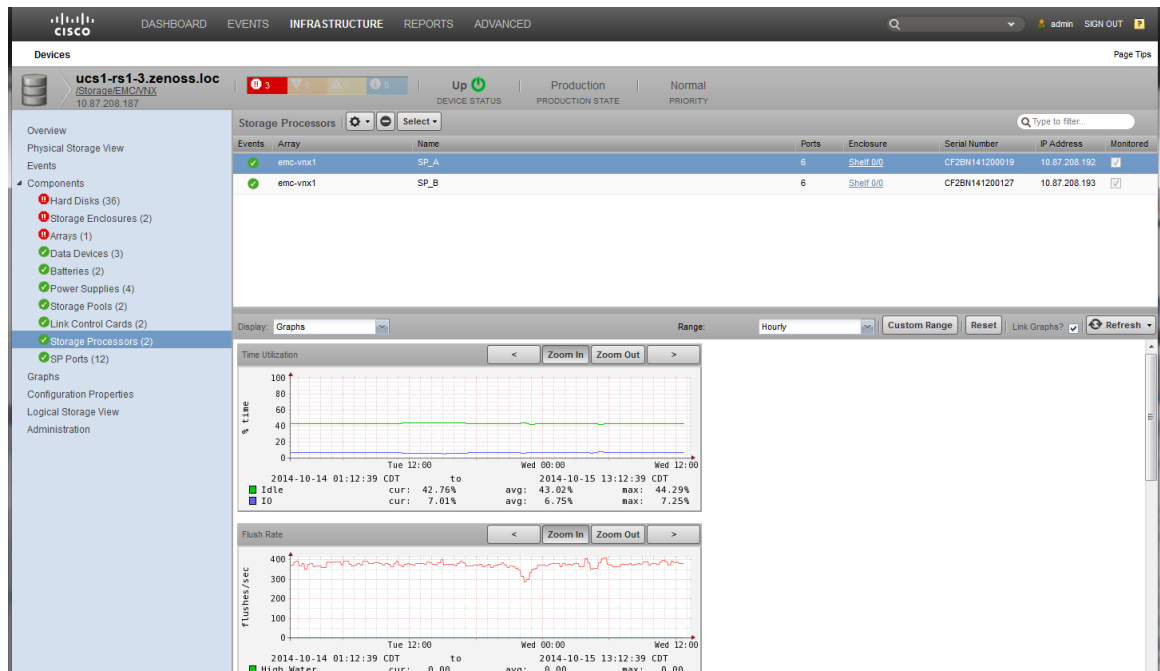
For the storage device **ucs1-rs1-3.zenoss.loc**, click **Storage Pools (n)** in the left pane to display the **Storage Pools** pane on the right.



Within this pane you can select a **Storage Pool** from the list and view performance for each individual pool, including which data to display and what time frame to use. This example shows the performance information for the **emc-vnx1 Performance** pool device.

c To View Storage Processor Information:

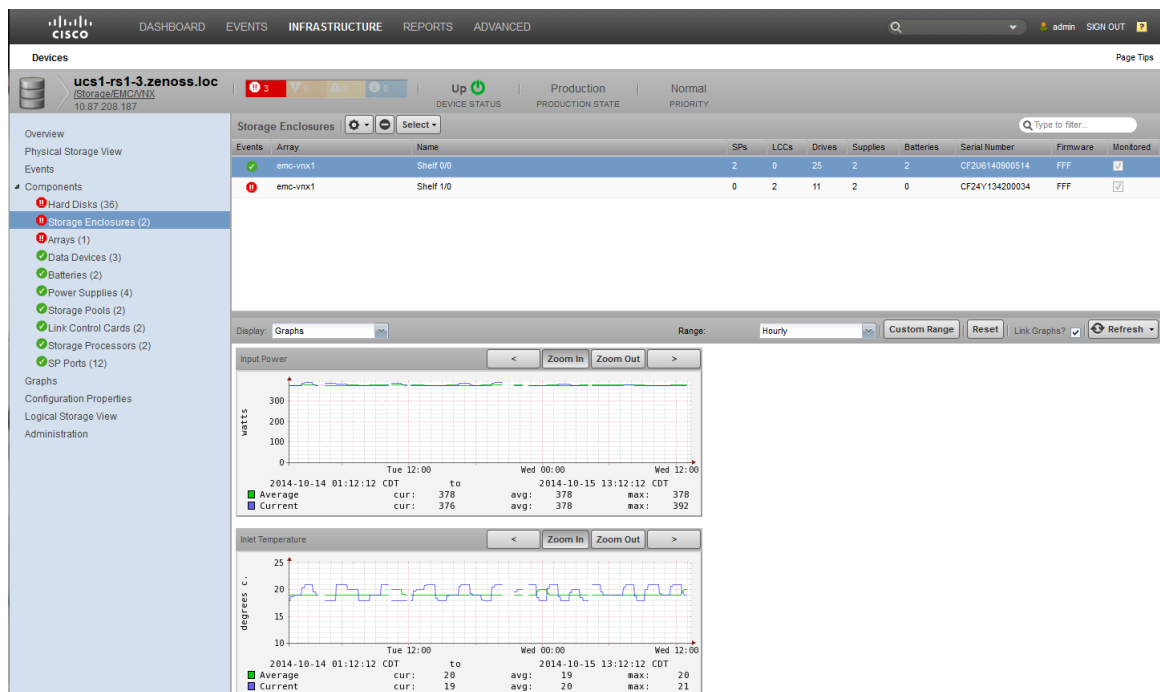
For the storage device **ucs1-rs1-3.zenoss.loc**, click **Storage Processors (n)** in the left pane to display the **Storage Processors** pane on the right.



Within this pane you can select a storage processor from the list and view its performance information, including which data to display and what time frame to use. You can also view IOPs and additional metrics for storage processors. This example shows the performance information for the **emc-vnx1 SP_A** storage processor.

d To View Storage Enclosure Information:

For the storage device **ucs1-rs1-3.zenoss.loc**, click **Storage Enclosures (n)** in the left pane to display the **Storage Enclosures** pane on the right.



