

VMware vCenter Operations Manager Enterprise Getting Started Guide

vCenter Operations Manager Enterprise 5.0

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VMware vCenter Operations Manager Enterprise Getting Started Guide

The *VMware vCenter Operations Manager Enterprise Getting Started Guide* introduces VMware® vCenter™ Operations Manager Enterprise, its user interface, and key terms and concepts. It also describes how to set up dashboards and configure widgets.

Intended Audience

This information is intended for anyone who uses or administers vCenter Operations Manager Enterprise.

Introducing vCenter Operations Manager Features and Concepts

1

vCenter Operations Manager collects performance data from monitored software and hardware resources in your enterprise and provides predictive analysis and real-time information about problems. It presents data and analysis through alerts, in configurable dashboards, on predefined pages in the user interface, and in several predefined reports.

Before you start using vCenter Operations Manager, become familiar with key vCenter Operations Manager features, concepts, and terminology.

This chapter includes the following topics:

- [“Viewing Resources in vCenter Operations Manager,”](#) on page 7
- [“Understanding How vCenter Operations Manager Collects Data,”](#) on page 8
- [“Understanding Alerts,”](#) on page 8
- [“Understanding Health Ratings,”](#) on page 10
- [“Monitoring Virtual Resources,”](#) on page 11
- [“Analyzing Performance and Capacity,”](#) on page 13

Viewing Resources in vCenter Operations Manager

In vCenter Operations Manager, a resource is an entity in your computing environment for which vCenter Operations Manager collects data. A resource can be a single entity, such as a router or database, or a container that holds other resources.

Applications and tiers are types of container resources. An application defines an interdependent set of hardware and software components. A tier is a group of resources that performs a specific task in an application. An application can contain multiple tiers. With applications and tiers, you can combine, track, and analyze metrics for related resources over a period of time.

To make resources easier to find in the user interface, a vCenter Operations Manager administrator assigns resources to resource tag values. A resource tag is a type of information, and a resource tag value is an individual instance of that type of information.

You can view resources in many places in the vCenter Operations Manager user interface, including the Environment Overview page. The list on the left side of the Environment Overview page contains the resource tags and resource tag values. The **List** tab contains the resources.

In the example, the resource tag value called VMware vCenter Operations is selected in the left pane under the Application resource tag, and the **List** tab shows the resources assigned to the VMware vCenter Operations resource tag value. The resources are tiers in the VMware vCenter Operations application.

Figure 1-1. Example of Resources on the Environment Overview Page

The screenshot shows the 'ENVIRONMENT OVERVIEW' page in vCenter Operations Manager. On the left is a navigation pane with a tree view containing categories like Collectors, Applications, Maintenance Schedules, Adapter Kinds, Adapter Instances, Resource Kinds, Recently Added Resources, Resource Statuses, Health Ranges, Entire Enterprise, Application, and VMware vCenter Operations (4). The main area displays a table of resources. The table has columns for Name, Health, Resource Kind, Collection State, Collection Status, Data Source, Attribute Package, Creation Time, and ID. The resources listed are Collection, Analysis, Presentation, and Distribution, all with a health of 100 and a tier of Tier. The table also shows collection state and status icons, data source icons, and attribute packages. The bottom of the table shows pagination: Page 1 of 1, and a status bar indicating 'Displaying resources 1 - 4 of 4'.

Name	Health	Resource Kind	Collection State	Collection Status	Data Source	Attribute Package	Creation Time	ID
Collection	100	Tier				All Attributes	Jun 29, 2011 3:03:52 PM	10
Analysis	100	Tier				All Attributes	Jun 29, 2011 3:03:52 PM	11
Presentation	82	Tier				All Attributes	Jun 29, 2011 3:03:52 PM	12
Distribution	100	Tier				All Attributes	Jun 29, 2011 3:03:52 PM	13

Understanding How vCenter Operations Manager Collects Data

vCenter Operations Manager can collect several types of data for a single resource. For example, for a database server it might receive data on free disk space, CPU use, and average response time. Each type of data that vCenter Operations Manager collects is called an attribute.

A metric is an instance of an attribute for a particular resource. For each metric, vCenter Operations Manager collects and stores multiple readings over time. Each piece of data that vCenter Operations Manager collects is called a metric observation or value.

A vCenter Operations Manager administrator creates attribute packages to define combinations of attributes and assigns attribute packages to resources. An attribute package specifies the attributes to collect for the resource to which it is assigned.

An administrator identifies the attributes that are most important in your enterprise as key performance indicators (KPIs). A KPI is a high-priority metric that might indicate a severe problem in your infrastructure if it exceeds its normal value range. vCenter Operations Manager treats KPIs differently from other attributes.

A vCenter Operations Manager administrator might also create super metrics and super metric packages. A super metric is useful when a single metric cannot tell you what you need to know about the behavior of your enterprise. For example, you might have a super metric that tracks the average free disk space for all of the database servers in your enterprise by averaging the free disk space metric for all servers. A super metric package is similar to an attribute package, except that it defines combinations of super metrics.

Understanding Alerts

For each attribute, vCenter Operations Manager maintains thresholds of normal behavior and generates anomalies when a metric violates a threshold. If vCenter Operations Manager determines that the current combination of anomalies indicates a real problem, or if a KPI violates a threshold, it generates an alert.

An alert is a notification that informs you of an abnormal condition that might require attention. An alert can describe a problem in a resource, including applications and tiers. Different combinations of conditions cause different types of alerts.

For example, if CPU use for all of the servers in a tier exceeds a threshold, vCenter Operations Manager generates an anomaly for each out-of-threshold metric value and sends an alert to notify you of the problem. The alert lists all of the anomalies for each metric.

You can view alerts in several places in the vCenter Operations Manager user interface, including the Alerts Overview page. If a vCenter Operations Manager administrator sets up the alert notification feature, you might also receive alerts in email messages.

On the Alerts Overview page, the list on the left side of the page contains resource tags and resource tag values and the right pane contains alerts. By default, the alert list includes alerts for all resources. If you select a resource tag value in the left pane, the alert list contains only the alerts for the resources that have the selected resource tag value.

Figure 1-2. Example of Alerts on the Alerts Overview Page

Id	Criticality	Sub-Type	Start Time	Duration	Status	Resource Name	Metric	Info
312	Critical	...	7:08 PM	00s	...	Online Banking		Not receiving data from adapter instance 8.H...
311	7:07 PM	01m:43s	...	ESX2	Info/Vlms PoweredUp	HT below 7.0 < 6.0
310	7:07 PM	01m:43s	...	ESX2		Host is having a problem
309	7:06 PM	02m:43s	...	ReportEngine	Reports/Branch Transactions	DT abnormal running
308	7:05 PM	03m:08s	...	Web		Not receiving data from adapter instance 8.H...
307	7:05 PM	03m:34s	...	UserExperience	Measurements/EndUserResponseTime	HT above 1466.0 > 1300.0
306	6:59 PM	07m:59s	...	ESX2		Not receiving data from adapter instance 67...
305	6:55 PM	07m:59s	...	Online Banking		Not receiving data from adapter instance 8.H...
304	6:52 PM	07m:59s	...	Web		Not receiving data from adapter instance 8.H...
303	6:50 PM	13m:05s	...	Online Banking		Users are complaining about slowness
302	6:50 PM	13m:40s	...	Online Banking	Super Metric/End User Response Time	HT above 2500.0 > 2000.0
301	6:50 PM	13m:40s	...	Database	Super Metric/Transaction Time - Seconds	HT above 15.0 > 7.0
300	6:50 PM	13m:40s	...	Web	Super Metric/Users Logged In	HT below 172.0 < 200.0
299	6:50 PM	15m:40s	...	UserExperience	Measurements/EndUserResponseTime	HT above 2500.0 > 1500.0
298	6:50 PM	13m:40s	...	UserExperience	Measurements/Users Logged In	HT below 172.0 < 1050.0
297	6:49 PM	13m:40s	...	UserExperience	Measurements/AvgTransactionTime - S...	HT above 9.0 > 5.0
296	6:47 PM	13m:04s	...	Web		Web is a little sluggish
295	6:47 PM	03m:41s	...	UserExperience	Measurements/EndUserResponseTime	HT above 1466.0 > 1300.0
294	6:46 PM	07m:59s	...	ESX2		Not receiving data from adapter instance 67...

Using Thresholds to Identify Abnormal Behavior

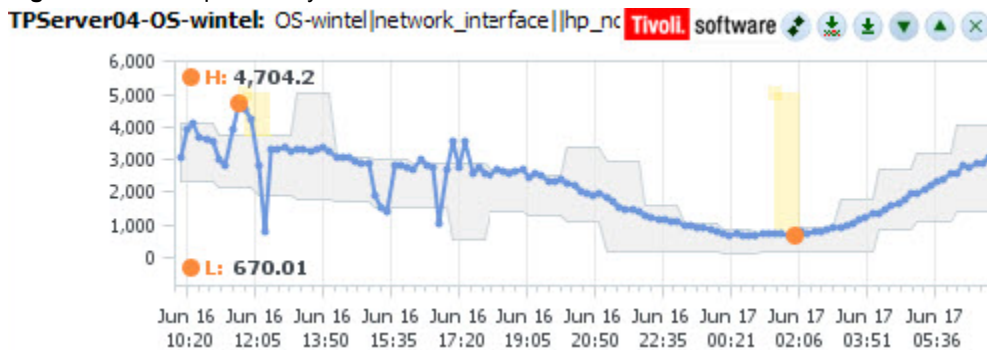
A threshold is a value that marks the boundary between normal and abnormal behavior for a metric. When a metric crosses a threshold, vCenter Operations Manager generates an anomaly. vCenter Operations Manager uses dynamic thresholds and hard thresholds.

With dynamic thresholds, vCenter Operations Manager determines whether to generate an anomaly based on how often a metric has violated its thresholds and by the amount of the violation. vCenter Operations Manager calculates and continually adjusts a degree of abnormality for the metric. If the metric value is within this degree of abnormality, vCenter Operations Manager does not generate an anomaly, even if the value is outside of the dynamic threshold.

A hard threshold is a value that a vCenter Operations Manager administrator defines for a metric. A hard threshold changes only when an administrator changes it.

The dynamic threshold for a metric appears as a shaded area in a metric graph. Out-of-range values that generated anomalies appear as yellow areas. You can view metric graphs in several places in the user interface, including the Metric Graph widget.

Figure 1-3. Example of a Dynamic Threshold for a Metric



Understanding KPI Alert Generation

When a KPI violates a threshold, vCenter Operations Manager always generates an alert. When they configure attribute packages, vCenter Operations Manager administrators can identify any attribute for any resource as a KPI.

The type of alert that vCenter Operations Manager generates depends on the type of threshold that the KPI uses. When a KPI violates an internally calculated dynamic threshold, vCenter Operations Manager sends a Smart KPI Breach alert. When a KPI violates a user-defined hard threshold, vCenter Operations Manager sends a Classic KPI HT Breach alert.

Identifying the Root Causes of Alert Symptoms

The root cause of an alert is the condition or symptom that was the first step in the chain of events that led to the alert. For example, a slowdown in network traffic through a particular router could lead to an increased time per transaction for users of your Web site, which in turn could cause vCenter Operations Manager to generate an alert for the Web server resource.

For each alert, vCenter Operations Manager lists the most likely root causes of the symptoms that caused the alert and ranks the causes in order of importance.

You can view root causes in the Root Cause column on the Alerts Overview page and in the Root Cause Ranking widget.

Figure 1-4. Example of Root Causes on the Alerts Overview Page

Resource Name	Resource Kind	Metric	Root Cause	Resource ID
qalab2vm-125	Virtual Machine	Network(4000)Usage Rate(KBps)	100% DT abnormal Datastore(datastore-680)Read Latency (ms)	71
qalabvm-65	Virtual Machine	CPU Usage(Demand (%)	100% DT above Virtual Disk(Aggregate of all instances)Read Latency (ms)	140
vse-routed.net (574bd7c5-096c-4fd3-9a55-dd...	Virtual Machine	CPU Usage(Demand (%)		453
qalab2vm-125	Virtual Machine	CPU Usage(Demand (%)	100% DT abnormal Datastore(datastore-680)Read Latency (ms)	71
vCops-ENT	Virtual Machine	CPU Usage(Demand (%)	100% HT above Network(4000)Usage Rate(KBps)	128
qalab2vm-122	Virtual Machine	CPU Usage(Demand (%)	100% DT abnormal Datastore(Aggregate of all instances)Read Latency (ms)	47
VM 1	Virtual Machine	CPU Usage(Demand (%)		495
VM 2	Virtual Machine	CPU Usage(Demand (%)	100% HT above Network(4000)Usage Rate(KBps)	496
qalab2vm-125	Virtual Machine	Network(Aggregate of all instances)Usage Rate(KBps)	100% DT abnormal Datastore(datastore-680)Read Latency (ms)	71
fred-win7-64	Virtual Machine	CPU Usage(Demand (%)	100% DT abnormal Datastore(datastore-12)Used Space (MB)	211
mon2005svr	Virtual Machine	CPU Usage(Demand (%)		483
VMware vCenter Operations 1.0 [373027]	Virtual Machine	CPU Usage(Demand (%)	100% HT above Network(4000)Usage Rate(KBps)	488
vse-hr.routed.net (38a4f14c-132e-454a-b604-...	Virtual Machine	CPU Usage(Demand (%)		481
VM 1	Virtual Machine	CPU Usage(Demand (%)		590
VM 2	Virtual Machine	CPU Usage(Demand (%)		591
SCOM2007R2	Virtual Machine	CPU Usage(Demand (%)	100% DT abnormal Guest File System (E:\Guest File System Free Space)	127
hpccent54vm	Virtual Machine	CPU Usage(Demand (%)	100% DT abnormal CPU Usage(3)Ready (ms)	217
qalab2vm-125	Virtual Machine	Network(Usage Rate(KBps)	100% DT abnormal Datastore(datastore-680)Read Latency (ms)	71
VMware vCenter Operations 1.0 [373027]	Virtual Machine	Memory(Usage (%)	100% HT above CPU Usage(Demand (%)	488
qalab2vm-163	Virtual Machine	Memory(Usage (%)	100% DT above CPU Usage(Ready (%)	46
vCops-ENT	Virtual Machine	Memory(Usage (%)	100% HT above CPU Usage(Demand (%)	128

Understanding Health Ratings

vCenter Operations Manager examines internally generated metrics and uses its proprietary analytics formulas to determine an overall health rating for a resource. The health rating, which ranges from 0 to 100, gives you a quick overview of the current state of a resource.

vCenter Operations Manager generates and stores internally generated metrics for every resource. Internally generated metrics include the total number of alerts and anomalies and the number of active alerts.

The health rating appears as a numeric rating and as a colored indicator in the user interface. The color is based on the range of the health rating. You can view the health rating for a resource anywhere that a resource is listed and in the Health widget. For resources that VMware vCenter Server™ manages, health ratings appear in the VC Relationship widget and on the Resource Detail page.

Figure 1-5. Example of Health Ratings on the Environment Overview Page

The screenshot shows the 'ENVIRONMENT OVERVIEW' page in vCenter Operations Manager. It features a left-hand navigation pane with categories like Collectors, Applications, Maintenance Schedules, Adapter Kinds, Adapter Instances, Resource Kinds, Recently Added Resources, Health Ranges, Entire Enterprise, GEO Location, Application, Tier, and UnTag. The main area displays a table of resources with columns for ID, Name, Health, Resource Kind, Collection State, Collection Status, and Data Source. The Health column uses colored circles and numbers to represent workload scores. The table lists 17 resources, including VMWare-Http, Crystal, Irvine, Yerevan, Chicago, New York, San Francisco, Los Angeles, Web, Network, Database, App, Online Banking, ESX3, ESX2, ESX1, Online Banking Virtual, and UserExperience. The bottom of the page shows 'Page 1 of 1' and 'Displaying resources 1 - 67 of 67'.

ID	Name	Health	Resource Kind	Collection State	Collection Status	Data Source
67	VMWare-Http	100	VMWare-Http Adapter Instance	🟢	🟢	🟢
66	Crystal	100	Crystal Adapter Instance	🟢	🟢	🟢
65	Irvine	58	GEO Location	🟢	🟢	
64	Yerevan	66	GEO Location	🟢	🟢	
63	Chicago	13	GEO Location	🟢	🟢	
62	New York	16	GEO Location	🟢	🟢	
61	San Francisco	15	GEO Location	🟢	🟢	
60	Los Angeles	69	GEO Location	🟢	🟢	
59	Web	35	Tier	🟢	🟢	🟢
58	Network	36	Tier	🟢	🟢	🟢
57	Database	36	Tier	🟢	🟢	🟢
56	App	68	Tier	🟢	🟢	🟢
55	Online Banking	?	Application	🟢	🟢	🟢
54	ESX3	44	ESX-Host	🟢	🟢	🟢
53	ESX2	?	ESX-Host	🟢	🟢	🟢
52	ESX1	36	ESX-Host	🟢	🟢	🟢
51	Online Banking Virtual	72	Data Center	🟢	🟢	🟢
50	UserExperience	95	UEM	🟢	🟢	🟢
49	Evento	?	EventoDK	🟢	🟢	🟢

Monitoring Virtual Resources

vCenter Operations Manager provides performance, relationship, and capacity data for objects in your virtual environment. It uses badges to represent derived metrics and give you a high-level, broad view of the performance and condition of your virtual environment.

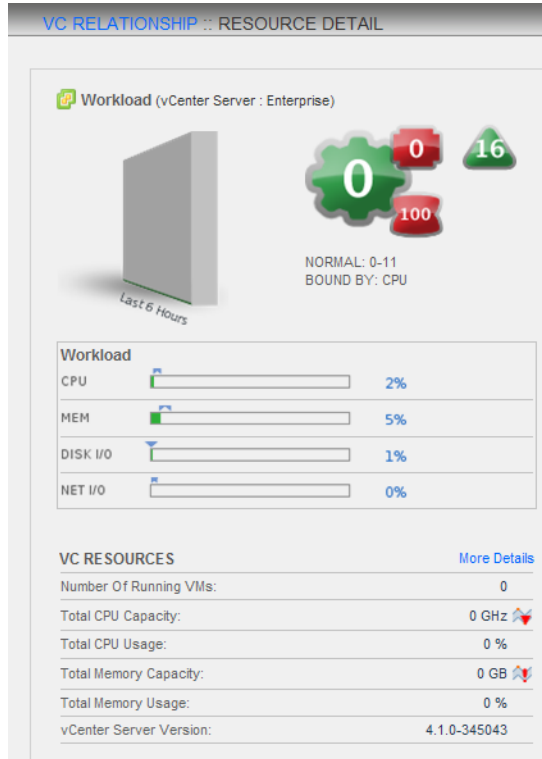
Interpreting Workload Scores for Virtual Resources

vCenter Operations Manager combines the metrics that show demand on virtual machines and other virtual objects in a single value called a workload. These metrics include CPU use and memory use.

vCenter Operations Manager indicates workload as a numeric score and as a colored circle. The color is based on the range of the workload score.

Workload scores typically range from 0 to 100. A score of 0 indicates that an object is not being used. A score greater than 100 indicates that an object is trying to access more resources than are currently available. When an object's workload score is greater than 100, you might need to allocate more resources to the object or move some tasks to other objects.

You can view workload scores for virtual objects in the VC Relationship widget and on the Resource Detail page.

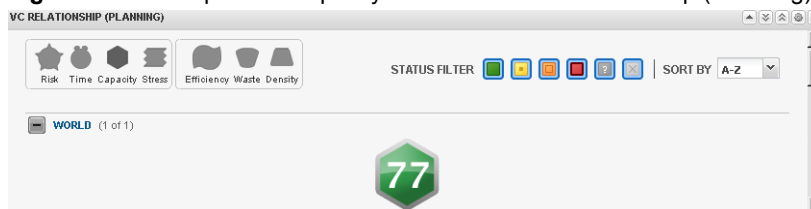
Figure 1-6. Example of a Workload Score on the Resource Detail Page

Interpreting Capacity Scores for Virtual Resources

The capacity score indicates how close a virtual object is to exhausting its available computing resources. The computing resources include disk space, memory size, and network capacity.