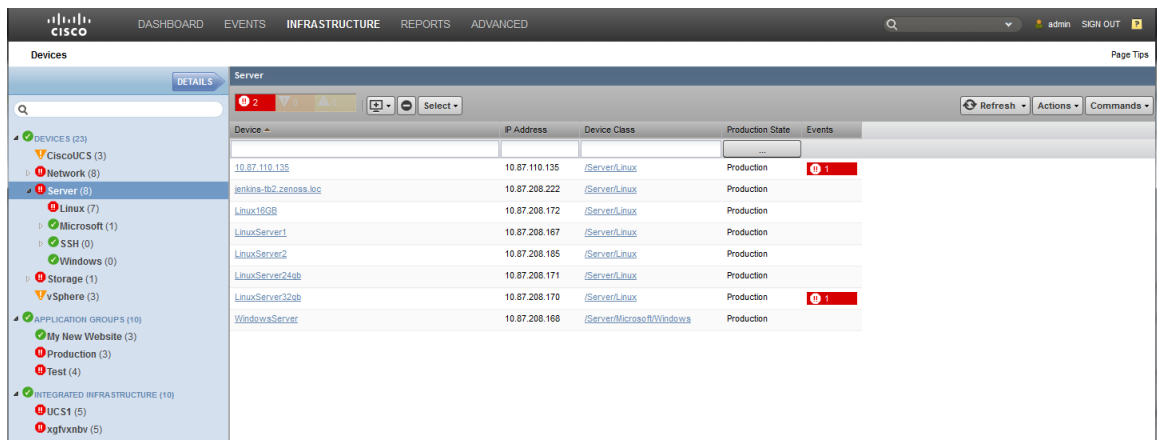
Within this pane you can select a storage enclosure from the list and view its performance information, including which data to display and what time frame to use. You can also view power and temperature

metrics for each storage enclosure. This example shows the performance information for the **emc-vnx1 Shelf 0/0** storage enclosure.

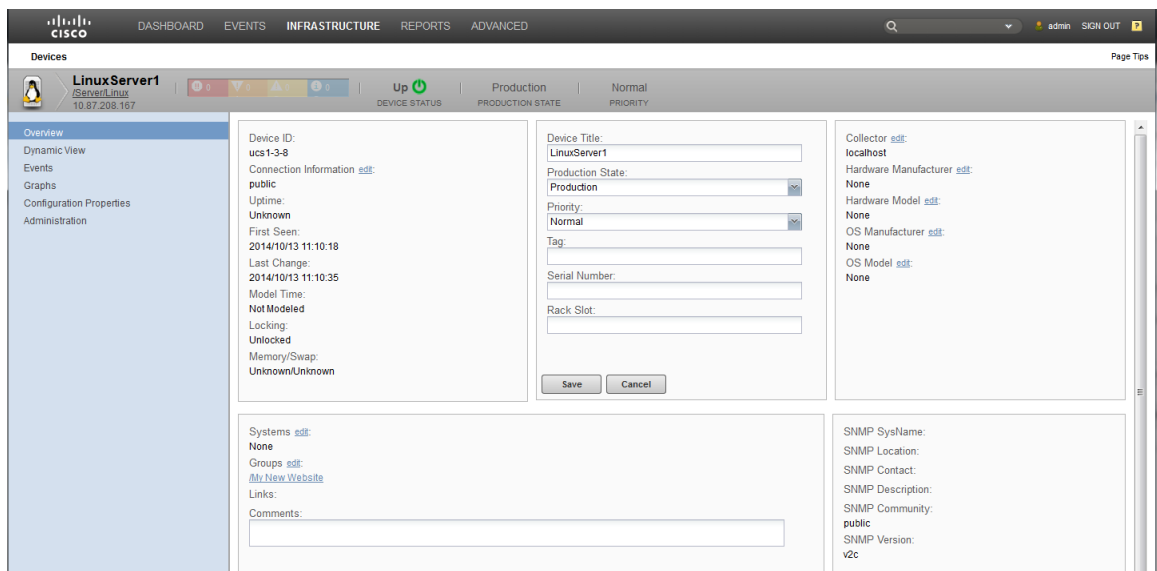
How to Display Integrated Infrastructure Components of an OS

The Cisco UCS Performance Manager UI enables you to survey and monitor your operating systems and their associated integrated infrastructure components. You can use it to view components that are being used by real or virtual operating systems. The following example scenario describes how to display the integrated infrastructure components each operating system is using within your system.

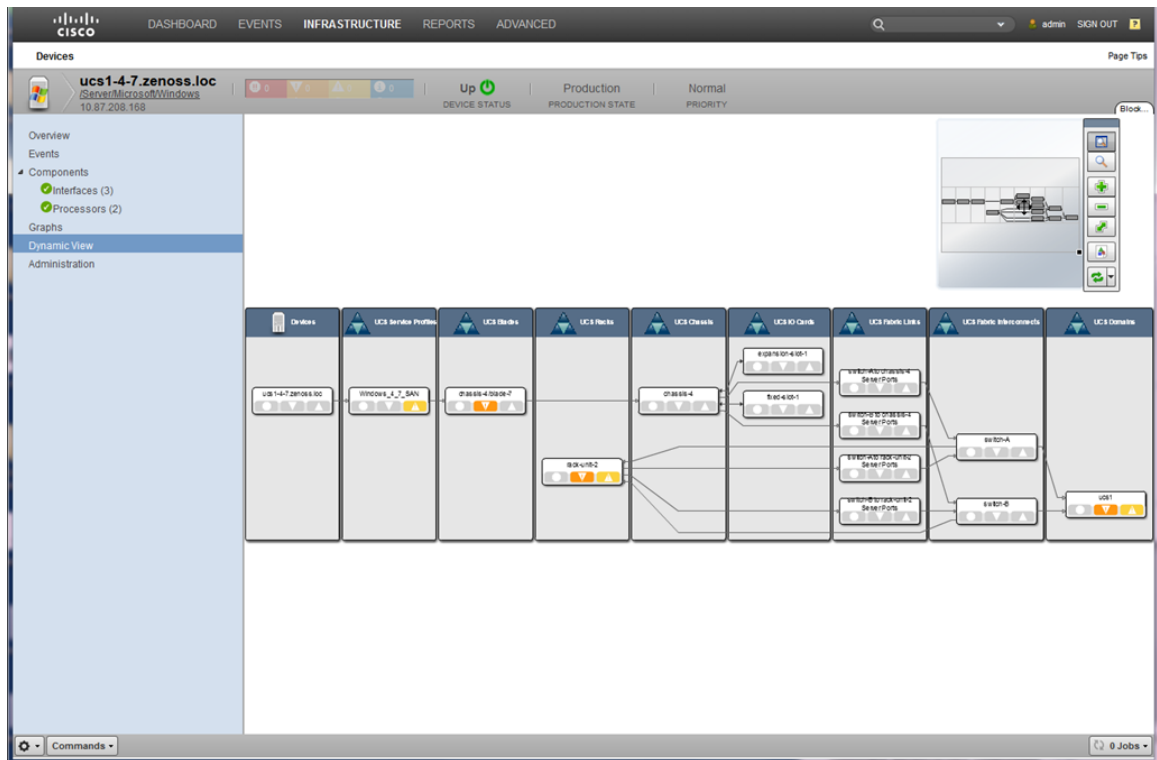
- 1 Within the Cisco UCS Performance Manager UI, navigate to **Infrastructure > Devices > Server (n)** to display the **Server Device** pane on the right.