To calculate the capacity score, vCenter Operations Manager combines applicable metrics from the object and applies its analytics algorithms to determine long-term cycles and trends. It uses these results to calculate when an object might run out of a type of resource.

vCenter Operations Manager indicates capacity as a numerical score and a colored hexagon. The color is based on the range of the capacity score. You can view capacity scores for virtual objects in the VC Relationship (Planning) widget.

Figure 1-7. Example of a Capacity Score in the VC Relationship (Planning) Widget

Viewing Change Events for Virtual Resources

A change event is any change to the virtual infrastructure. It can include changes on virtual machines or ESX hosts, such as adding, removing, connecting, or disconnecting an ESX host, and starting, stopping, or reconfiguring a virtual machine.

vCenter Operations Manager can show change events on its performance graph on the Resource Detail page for a virtual object. A vCenter Operations Manager administrator can configure whether change events appear on performance graphs.

Analyzing Performance and Capacity

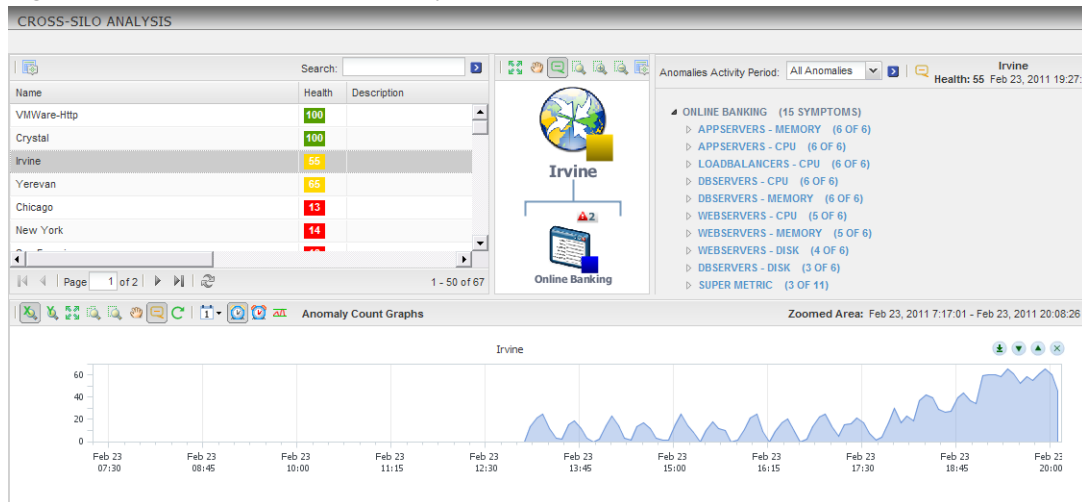
With vCenter Operations Manager forensics features, you can analyze the performance and capacity of your resources and use this information to balance the resources in your environment. Forensics features include cross-silo analysis, top-n analysis, the problem fingerprint library, capacity analysis, and VC analysis.

Examining Anomalies with Cross-Silo Analysis

With cross-silo analysis, you can examine graphs that show the number of anomalies over time for particular resources. You can zoom in on a graph to focus on a specific period of time, such as immediately before an alert. You can also click on a location in a graph to see a ranking of the likely root causes for the anomalies at that specific time.

Cross-silo analysis information appears on the Cross-Silo Analysis page. For applications, the anomaly graph includes a line that shows the internally determined 90 percent threshold. If the number of anomalies exceeds this threshold, vCenter Operations Manager generates an early warning Smart Alert.

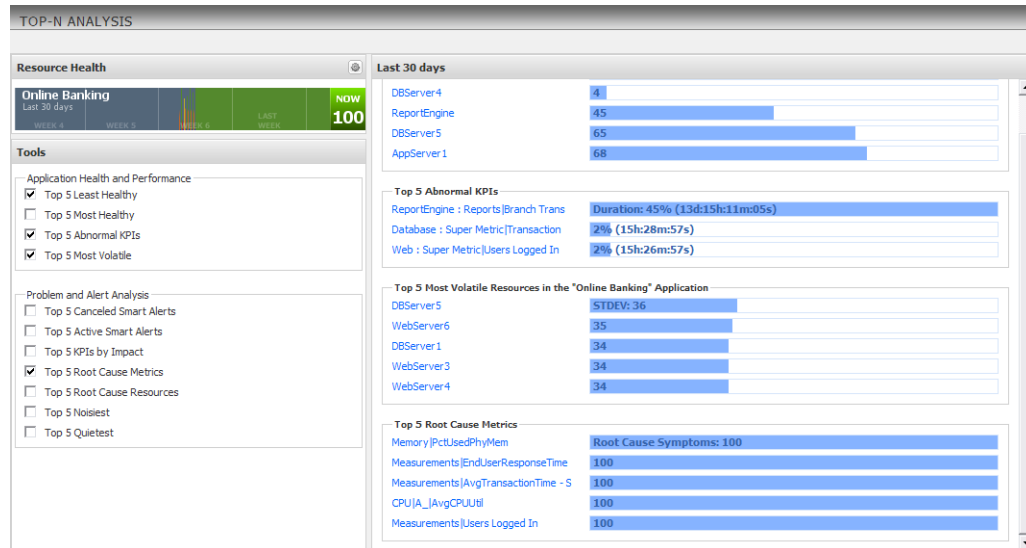
Figure 1-8. Example of Cross-Silo Analysis



Using Top-N Analysis to Determine Best and Worst Performers

With top-n analysis, you can identify the top or bottom resources, metrics, or alerts in selected categories, such as the five most or least healthy resources in a tier. You can also select the resource tag and time frame to analyze and the categories to show.

Top-n analysis information appears on the Top-N Analysis page and in the Top-N Analysis widget. The Resource Health pane shows the health of the resource. The information that you select in the Tools pane appears in the right pane.

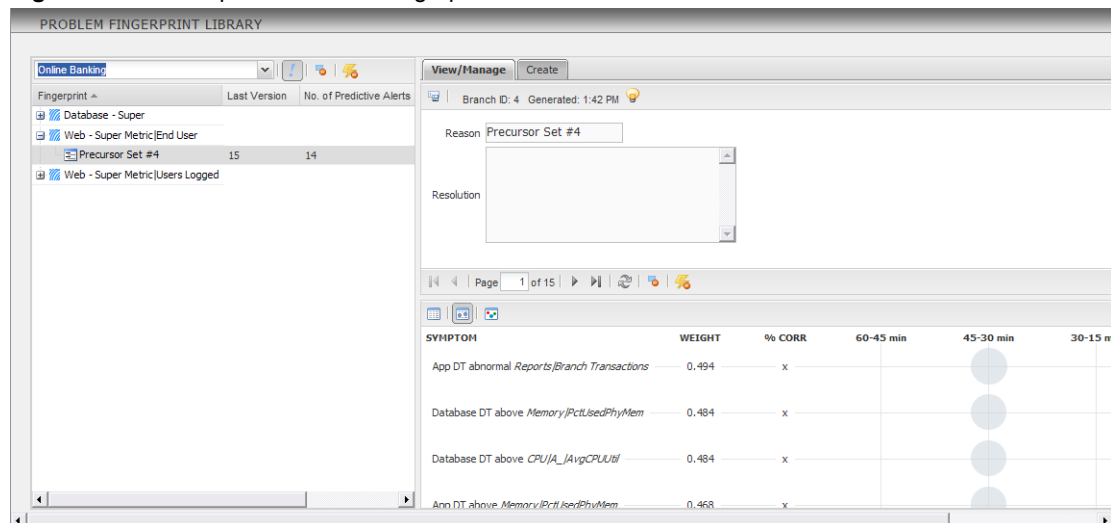
Figure 1-9. Example of Top-N Analysis

Isolating and Resolving Issues with Problem Fingerprinting

When a KPI for an application or tier violates a threshold, vCenter Operations Manager examines the events that preceded the violation. If it finds enough related information, it captures the set of events that preceded the violation as a fingerprint. If vCenter Operations Manager finds a similar series of events in the future, it can issue a predictive alert to warn of a likely KPI violation.

Fingerprinting helps you to quickly isolate and resolve problems by reducing the number of possible silos and tiers in which a problem might have occurred, capturing the events that precede a problem for root-cause analysis, and notifying you of problems before they occur.

You can see fingerprint information on the Problem Fingerprint Library page. If you select a fingerprint branch in the left pane, the details for that branch appear in the right pane.

Figure 1-10. Example of Problem Fingerprints

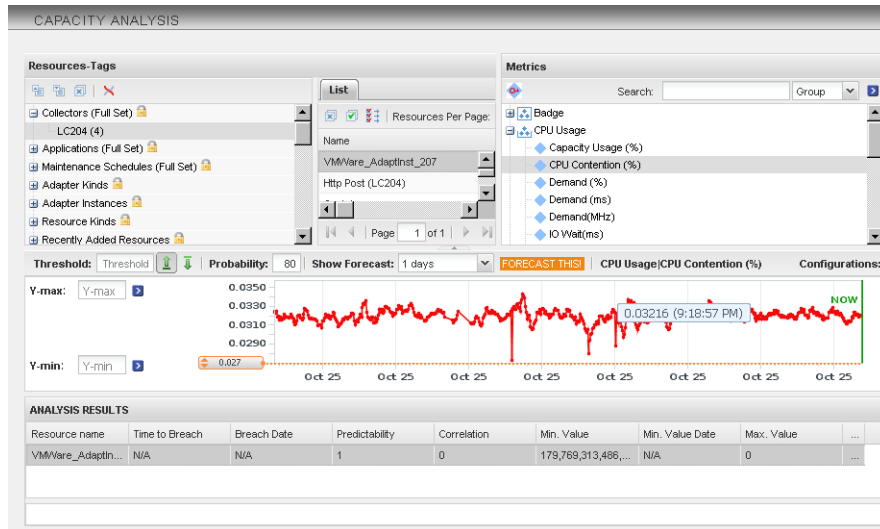
Performing Capacity Analysis

Some metrics, such as disk space use or network traffic measurements, frequently show long-term trends. Short-term fluctuations can hide this data or make it difficult to calculate.

The capacity analysis feature looks at the overall value trend for a selected metric, tells you when a metric is likely to reach a threshold, and indicates how confident vCenter Operations Manager is of the prediction. This information can help you plan for infrastructure upgrades, such as adding additional storage and network routers.

Capacity analysis information appears on the Capacity Analysis page.

Figure 1-11. Example of Capacity Analysis Information



Analyzing and Balancing Virtual Resources

With the VC analysis feature, you can compare the metric values of different objects in your virtual environment by using predefined heat maps or by creating your own custom heat maps.

A heat map contains rectangles of different colors and sizes, and each rectangle represents an object in your virtual environment. The color of a rectangle represents the value of one metric, and the size of a rectangle represents the value of another metric. For example, one of the predefined heat maps shows the total memory and percentage of memory use for each virtual machine. Larger rectangles are virtual machines that have more total memory. Green indicates low memory use and red indicates high memory use.

vCenter Operations Manager updates heat maps in real time as it collects new values for each object and metric. The colored bar below a heat map is the legend. The legend identifies the values that the endpoints represent and the midpoint of the color range.

Heat map objects are grouped by parent. A heat map that shows virtual machine performance groups virtual machines by the ESX hosts on which they run.

Designing Your Workspace

You can customize your vCenter Operations Manager workspace to meet your specific needs. Depending on your access rights, you can add, delete, and arrange widgets on your dashboards, create new dashboards, edit widget configuration options, and configure widget interactions.

This chapter includes the following topics:

- [“Working with Dashboards,”](#) on page 17
- [“Working with Widgets,”](#) on page 22

Working with Dashboards

When your user account is created, a vCenter Operations Manager administrator assigns you to one or more user groups. These user groups determine which dashboards are available to you when you first log in to vCenter Operations Manager. If your user account has the necessary access rights, you can modify your dashboards and create dashboards.

Create a Dashboard

You typically create a dashboard by selecting a dashboard template. A dashboard template contains all of the information in a dashboard definition. You can also create a dashboard by defining and arranging the widgets that the dashboard contains.

vCenter Operations Manager includes predefined dashboard templates. If the predefined templates do not meet your needs, you can create your own templates. See [“Create a Dashboard Template,”](#) on page 19.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- If you are creating a dashboard by selecting widgets, become familiar with the available widgets. See [“Working with Widgets,”](#) on page 22.

Procedure

- 1 On your Home page, click the plus (+) sign to the right of the last dashboard tab.

- 2 Create the dashboard.

Option	Action
Create a dashboard from a template	<ol style="list-style-type: none"> Drag a dashboard template to the right side of the window. Select the number of columns to use on the dashboard from the Select Layout drop-down menu.
Create a dashboard by selecting widgets	<ol style="list-style-type: none"> Click the Create Dashboard Using Widgets icon at the top left side of the window. Drag each widget from the left pane to the right pane. Select the number of columns to use on the dashboard from the Select Layout drop-down menu. (Optional) To change the size of the columns, drag the divider bars under Drag to Change Layout.

- 3 Type a name for the dashboard in the **Tab Name** text box.
- 4 (Optional) Select **Yes** next to **Mark as Default** to make the new dashboard your default dashboard.
- 5 Click **OK** to save your changes.

What to do next

The tab for the new dashboard appears to the right of the other dashboard tabs on your home page. To change the order of the dashboard tab, see [“Change the Order of Dashboard Tabs,”](#) on page 20.

If you used a template to create the dashboard, you might want to change the layout or the widgets that it contains. See [“Edit a Dashboard,”](#) on page 18 or [“Working with Widgets,”](#) on page 22.

Clone a Dashboard

You can create a dashboard by making a copy of an existing dashboard.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard to clone.
- 2 Click **Clone** on the **Dashboard Tools** bar.
- 3 Type a name for the new dashboard and click **OK**.

What to do next

The tab for the new dashboard appears to the right of the other dashboard tabs on your Home page. To change the order of the dashboard tab, see [“Change the Order of Dashboard Tabs,”](#) on page 20.

When you clone a dashboard, all of the widgets that are in the original dashboard appear in the new dashboard. You might want to change the layout of the new dashboard or the widgets that it contains. See [“Edit a Dashboard,”](#) on page 18 or [“Working with Widgets,”](#) on page 22.

Edit a Dashboard

You can change a dashboard name, select or deselect a dashboard as your default dashboard, and change the number and size of the columns that appear on a dashboard.

For information about adding and removing widgets from a dashboard, see [“Working with Widgets,”](#) on page 22.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab of the dashboard to edit.
- 2 Click **Edit** on the **Dashboard Tools** bar.

The available widgets appear in the left pane of the Dashboard Editing: Edit a Tab window.

- 3 Edit the dashboard.

Option	Action
Change the name of the dashboard	Type a different name in the Tab Name text box.
Make the dashboard your default dashboard	Select Yes next to Mark as Default .
Change the number of columns on the dashboard	Select a different value from the Select Layout drop-down menu.
Change the size of the columns on the dashboard	Drag the divider bars under Drag to Change Layout .

- 4 Click **OK** to save your changes.

Delete a Dashboard

If you do not need a dashboard, you can delete it.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard to delete.
- 2 Click **Delete** on the **Dashboard Tools** bar.
- 3 Click **Yes** on the confirmation dialog box to delete the dashboard.

After the dashboard is deleted, its tab does not appear on your Home page.

Create a Dashboard Template

If the predefined dashboard templates do not meet your needs, you can create your own dashboard templates. A dashboard template contains all of the information in a dashboard definition. You can use a dashboard template to create dashboards.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Select a dashboard to use for the template, or create a dashboard to use for the template. See [“Create a Dashboard,”](#) on page 17.

Procedure

- 1 Click the tab for the dashboard to use for the template.

- 2 Click **Create Template** on the **Dashboard Tools** bar.
- 3 Type a name for the new dashboard template and click **OK**.

After the dashboard template is created, you and other users can use the template to create dashboards. See [“Create a Dashboard,”](#) on page 17.

Delete a Dashboard Template

If you do not need a dashboard template, you can delete it.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 On your home page, click the plus (+) sign to the right of the last dashboard tab.
- 2 Click the **Manage Templates** link.
- 3 Select the dashboard template to remove and click the **Remove Selected Dashboard Template** icon.
- 4 Click **Yes** on the confirmation dialog box to delete the dashboard template.

Change the Order of Dashboard Tabs

You can change the order of the dashboard tabs on your home page.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click **Reorder Tabs** on the **Dashboards** bar.
Your dashboard tabs appear on the left side of the Reorder Tabs window.
- 2 Drag each tab to its new location.
- 3 Click **OK** to save your changes.

Configure Dashboard Switching

You can configure vCenter Operations Manager to switch from one dashboard to another. This feature is useful if you have several dashboards that show different aspects of your enterprise's performance and you want to look at each dashboard in turn.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Select **Dashboards > Reorder Tabs**.
- 2 Select **On** next to the dashboard.
- 3 Type the number of seconds to wait before switching the dashboard in the **Seconds** text box next to the dashboard.

- 4 Select the dashboard to switch to from the **To this Tab** drop-down menu next to the dashboard.
- 5 Click **OK** to save your changes.

Share a Dashboard

You can share a dashboard with one or more user groups. When you share a dashboard, it becomes available to all of the users in the user group that you select. The dashboard appears the same to all of the users who share it. If you edit a shared dashboard, the dashboard changes for all users.

NOTE Other users can only view a shared dashboard. They cannot change it.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard to share.
- 2 Click **Share** on the **Dashboard Tools** bar.
- 3 Select the dashboard in the Shared Dashboards pane and drag it to one or more user groups in the Accounts Groups pane.
- 4 Click **OK** to save your changes.

After you share a dashboard, an icon appears on the dashboard tab to indicate that you are sharing the dashboard. When another user views the shared dashboard, a key icon on the dashboard tab indicates that the user cannot edit the dashboard.

Stop Sharing a Dashboard

If you do not want other users to be able to use a dashboard that you previously shared, you can stop sharing it.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard to stop sharing.
- 2 Click **Share** on the **Dashboard Tools** bar.
- 3 Select the dashboard on the Shared Dashboards pane and click the **Stop Sharing Dashboard** icon.
- 4 Click **OK** to save your changes.

Working with Widgets

A widget is a pane on a dashboard that contains information about configured attributes, resources, applications, or the overall processes in your environment. Widgets can provide a holistic, end-to-end view of the health of all of the applications in your enterprise. If your user account has the necessary access rights, you can add and remove widgets from your dashboards.

Summary of Widgets

vCenter Operations Manager includes many types of widgets.

Table 2-1. Summary of Widgets

Widget Name	Description
Advanced Health Tree	Similar to the Health Tree widget, but includes information about the resource's grandchildren and indicates the health of each resource that it shows.
Alerts	Lists all alerts for all monitored resources.
Application Detail	Shows the health and alert counts for each tier in a single selected application.
Application Overview	Shows the overall health and the health of each tier for one or more applications.
Configuration Overview	Shows statistics for the overall monitored environment.
Data Distribution Analysis	Shows how often a metric had a particular value, as a percentage of all values, within a given time period. It can also compare percentages for two time periods.
Geo	Shows the location of resources that are assigned to GEO Location tag values.
Health Status	Shows health information for selected resources, or all resources that have a selected tag.
Health Tree	Shows the indicator for a selected resource, its parent resource, and its child resources.
Health-Workload Scoreboard	Shows color-coded health or workload scores for selected resources.
Heat Map	Shows performance information for a selected application as a heat map.
Mashup Chart	Brings together disparate pieces of information for a resource. It shows a health chart, an anomaly count graph, and metric graphs for key performance indicators (KPIs). This widget is typically used for an application.
Metric Graph	Shows the recent performance of selected metrics graphically.
Metric Graph (Rolling View)	Cycles through selected metrics at an interval that you define and shows one metric graph at a time. Miniature graphs, which you can expand, appear for all selected metrics at the bottom of the widget.
Metric Selector	Shows all metrics for the resources that are selected in the Resources widget.
Metric Sparklines	Shows the values collected for one or more selected metrics graphically over a time period that you select.
Metric Weather Map	Uses changing colors to show the behavior of a selected metric over time for multiple resources.
Resources	Lists all defined resources.
Root Cause Ranking	Shows the likely root causes for symptoms for a selected resource.
Generic Scoreboard	Shows values for selected metrics, which are typically KPIs, with color coding for defined value ranges.
Tag Selector	Lists all defined resource tags.
Top-N-Analysis	Shows the top or bottom five metrics or resources in various categories, such as the five applications that have the best or worst health score.