- 2 Select a device name that you want to learn details about. In this example, **ucs1-4-7.zenoss.loc** is selected.
- 3 Double-click the device name, in this case, **ucs1-4-7.zenoss.loc** to display the **Overview** pane for that device.

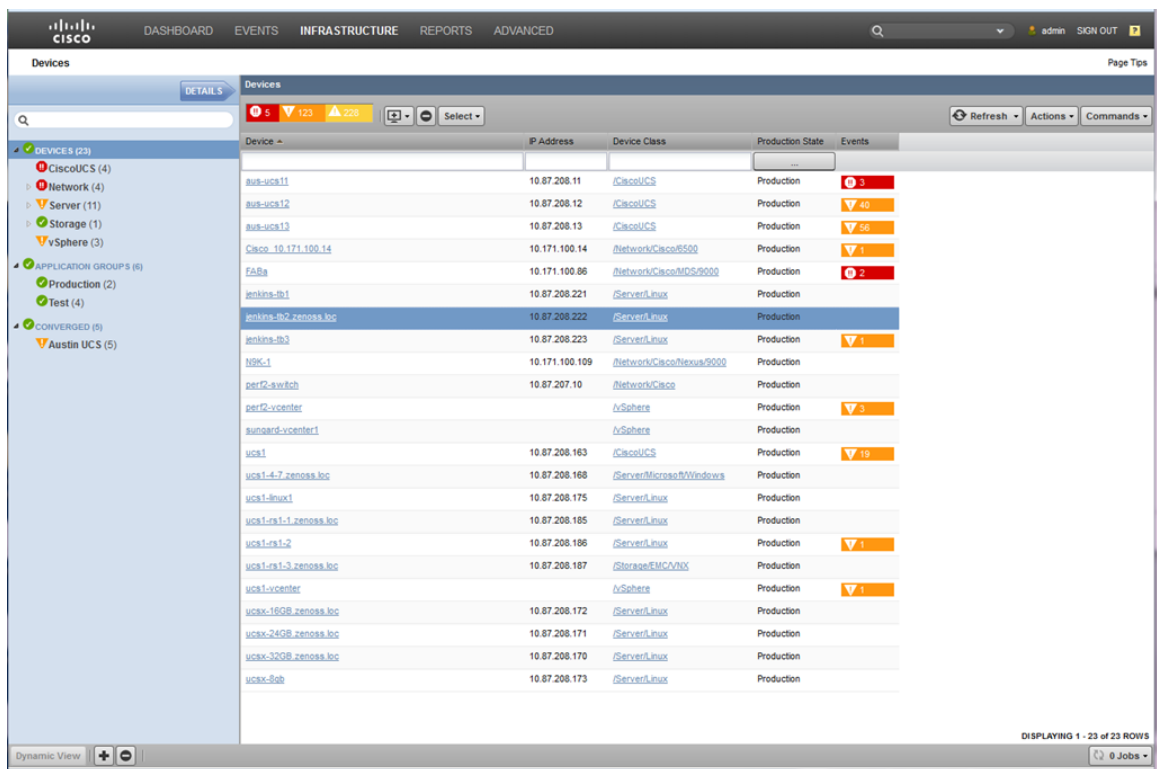


- 4 From the left hand pane, click **Dynamic View** to display the dynamic view pane on the right.



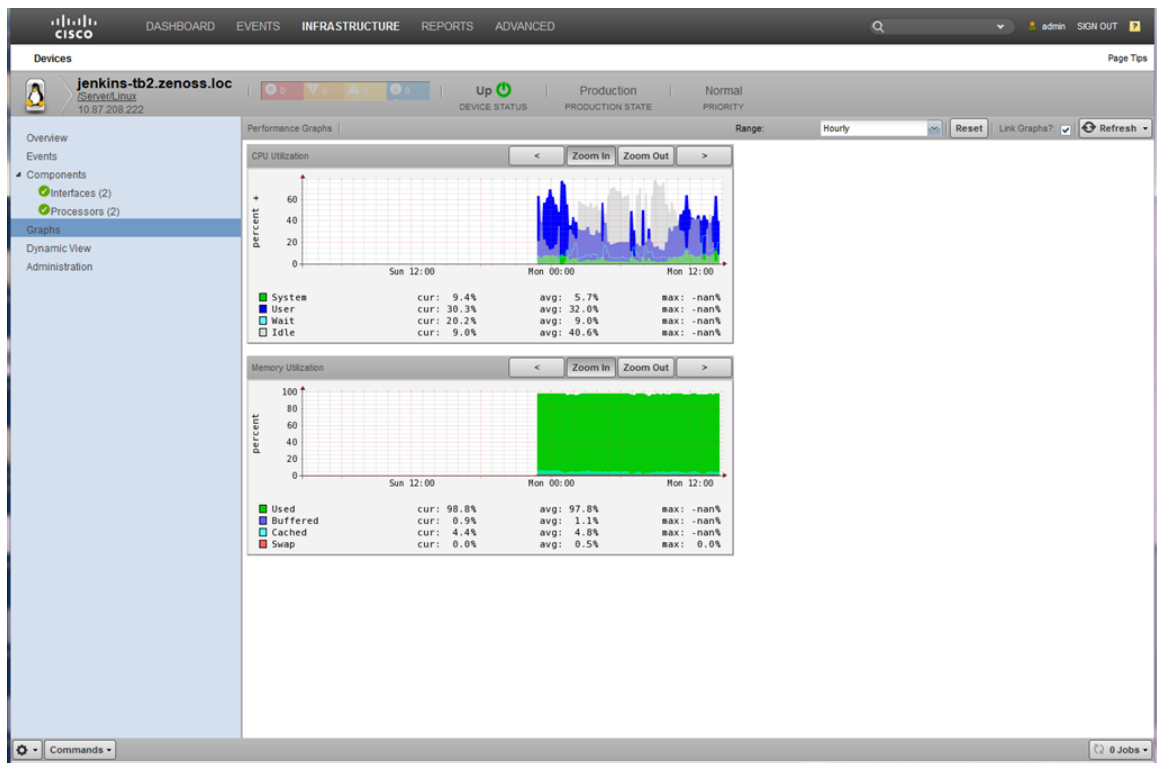
This view displays the integrated infrastructure devices your OS is using. These are supporting components that are automatically discovered and dynamically updated if they change. The upper right corner of this pane contains a small view that aids in navigation as the dynamic view grows to contain more items than can be easily viewed in the screen. It also houses a small toolbar that enables you to Navigate, Resize, Refresh and Export the view.

- 5 To view components of a virtualized OS, within the Cisco UCS Performance Manager UI, navigate to **Infrastructure > Devices (n)** to display the **Devices** pane on the right.



In this example, the **jenkins-tb2-zenoss.loc** Linux server is selected.

- 6 Click the device name, for example, **jenkins-tb2-zenoss.loc**, to display the device details page.
- 7 In the left pane, click **Graphs** to display the Performance Graphs pane on the right.

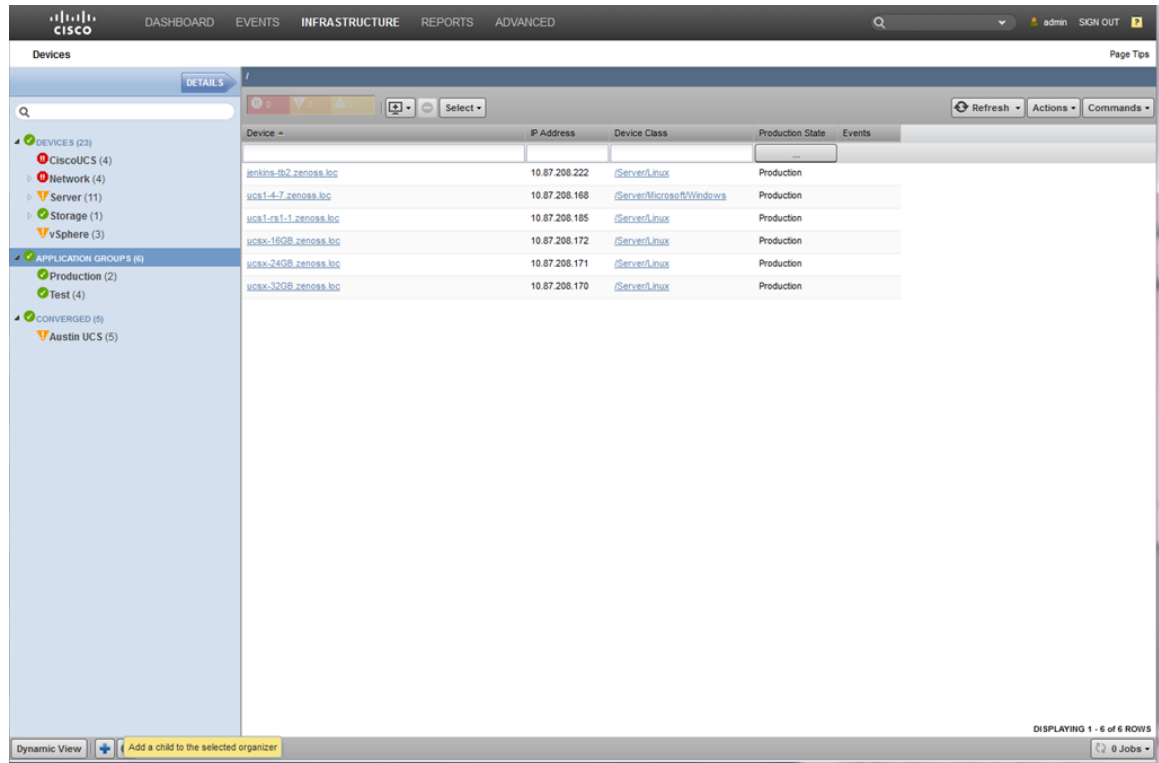


This pane displays various performance graphs, including CPU and memory utilization. You can also specify which time frame to use for the graphical displays.

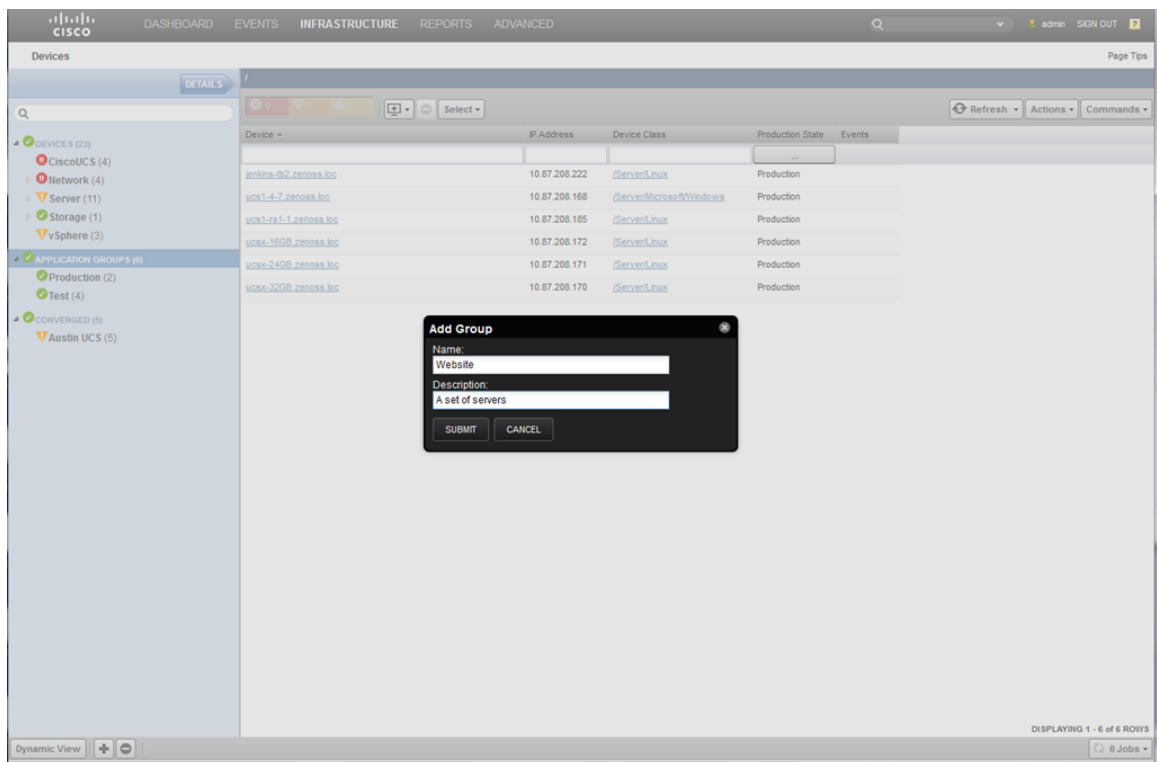
How to Create an Integrated Infrastructure Application Group

The Cisco UCS Performance Manager enables you to create integrated infrastructure application groups. These application groups can be used to monitor application performance. Perform the following to create an application group for your integrated infrastructure:

- 1 Navigate to **Infrastructure > Devices > Application Groups (n)** . In this example, several application groups display in the right hand **Device** pane.