Table 2-1. Summary of Widgets (Continued)

Widget Name	Description
VC Relationship	Shows the performance status of objects in your virtual environment and their relationships. You can click an object to highlight its related objects and double-click an object to view its Resource Detail page.
VC Relationship (Planning)	Provides use and badge metric information (risk, time, capacity, stress, efficiency, waste, and density) for the resources in your virtual environment. You can use this information to plan for capacity upgrades or rebalance the workload in your virtual infrastructure.

For detailed information about these widgets, see [Chapter 3, “Using and Configuring Widgets,”](#) on page 25.

Add a Widget to a Dashboard

You add a widget to a dashboard by editing the dashboard. You can add any widget to any dashboard. A dashboard typically contains widgets that show related information, such as different views of the performance of a particular group of resources or similar alerts for separate applications.

NOTE You can add any number of widgets to a dashboard, but the more widgets that you add, the further you must scroll down the browser window to use a widget.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Become familiar with the available widgets. See [Chapter 3, “Using and Configuring Widgets,”](#) on page 25.

Procedure

- 1 Click the tab for the dashboard.
- 2 Click **Edit** on the **Dashboard Tools** bar.
The available widgets appear in the left pane of the Dashboard Editing: Edit a Tab window.
- 3 Drag the widget to add from the left pane to the right pane.
- 4 Click **OK** to save your changes.
The widget appears on the dashboard.

What to do next

If necessary, edit the widget configuration. See [“Edit a Widget Configuration,”](#) on page 26.

Remove a Widget from a Dashboard

You can remove a widget from a dashboard by editing the dashboard or by clicking an icon on the widget's toolbar.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard that contains the widget to remove.

- 2 Remove the widget from the dashboard.

Option	Action
Remove the widget by editing the dashboard	<ol style="list-style-type: none"> Click Edit on the Dashboard Tools bar. Find the widget in the right pane and click its Delete Widget icon. Click OK to save your changes.
Remove the widget by using the widget toolbar	<ol style="list-style-type: none"> Click the Close Widget icon on the widget's toolbar. Click Yes on the confirmation dialog box to remove the widget.

Resize a Widget

You can change the height of a widget on a dashboard.

The width of the column that contains a widget determines the width of the widget. To change the size of the columns on a dashboard, see [“Edit a Dashboard,”](#) on page 18.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard that contains the widget to resize.
- 2 Resize the widget.

Option	Description
Make the widget larger	Click the Expand Widget icon on the widget's toolbar.
Make the widget smaller	Click the Shrink Widget icon on the widget's toolbar.

Expand or Collapse a Widget

When you collapse a widget, its data is hidden and only its title bar is visible. You can expand a collapsed widget to make its data visible again.

Prerequisites

Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

Procedure

- 1 Click the tab for the dashboard that contains the widget to expand or collapse.
- 2 To expand a widget, or collapse an expanded widget, click the **Expand/Collapse Widget** icon on the widget's toolbar.

The **Expand/Collapse Widget** icon arrow changes direction depending on whether the widget is collapsed or expanded.

Using and Configuring Widgets

Widgets include configuration options that you can edit to customize them for your use. For example, you can select the metrics that the Data Distribution Analysis widget shows by editing its configuration. The available configuration options vary depending on the widget type. Some widgets do not show any data until you configure them.

Most widgets can provide information to, or receive information from, other widgets. For example, you can configure the Metric Sparklines widget to show a graph for a metric that you select in the Metric Selector widget. These relationships are called widget interactions.

This chapter includes the following topics:

- [“Edit a Widget Configuration,”](#) on page 26
- [“Configure Widget Interactions,”](#) on page 26
- [“Advanced Health Tree Widget,”](#) on page 31
- [“Alerts Widget,”](#) on page 33
- [“Application Detail Widget,”](#) on page 35
- [“Application Overview Widget,”](#) on page 36
- [“Configuration Overview Widget,”](#) on page 37
- [“Data Distribution Analysis Widget,”](#) on page 38
- [“Generic Scoreboard Widget,”](#) on page 40
- [“GEO Widget,”](#) on page 43
- [“Health Status Widget,”](#) on page 44
- [“Health Tree Widget,”](#) on page 45
- [“Health-Workload Scoreboard Widget,”](#) on page 47
- [“Heat Map Widget,”](#) on page 48
- [“Mashup Charts Widget,”](#) on page 51
- [“Metric Graph Widget,”](#) on page 53
- [“Metric Graph \(Rolling View\) Widget,”](#) on page 56
- [“Metric Selector Widget,”](#) on page 59
- [“Metric Sparklines Widget,”](#) on page 60
- [“Metric Weather Map Widget,”](#) on page 62
- [“Resources Widget,”](#) on page 64

- [“Root Cause Ranking Widget,”](#) on page 65
- [“Tag Selector Widget,”](#) on page 67
- [“Top-N Analysis Widget,”](#) on page 68
- [“VC Relationship Widget,”](#) on page 70
- [“VC Relationship \(Planning\) Widget,”](#) on page 71

Edit a Widget Configuration

You customize a widget by editing its configuration options. Some widgets do not show data until you configure them. The available configuration options vary depending on the widget type.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Become familiar with the configuration options for the widget to edit.

Procedure

- 1 Click the tab for the dashboard that contains the widget to edit.
- 2 Click the **Edit Widget** icon on the widget's toolbar.

The content of the Edit Widget window depends on the type of widget.

- 3 Type another name in the **Widget title** text box to customize the name of the widget.
- 4 Select a **Self Provider** option to specify where the objects that the widget shows are defined.

This option is not available if the widget cannot receive data from other widgets.

Option	Description
On	Define the objects that the widget shows in the widget configuration.
Off	You configured, or plan to configure, one or more other widget to provide objects to the widget.

- 5 Select a **Refresh Widget Content** option to specify whether the widget refreshes data after a specific time period.
The default setting is **Off**.
- 6 If you set **Refresh Widget Content** to **On**, type the refresh interval, in seconds, in the **Widget Refresh Interval** text box.
- 7 Edit any remaining configuration options, if required.
For example, if you set **Self Provider** to **On**, you must define the objects that the widget shows.
- 8 Click **OK** to save the widget configuration.

Configure Widget Interactions

You can configure a widget to show information for resources, applications, tags, or metrics that you select in another widget. For example, you can configure the Metric Sparklines widget to show a graph for a metric that you select in the Metric Selector widget. Both widgets must appear on the same dashboard.

When you configure widget interaction, you specify the widget that provides the information, called the providing widget, to the widget that shows the information, called the receiving widget.

For some widgets, you can define two providing widgets. For example, you can configure the Root Cause Ranking widget to receive data from the Tag Selector widget and the Health Status widget. In this case, the Root Cause Ranking widget shows root cause data for any resource that you select in the Health Status widget or for resources that have the tag value that you select in the Tag Selector widget.

Widget interactions apply only to the dashboard where you define them. For example, on one dashboard, the Root Cause Ranking widget might receive its resources from the Health Widget widget. On another dashboard, the Root Cause Ranking widget might receive its resources from the Tag Selector widget.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Become familiar with the widgets that can provide and receive data from other widgets. See [“Supported Widget Interactions,”](#) on page 27.

Procedure

- 1 Click the tab for the dashboard that contains the widgets to interact.
- 2 Click **Interactions** on the **Dashboard Tools** bar.

The Receiving Widget column on the Configure Widget Interactions window lists the widgets on the dashboard that can receive information from another widget on the dashboard.

- 3 For each receiving widget, select a providing widget or select **None**.

If the Providing Widget column has two drop-down menus for a receiving widget, you can select one providing widget from each menu. When you select **None** for all of the providing widgets, that widget does not show any data unless you configure it as a self provider.

- 4 Click **OK** to save the configuration.

Supported Widget Interactions

Many widgets can provide data to, and accept data from, other widgets. These relationships are called widget interactions.

In the following table, the widgets in the Providing Widgets 1 column can provide a resource ID to the widget in the Receiving Widget column, and the widgets in the Providing Widgets 2 column can provide a metric ID to the widget in the Receiving Widget column.

If widgets appear in both the Providing Widget 1 and Providing Widget 2 columns, you can select one providing widget from each column.

Table 3-1. Widget Interactions

Receiving Widget	Providing Widget 1	Providing Widget 2
Advanced Health Tree	<ul style="list-style-type: none"> ■ Generic Scoreboard ■ Alerts ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector
Alerts	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Heat Map ■ Health-Workload Scoreboard ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector
Application Detail	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector 	
Application Overview	None	
Configuration Overview	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Heat Map ■ Health-Workload Scoreboard ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	
Data Distribution Analysis	<ul style="list-style-type: none"> ■ Alerts ■ Generic Scoreboard ■ Health-Workload Scoreboard ■ Heat Map ■ Metric Selector ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	
Generic Scoreboard	None	
GEO	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector 	

Table 3-1. Widget Interactions (Continued)

Receiving Widget	Providing Widget 1	Providing Widget 2
Health Status	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector
Health Tree	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	
Heat Map	None	
Mashup Charts	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	Metric Selector
Metric Graph	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Alerts ■ Generic Scoreboard ■ Health-Workload Scoreboard ■ Heat Map ■ Metric Selector ■ Root Cause Ranking

Table 3-1. Widget Interactions (Continued)

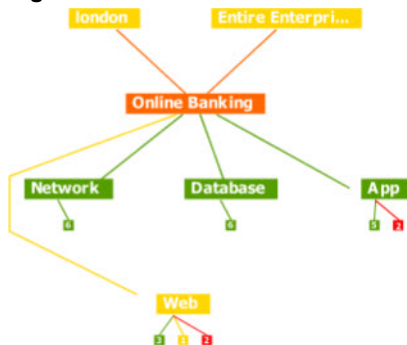
Receiving Widget	Providing Widget 1	Providing Widget 2
Metric Graph (Rolling View)	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Alerts ■ Generic Scoreboard ■ Health-Workload Scoreboard ■ Heat Map ■ Metric Selector ■ Root Cause Ranking
Metric Selector	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	
Metric Sparklines	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Alerts ■ Generic Scoreboard ■ Health-Workload Scoreboard ■ Heat Map ■ Metric Selector ■ Root Cause Ranking
Metric Weather Map	None	
Resources	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Root Cause Ranking ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector ■ Alerts <p>NOTE For the Resources widget, the Alerts widget is in a separate provider category. If it is a provider, selecting one or more alerts displays the resources for those alerts. You can select the Alerts widget and any providing widget that is selected from the other two categories.</p>

Table 3-1. Widget Interactions (Continued)

Receiving Widget	Providing Widget 1	Providing Widget 2
Root Cause Ranking	<ul style="list-style-type: none"> ■ Advanced Health Tree ■ Alerts ■ Generic Scoreboard ■ Health Status ■ Health Tree ■ Health-Workload Scoreboard ■ Heat Map ■ Resources ■ VC Relationship ■ VC Relationship (Planning) 	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector
Tag Selector	None	
Top-N-Analysis	<ul style="list-style-type: none"> ■ Application Overview ■ Tag Selector 	

Advanced Health Tree Widget

The Advanced Health Tree widget shows the section of your resource hierarchy around any resources that you select. The widget shows the selected resource and its parent and child resources. The Advanced Health Tree widget is similar to the Health Tree widget, except that it includes information about the resource's grandchildren and indicates the health of each resource.

Figure 3-1. Advanced Health Tree Widget

The color of the icon for each resource indicates its current health. The Advanced Health Tree widget shows the number of children for each child, by current health color. For example, it might show that one child resource has five children that have good health (green), and three children that have abnormal health (yellow).

You can click any resource to make it the center of the relationships. When a resource is the center of the relationships, the widget shows the resource's parents, children, and grandchildren count.

The toolbar at the top of the Advanced Health Tree widget contains icons that you can use to change the appearance of the hierarchy.

Table 3-2. Advanced Health Tree Widget Toolbar Icons

Icon	Description
Zoom to Fit	Changes the size of the resource icons for the best possible fit in the widget.
Pan	Click this icon and click and drag the hierarchy to show different parts of the hierarchy.
Image Map Tooltip	Click this icon and point to a resource to show its name and current health.
Zoom the view	Click this icon and drag to outline a part of the hierarchy. The display zooms to show only the outlined section.

Table 3-2. Advanced Health Tree Widget Toolbar Icons (Continued)

Icon	Description
Zoom in	Zooms in on the hierarchy.
Zoom out	Zooms out on the hierarchy.
Reset To Initial Resource	If you changed the central resource of the hierarchy, click this icon to return to the initial resource. Clicking this icon also resets the initial display size.
Resource Detail	Select a resource and click this icon to show the Resource Detail page for the resource.
Show Alerts	Select the resource in the hierarchy and click this icon to show alerts for the resource. Alerts appear in a pop-up window. You can double-click an alert to view its Alert Summary page.
Display Filtering Criteria	Shows the filtering settings for the widget in a pop-up window.

Configure the Advanced Health Tree Widget

By default, the Advanced Health Tree widget includes all parent and child resources that match the selected resource. You can edit the widget configuration to limit the parent and child resources that the widget shows.

You can also configure other widgets to provide a resource to the Advanced Health Tree widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Advanced Health Tree widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define a resource in the widget configuration.
- 2 In the **Resource Selection** pane, select the resource.

To find a specific resource, type all or part of the resource name in the **Search** text box and click the right angle bracket (>).

The name of the resource that you select appears after **Selected Resource**.
- 3 (Optional) To limit the parent and child resources that the widget shows, select one or more tag values in the **Select which tags to filter** pane.

You can use icons on the toolbar at the top of the pane to collapse, expand, and deselect all of the tags in the list











































When you select more than one value for the same tag, the widget shows resources that have either value. When you select values for two or more tags, the widget shows only resources that have all of the values that you select. When you click the **Invert Result** icon, the widget shows only resources that do not match the tag values that you select.
- 4 Click **OK** to save the widget configuration.
- 5 (Optional) To verify the filtering settings that you configured for the widget, click the **Display Filtering Criteria** icon on the widget's toolbar.

The filtering settings appear in a pop-up window.

Alerts Widget

The Alerts widget lists alerts for selected resources and provides a convenient way to view and manage alerts. When you double-click an alert in the Alerts widget, the Alert Summary page appears and shows more detailed information about the alert.

Figure 3-2. Alerts Widget

Sub-Type	Resource Name	Resource Kind	Start Time	Duration	Metric	Update Time	Critical ...
	ReportEngine	Reports	3/2/10 11:20 PM	38m:16s	Reports Branch Transactions	3/2/10 11:20 PM	
	ReportEngine	Reports	3/2/10 8:49 PM	38m:01s	Reports Branch Transactions	3/2/10 8:49 PM	
	ReportEngine	Reports	3/2/10 5:29 PM	38m:03s	Reports Branch Transactions	3/2/10 5:29 PM	
	ESX2	Host	3/2/10 11:23 PM	34m:45s		3/2/10 11:23 PM	
	Online Banking	Application	3/2/10 11:33 PM	34m:42s		3/2/10 11:33 PM	
	Web	Tier	3/2/10 11:30 PM	34m:42s		3/2/10 11:30 PM	
	Online Banking	Application	3/1/10 11:17 PM	34m:31s		3/1/10 11:17 PM	
	ESX2	Host	3/1/10 8:36 PM	34m:31s		3/1/10 8:36 PM	
	UserExperience	UEM	3/1/10 4:26 PM	13m:43s	Measurements EndUserResp...	3/1/10 4:26 PM	
	UserExperience	UEM	3/1/10 2:46 PM	15m:42s	Measurements EndUserResp...	3/1/10 2:46 PM	
	UserExperience	UEM	3/1/10 3:13 AM	11m:09s	Measurements EndUserResp...	3/1/10 3:13 AM	
	DBServer4	DBServers	3/1/10 5:02 AM	14m:39s		3/1/10 5:02 AM	
	DBServer4	DBServers	3/1/10 10:53 AM	14m:39s		3/1/10 10:53 AM	
	DBServer4	DBServers	3/1/10 3:54 PM	14m:38s		3/1/10 3:54 PM	
	ReportEngine	Reports	5:12 AM	38m	Reports Branch Transactions	5:12 AM	
	ReportEngine	Reports	6:02 AM	38m	Reports Branch Transactions	6:02 AM	
	ReportEngine	Reports	7:42 AM	38m	Reports Branch Transactions	7:42 AM	
	ReportEngine	Reports	8:32 AM	38m	Reports Branch Transactions	8:32 AM	
	ReportEngine	Reports	12:43 PM	38m	Reports Branch Transactions	12:43 PM	
	ReportEngine	Reports	1:51 AM	38m	Reports Branch Transactions	1:51 AM	
	UserExperience	UEM	3:44 AM	14m:43s	Measurements EndUserResp...	3:44 AM	

If the Alerts widget accepts resources from another widget, it shows alerts for the provided resource and its immediate children unless the resource is an application. For applications, it shows alerts for the application, its tiers, and the resources in the tiers.

The toolbar at the top of the Alerts widget contains icons that you can use to view alert information.

Table 3-3. Alerts Widget Toolbar Icons








Icon	Description
	RSS Feed Lets you receive RSS feeds of issued alerts in your Web browser. Only alerts that appear in the widget as it is configured are included. For example, if the widget is set to show alerts only for a particular application, only alerts for that application are included in the RSS feed. The detail message of an individual alert appears in the feed's headline. Depending on the RSS client that you use, details for all anomalies related to the alert appear in the feed's body.
	Reset Grid Sort Returns the grid to the default sort order, which is set on the Edit Alerts Widget window, if you changed it when you used the widget.
	Reset Interaction Returns the widget to its initial configured state and undoes any interactions made from another providing widget.
	Perform Multi-Select Interaction Press Ctrl-click to select multiple individual resources or Shift-click to select a range of resources and click this icon.
	Colorize Rows By Alert Type Sets the background color for each alert's row based on its criticality. <ul style="list-style-type: none"> ■ Critical is Red ■ Immediate is Orange ■ Warning is Yellow ■ Information is Blue
	Cancel Alert Cancels the selected alert. You can cancel only one alert at a time. You can cancel an alert only if your user account name has administrative access rights.
	Suspend Suspends the selected alerts. You can enter the number of minutes to suspend the alerts.

Table 3-3. Alerts Widget Toolbar Icons (Continued)

Icon	Description
Suppress	Suppresses the selected alerts. You can enter the number of days to suppress the alerts.
Take Ownership	Takes ownership of the selected alerts.
Release Ownership	Releases ownership of the selected alerts.

Configure the Alerts Widget

You can configure the Alerts widget to show alerts for specific resources. You can also configure filters to limit the alerts that the widget shows and specify the default sort order of the alerts.

The Alerts widget uses the filters that you configure whether you define resources in the Alerts widget configuration or another widget provides resources to the Alerts widget. If you select a resource in the providing widget that does not match the filters that you configure, its alerts do not appear in the Alerts widget.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Alerts widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 To limit the number of alerts that appear on each page of the Alerts widget, type a value in the **Pagination number** text box.
The default value is 100.
- 2 To configure the Alerts widget to show alerts only for resources that have certain tag values, select the tag values to monitor in the **Select which tags to filter** pane.
You can use icons on the toolbar at the top of the **Select which tags to filter** pane to collapse, expand, and deselect all of the tags in the list.
When you select more than one value for the same tag, the widget includes resources that have either value. When you select values for two or more tags, the widget includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the widget includes only resources that do not match the tag values that you select.
- 3 Click one or more categories in the **Filter By** pane and select values to further limit the alerts that the Alerts widget shows.
For example, if you click **Time Range**, you can select a range from the drop-down menu or type specific dates and times in the **From Date** and **To Date** text boxes.
When you specify multiple filters, an alert must meet all of the criteria to appear in the widget.
- 4 Select sort criteria in the **Sort Data By** pane to set the default sort order for the alerts that the Alerts widget shows.
You can use up to four column values and any of the standard columns to sort by, except for Resource Identifier.
- 5 Click **OK** to save the widget configuration.