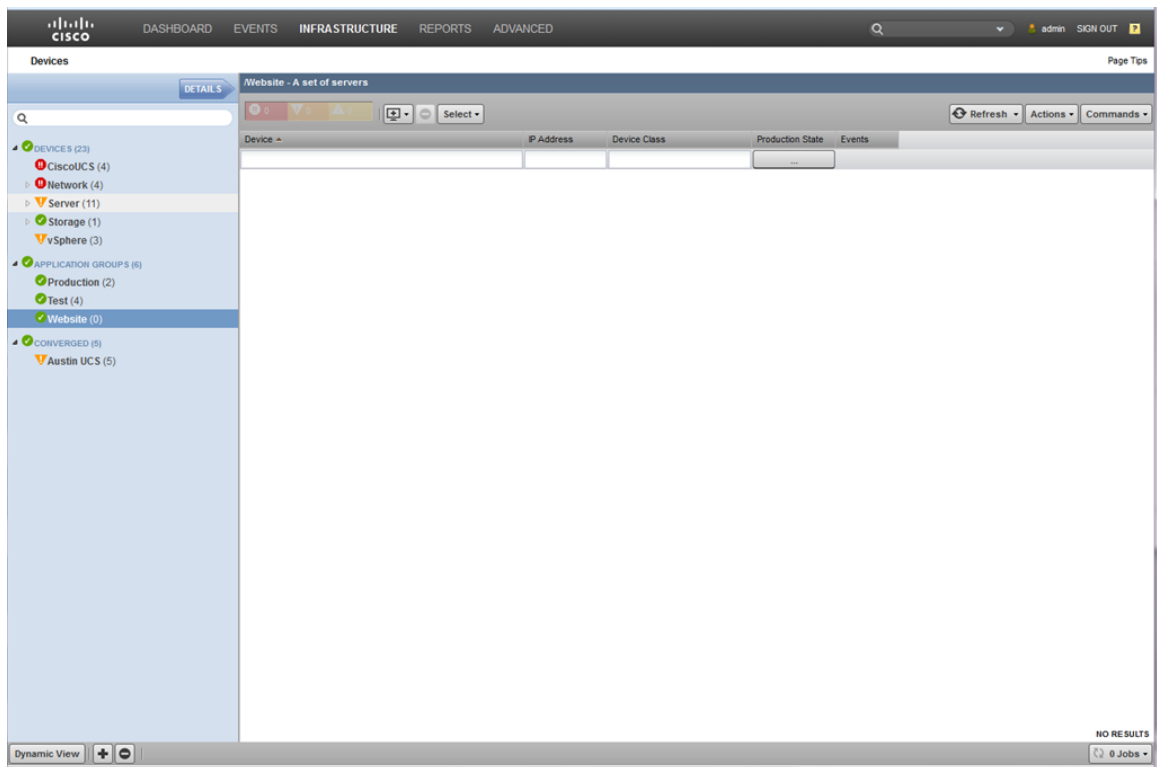
- 2 To create or add a new application group, click the plus (+) icon in the bottom of the left pane. This displays the **Add Group** dialog.



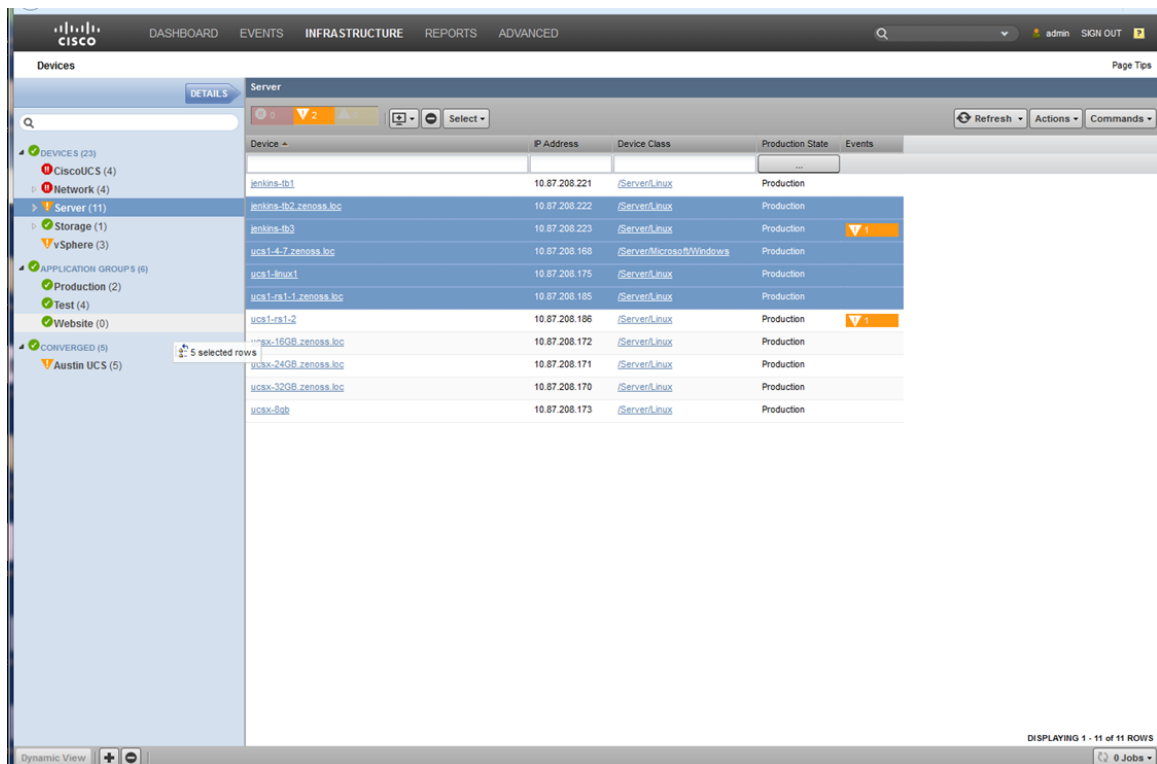
- 3 Enter a value for **Name** and a short description into the **Description** field, in this example:

Name = Website
Description = A set of servers

Click **Submit** to save and exit the dialog to display the new application group. The right hand pane is empty because it has no defined members yet

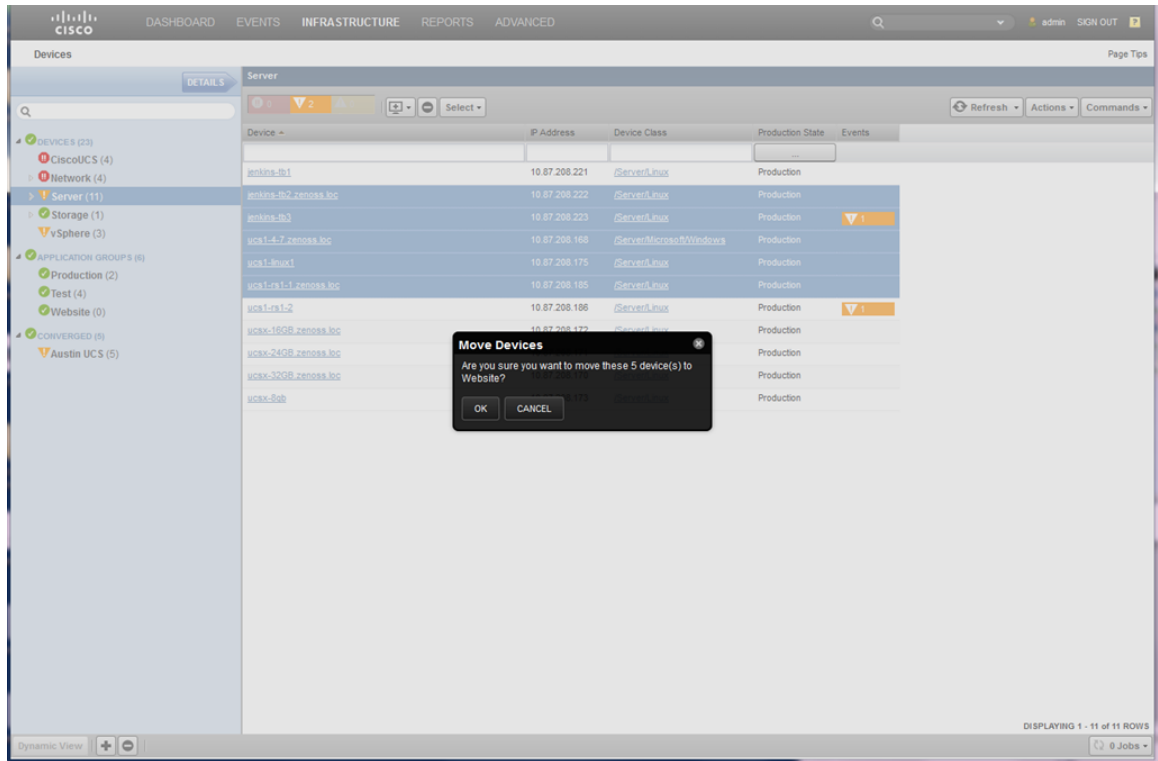


- 4 To add members to your new application group, navigate to **Infrastructure > Devices > Server (n)**. In this example, several servers display in the right hand **Device** pane.

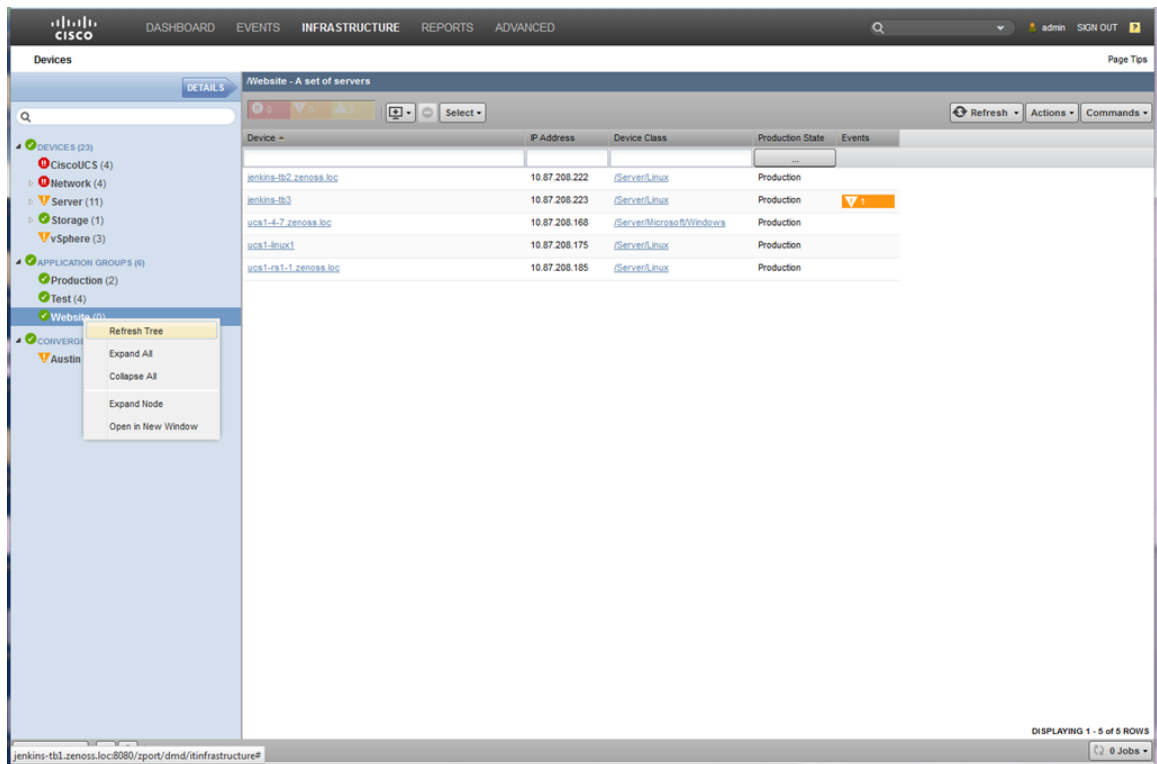


Select your server(s) for the new application group. Drag and drop them onto the new application group, in this example, **Website** in the left pane. For this example 5 servers are selected for addition to the new **Website** application group.

- 5 When you drop the selected files onto the new application group (**Website**) in the left pane, the Move Devices dialog displays.