Application Detail Widget

The Application Detail widget shows information for a selected application. The top of the widget shows the number of tiers, resources, and metrics that the application contains and the number of Smart Alerts and classic alerts on the application. The Application Detail widget does not show information for child resources.

Figure 3-3. Application Detail Widget



For each tier in the application, the Application Detail widget shows the icons for the health of each resource in that tier, the tier name, the metric sparkline for the last 24 hours, the tier's current health score, and the number of active Smart Alerts and classic alerts for the tier itself.

Configure the Application Detail Widget

If the Application Detail widget is a self provider, you can select an application tag value to monitor in the widget. You can also configure the column arrangement in the widget.

You can also configure other widgets to provide an application to the Application Detail widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Application Detail widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define applications in the widget configuration.
- 2 Select the application tag value to monitor in the **Select which tags to filter** list.
You can use toolbar icons to collapse, expand, and deselect all application tags in the list.
- 3 Use the **Mode** option to configure the Application Detail in **Compact** or **Large** mode.
The same information appears in both modes, but the column arrangement is different.
- 4 Click **OK** to save the widget configuration.

Application Overview Widget

The Application Overview widget can list all of the applications in the enterprise, or only applications that you select. The widget shows a health graph for the last 24 hours, the current health score, the current health of each tier, and the number of alerts for the application itself. You can double-click an application to open its Application Detail page.

Figure 3-4. Application Overview Widget

Name	Last 24 Hrs	Health	Tier Health	Application Alerts
Online Banking		52		
EmailFilterApp		100		
Heat - Instanted		100		
Account Management		65		
CRM App		100		
ERP App		100		
Partner Network		52		
App6		100		
BIGAPP		100		
AAA		100		

The toolbar at the top of the Application Overview widget contains icons that you can use to select multiple widgets or to search for applications.

Table 3-4. Application Overview Widget Toolbar Icons

Icon	Description
	If the Application Overview widget is a provider for another widget on the dashboard, you can click this icon to select multiple applications to display in the receiving widget.
	To search for a particular application, type all or part of the application name in this text box and click the right angle bracket (>).

Configure the Application Overview Widget

You can select the applications to show in the Application Overview widget by editing the widget configuration. If you do not select applications in the widget configuration, the Application Overview widget lists all of the applications in the enterprise.

You cannot configure the Application Overview widget to accept applications from other widgets.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Application Overview widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Select one or more application tag values in the **Select which tags to filter** list.
You can use toolbar icons to collapse, expand, and deselect all application tags in the list.
- 2 Click **OK** to save the widget configuration.

Configuration Overview Widget

The Configuration Overview widget shows the current uptime functional status of defined resources, applications, and collected metrics for the environment.

Figure 3-5. Configuration Overview Widget

RESOURCES	
Resources (Entities)	179
METRICS	
Metrics Configured	12,884
Metrics Collecting	12,884
APPLICATIONS	
Applications	1
Tiers	4
Containers	23
ALERTS	
Active Alerts	34
ANALYTICS	
ACPD	3
CCPD	72
USERS	
Users Defined	2

You can click the **Reset Interaction** icon on the toolbar at the top of the Configuration Overview widget to return the widget to its initial configured state.

Configure the Configuration Overview Widget

You can filter the data and resources that the Configuration Overview widget shows by editing the widget configuration.

You can also configure other widgets to provide resources to the Configuration Overview widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Configuration Overview widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define resources in the widget configuration.
- 2 Select one or more categories or values to configure the data to include in the Configuration Overview widget.

If you select the check box for a category, all of the data in that category is selected. If you do not make a selection, all data appears in the widget.

- 3 Select the tag values for the resources in the **Select which tags to filter** list.

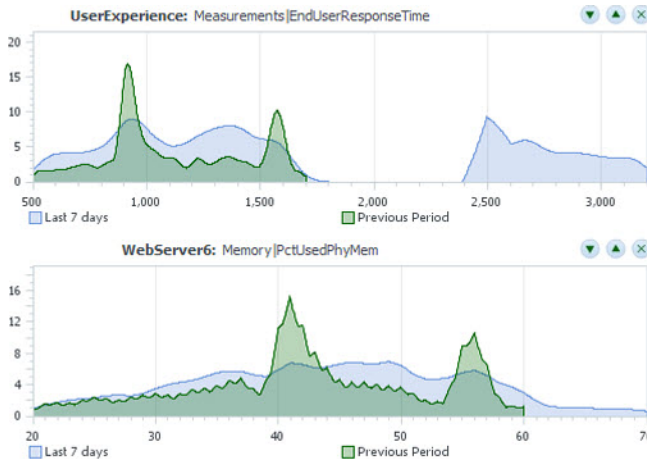
You can use toolbar icons to collapse, expand, and deselect all of the tags in the list.

- 4 Click **OK** to save the widget configuration.

Data Distribution Analysis Widget

The Data Distribution Analysis widget shows a graph for selected metrics. For each metric, the graph shows the data distribution of the metric, including how often it had a particular value.

Figure 3-6. Data Distribution Analysis Widget



You can use the Data Distribution Analysis widget to compare the values of a metric over two time periods. By default, the widget compares the last seven days to the last 30 days. The x-axis of the graph shows the range of received values for the metric, from lowest to highest, over the selected time period. The y-axis is the percentage of the received metrics that had that value.

The graph has a Density mode and a Distribution mode.

Density mode

Shows how often the metric had each particular value.

Distribution mode

Shows the percentage possibility that the metric was at or below the x-axis value. The y-axis always ranges from 0 to 1. The right edge of the graph always reaches a value of 1, which shows that all received readings were at or below the maximum value indicated on the x-axis. At any point in the middle of the graph, the y-axis value is the percentage of collected values that were at or below the x-axis value, or the probability that any one collected value was at or below that value.

To change the graph to Distribution mode, click the **Change to distribution mode** icon.

If you graph only one time period in either mode, the graph might include vertical lines at the 75, 90, and 95 percent levels. You can edit the widget to add or remove the percentage lines.

You can click the **Date Controls** icon to change either or both time periods on the graph. In the two drop-down menus that appear, select the time periods for the graph. To show only one time period, select **Not Selected** from the second drop-down menu. You can click the **Date Controls** icon again to hide the date.

Configure the Data Distribution Analysis Widget

You can select the metrics that the Data Distribution Analysis widget shows by editing the widget configuration.

You can also configure other widgets to provide metric selections to the Data Distribution Analysis widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Data Distribution Analysis widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define metric selections in the widget configuration.
- 2 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 3 In the **List** pane, select one or more resources.

Option	Action
Select a specific resource	Select the resource in the list. You can type all or part of the resource name in the Search text box and click the right angle bracket (>) to search for the resource.
Select multiple resources	<ol style="list-style-type: none"> a Press Ctrl-click to select multiple resources or Shift-click to select a range of resources. b Click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selection icon on the toolbar at the top of the List pane.

The metrics for the resources appear in the **Metric Selector With Resource Selection** pane.

- 4 In **Metric Selector With Resource Selection** pane, select the metrics to show in the widget.

Option	Action
Select a specific resource	Double-click the metric.
Select multiple metrics	<ol style="list-style-type: none"> a Press Ctrl-click to select multiple metrics or Shift-click to select a range of metrics. b Click the Perform Multi-Select icon on the toolbar at the top of the Metric Selector With Resource Selection pane.
List the metrics that are common to multiple selected resources	Click the Show Common Metrics icon on the toolbar at the top of the Metric Selector With Resource Selection pane.

The metrics that you select appear in the **Selected Metrics** pane.

- 5 (Optional) Manage the metrics in the **Selected Metrics** pane.

Option	Action
Change the order of a metric in the list	Select the metric and drag and drop it to another position in the list.
Remove a metric from the list	Select the metric and click the Remove Selected Metrics icon on the toolbar at the top of the Selected Metrics pane.

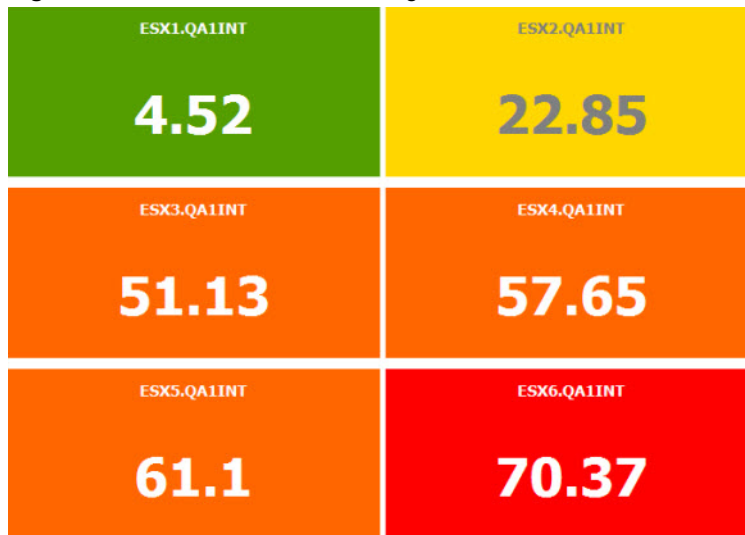
Option	Action
Select all of the metrics in the list	Click the Select All icon on the toolbar at the top of the Selected Metrics pane.
Remove all of the metrics from the list	Click the Clear Selections icon on the toolbar at the top of the Selected Metrics pane.

- 6 Select **75th percentile**, **90th percentile**, or **95th percentile** to show a vertical line on the graph at the 75, 90, or 95 percent level.
- 7 Click **OK** to save the widget configuration.

Generic Scoreboard Widget

The Generic Scoreboard widget shows the current value for each metric that you select. Each metric appears in a separate box. The value of the metric determines the color of the box. You define the values for each color when you edit the widget. If you point to a box, the widget shows the source resource and metric data.