- 6 Click **OK** to add the devices to your new application group and close the dialog box. The new list of servers that exist within your new application group display in the right **Website - A set of Servers** pane.



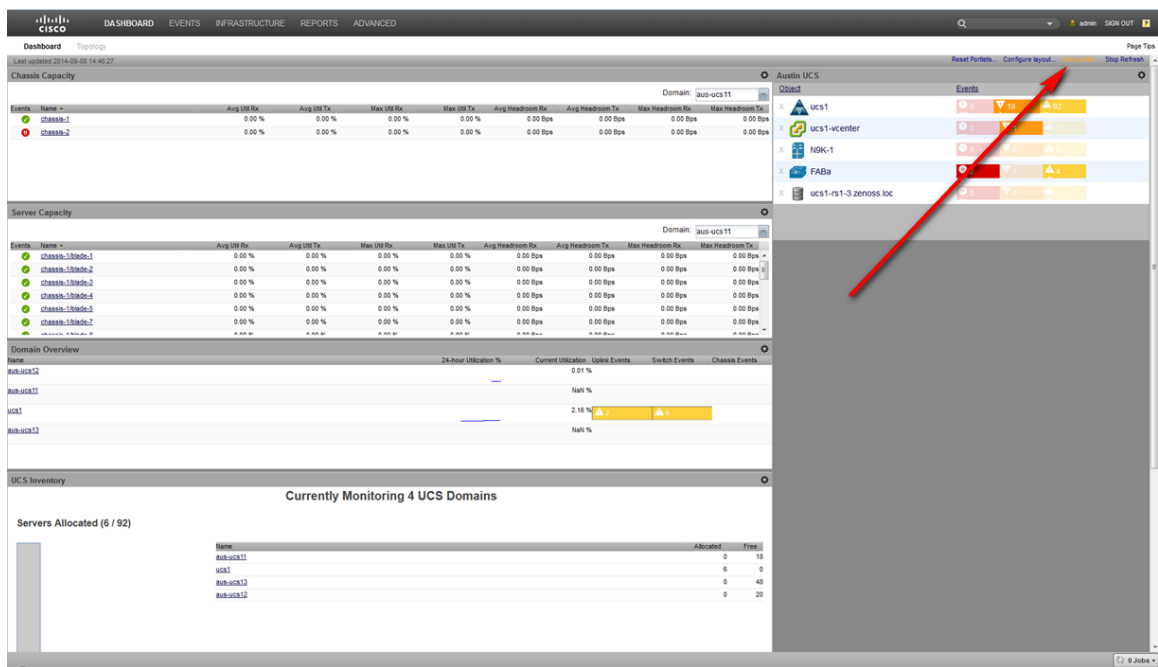
Note that you can right-click on an application group name in the left pane to display a drop-down menu. This menu enables you to Refresh the tree or change how you view the information.

How to Add an Application View to the Dashboard

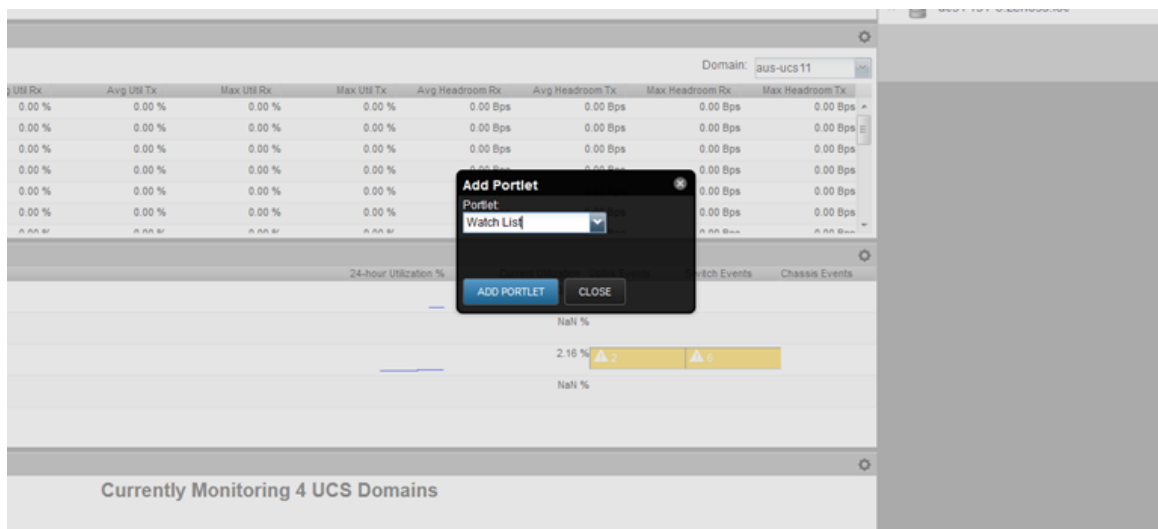
The Cisco UCS Performance Manager UI enables you to add application view portlets to the dashboard to expand and enhance the UI capabilities.

Perform the following to create an application view for your dashboard:

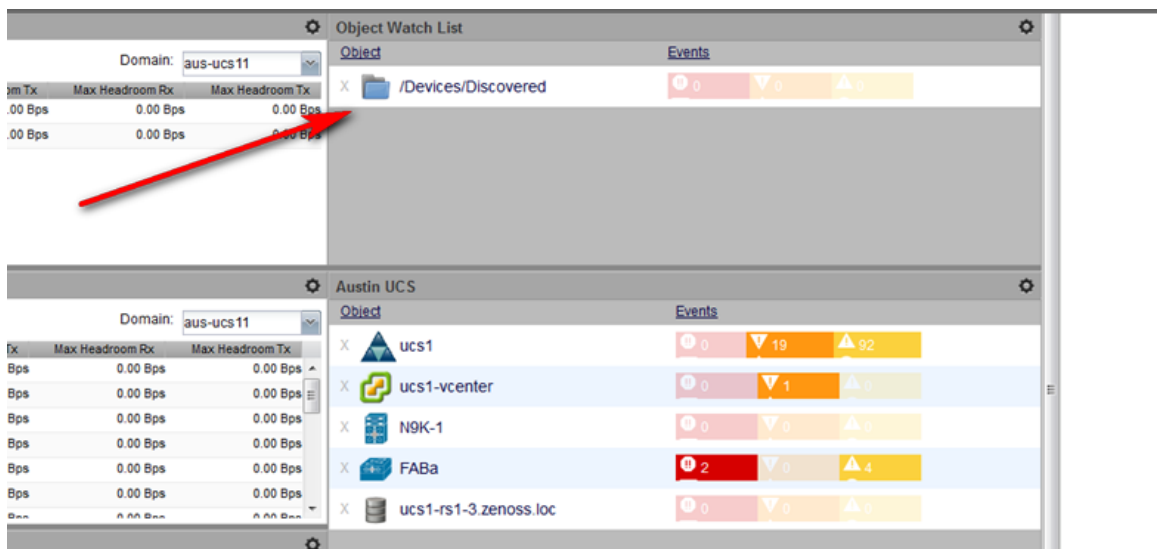
- 1 From your **Dashboard** view, click **Add Portlet** at the top right.



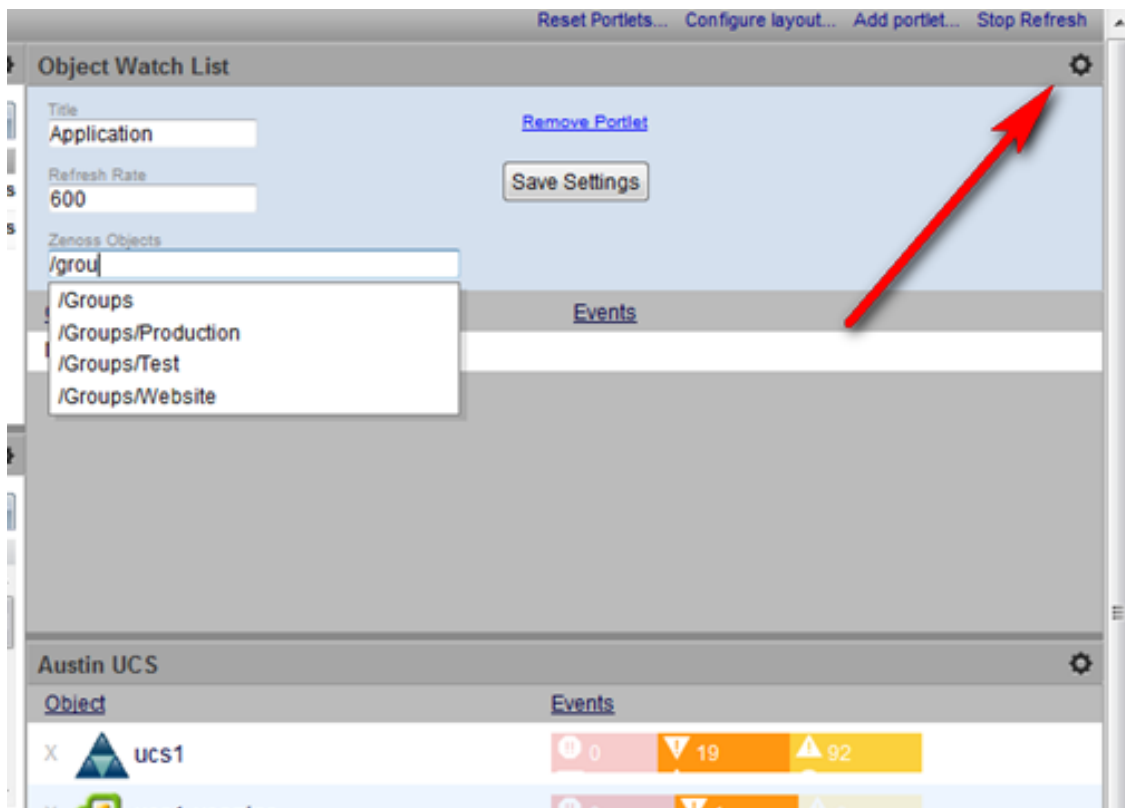
- 2 When the **Add Portlet** dialog box displays, click the down arrow to display the list of available portlets and select **Watch List**.



- 3 Click **Add Portlet** to save and close the dialog box. Your new portlet displays in the dashboard.



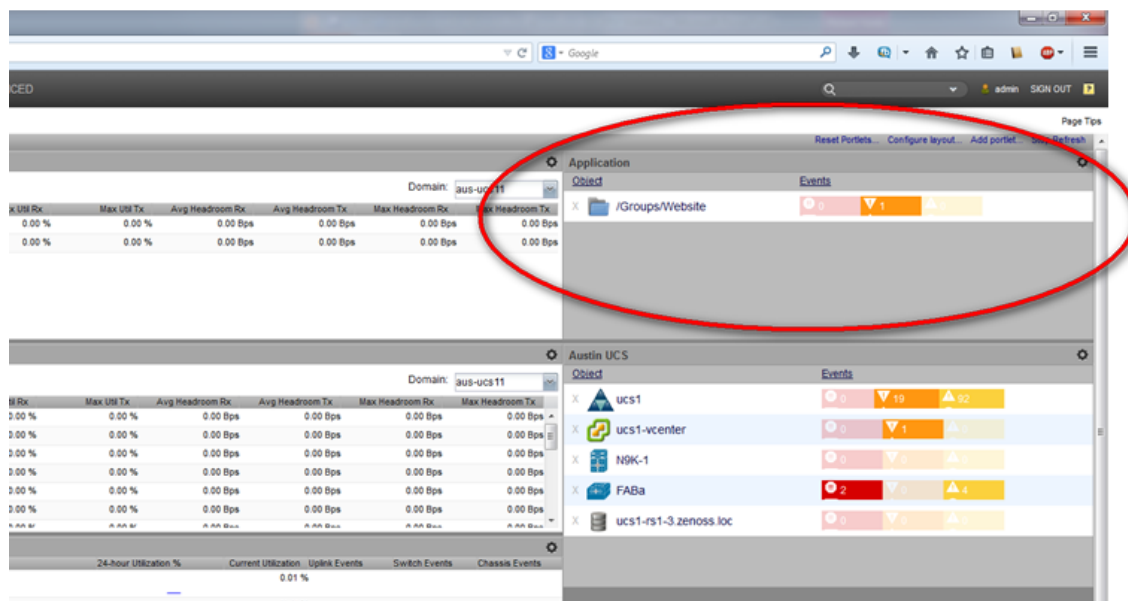
- 4 Click the gear icon (top right) to edit the settings for your new portlet.



Enter a **Title**, verify or specify a **Refresh Rate**, and add your application group to the **Zenoss Objects** field. For example:

```
Title = Application
Refresh Time = 600
Zenoss Objects = /Groups/Website
```

- 5 Click **Save Settings** to save and exit the settings dialog. Your new portlet displays in the dashboard.



Note that you can rearrange the dashboard to suit your needs or taste.