Figure 3-7. Generic Scoreboard Widget



Configure the Generic Scoreboard Widget

You select the metrics that the Generic Scoreboard widget shows by editing the widget configuration. You cannot configure the Generic Scoreboard widget to accept metric selections from other widgets. You must define the metrics by editing the widget.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Generic Scoreboard widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set options to configure the layout of the metric display.

Option	Description
Layout Mode	Select Fixed Size to define the height for each metric box in Box Height , or Fixed View to have vCenter Operations Manager size the boxes so all metrics fit in the displayed widget.
Box Height	If Layout Mode is set to Fixed Size , this value is the height, in pixels, of each metric box.
Box Columns	Number of boxes to include in each row, from 2 to 10. If Layout Mode is set to Fixed View , vCenter Operations Manager changes the box width as needed to fit this many columns in the widget width.
Label size	Point size to use for the label of each metric box. vCenter Operations Manager decreases this value if needed to fit the label in the box width.
Value size	Point size to use for the value in each metric box. vCenter Operations Manager decreases this value if needed to fit the value in the box width.
Round Decimals	To round decimal values, select a value from 0 to 10.

- 2 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 3 In the **List** pane, select one or more resources.

Option	Action
Select a specific resource	Select the resource in the list. You can type all or part of the resource name in the Search text box and click > to search for the resource.
Select multiple resources	<ol style="list-style-type: none"> Press Ctrl-click to select multiple resources or Shift-click to select a range of resources. Click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selection icon on the toolbar at the top of the List pane.

The metrics for the resources appear in the **Metric Selector With Resource Selection** pane.

- 4 In **Metric Selector With Resource Selection** pane, select the metrics to show in the widget.

NOTE The Generic Scoreboard widget does not work with string metrics.

Option	Action
Select a specific resource	Double-click the metric.
Select multiple metrics	<ol style="list-style-type: none"> Press Ctrl-click to select multiple metrics or Shift-click to select a range of metrics. Click the Perform Multi-Select icon on the toolbar at the top of the Metric Selector With Resource Selection pane.
List the metrics that are common to multiple selected resources	Click the Show Common Metrics icon on the toolbar at the top of the Metric Selector With Resource Selection pane.

The metrics that you select appear in the **Selected Metrics** pane.

- 5 (Optional) Manage the metrics in the **Selected Metrics** pane.

Option	Action
Change the order of a metric in the list	Select the metric and drag and drop it to another position in the list.
Remove a metric from the list	Select the metric and click the Remove Selected Metrics icon on the toolbar at the top of the Selected Metrics pane.
Select all of the metrics in the list	Click the Select All icon on the toolbar at the top of the Selected Metrics pane.
Remove all of the metrics from the list	Click the Clear Selections icon on the toolbar at the top of the Selected Metrics pane.

- 6 Set values for each metric in the **Selected Metrics** pane.

Option	Description
Box Label	The text label to include in the box for this metric.
Measurement Unit	The text that appears after the metric value in the box.
Value Ranges	<p>The value ranges for each box color for this metric. You must define either an ascending or descending set of ranges from green through red.</p> <ul style="list-style-type: none"> ■ For an ascending range, type the highest value that should be green in Green Range. ■ In Yellow Range, type the Green Range value, a hyphen, and the highest Yellow Range color. ■ In Orange Range, type the highest Yellow Range value, a hyphen, and the highest Orange Range value. ■ In Red Range, repeat the highest Orange Range value. All values higher than this are red.

- 7 Click **OK** to save the widget configuration.

GEO Widget

If your configuration assigns values to the GEO Location resource tag, the GEO widget shows where your resources are located on a world map. The GEO widget is similar to the GEO tab on the Environment Overview page.

Figure 3-8. GEO Widget



You can move the map and zoom in or out by using the controls on the map. The icons at each location show the health of each resource that has the GEO Location tag value.

You can click the **Auto Refresh** icon on the GEO widget toolbar to refresh the widget data. Clicking the **Reset Interaction** icon returns the widget to its initial configured state.

Configure the GEO Widget

You can filter the resources that the GEO widget shows by editing the widget configuration.

You can also configure other widgets to provide resources to the GEO widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the GEO widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define resources in the widget configuration.
- 2 Select tag values in the **Select which tags to show** list to show only resources that have certain tag values in the widget.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

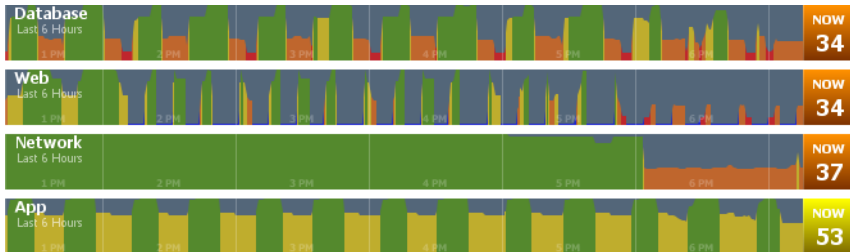
When you select more than one value for the same tag, the widget includes resources that have either value. When you select values for two or more tags, the widget includes only resources that have all of the selected values. When you click the **Invert Result** icon, the widget includes only resources that do not match the tag values that you select.

- 3 Click **OK** to save the widget configuration.

Health Status Widget

The Health Status widget shows the health score for selected resources. Health status is a 0 to 100 ranking that vCenter Operations Manager determines for each resource. For each resource, the widget includes the current health score and a graph that shows how the health score has changed over time. You can double-click the graph for a resource to view the Resource Detail page for that resource.

Figure 3-9. Health Status Widget



If vCenter Operations Manager does not receive metrics for a resource at a particular time, it cannot calculate a health score for that time and it shows a score of -1 on the graph. A -1 score can occur if collection is turned off for a resource or if vCenter Operations Manager encounters a data gathering problem.

Configure the Health Status Widget

You can filter the resources that the Health Status widget shows by editing the widget configuration.

You can also configure other widgets to provide resources to the Health Status widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Health Status widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define resources in the widget configuration.
- 2 Configure options to control the appearance of the resource display.

Option	Description
Mode	Sets the widget mode.
Self	The widget shows the selected resources.
Children	The widget shows child resources.
Parents	The widget shows parent resources.
	If you select Children or Parents , the selected resources themselves do not appear in the widget, whether you select resources by editing the widget or the widget accepts resources from a providing widget.
Order By	Sets whether the list is ordered by health score or resource name, and whether the order is ascending or descending.
Pagination Number	Sets the number of resources that appear on each page of the widget.
Period Length	Sets the amount of time that appears on the health graph for each resource.

- 3 Select tag values in the **Select which tags to show** list to show only resources that have certain tag values in the widget.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the widget includes resources that have either value. When you select values for two or more tags, the widget includes only resources that have all of the selected values. When you click the **Invert Result** icon, the widget includes only resources that do not match the tag values that you select.

- 4 Click **OK** to save the widget configuration.

Health Tree Widget

The Health Tree widget shows the section of your resource hierarchy around a resource that you select. The widget shows all of the parent container resources that hold the resource. If you select a container resource, the widget shows all of the child resources that the container holds.

Figure 3-10. Health Tree Widget



Unless you are in Pan or Zoom the view mode, you can point to a resource to show its name and current health. You can double-click a resource to shift the display to show its parents and children.

If you configure a filter tag for the Health Tree widget, only the parent and child resources that match the tag appear in the widget. You can double-click a resource to turn off the filter and show all of its parents and children.

The toolbar at the top of the Health Tree widget contains icons that you can use to change the view.

Table 3-5. Health Tree Widget Toolbar Icons

Icon	Description
Zoom to Fit	Changes the size of the resource icons for the best possible fit in the widget.
Pan	Click this icon and click and drag the hierarchy to show different parts of the hierarchy.
Image Map Tooltip	Click this icon and point to a resource to show its name and current health.
Zoom the view	Click this icon and drag to outline a part of the hierarchy. The display zooms to show only the outlined section.
Zoom in	Zooms in on the hierarchy.
Zoom out	Zooms out on the hierarchy.
Reset To Initial Resource	If you changed the central resource of the hierarchy, click this icon to return to the initial resource. Clicking this icon also resets the initial display size.

Table 3-5. Health Tree Widget Toolbar Icons (Continued)

Icon	Description
Resource Detail	Select a resource and click this icon to show the Resource Detail page for the resource.
Show Alerts	Select the resource in the hierarchy and click this icon to show alerts for the resource. Alerts appear in a pop-up window. You can double-click an alert to view its Alert Summary page.
Display Filtering Criteria	Shows the filtering settings for the widget in a pop-up window.

Configure the Health Tree Widget

By default, the Health Tree widget includes all parent and child resources that match the selected resource. You can edit the widget configuration to limit the parent and child resources that the widget shows.

You can also configure other widgets to provide a resource to the Health Tree widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Health Tree widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define a resource in the widget configuration.
- 2 Select the resource in the **Resource Selection** pane.
 To find a specific resource, type all or part of the resource name in the **Search** text box and click the right angle bracket (>).
 The name of the resource that you select appears after **Selected Resource**.
- 3 (Optional) To limit the parent and child resources that the widget shows, select one or more tag values in the **Select which tags to filter** pane.
 You can use icons on the toolbar at the top of the pane to collapse, expand, and deselect all of the tags in the list.
 When you select more than one value for the same tag, the widget shows resources that have either value. When you select values for two or more tags, the widget shows only resources that have all of the values that you select. When you click the **Invert Result** icon, the widget shows only resources that do not match the tag values that you select.
- 4 Click **OK** to save the widget configuration.
- 5 (Optional) To verify the filtering settings that you configured for the widget, click the **Display Filtering Criteria** icon on the widget's toolbar.

The filtering settings appear in a pop-up window.

Health-Workload Scoreboard Widget

The Health-Workload Scoreboard widget shows the health or workload score of selected resources. The icons for each resource are color coded. Green indicates best performance, which is 100 for health or 0 for workload. Red indicates worst performance, which is 0 for health or 100 for workload.

Figure 3-11. Health-Workload Scoreboard Widget



The workload score applies only to specific resources monitored through the VMware adapter. If you configure the widget to show the workload for resources that do not have the workload metric, those resources have blue icons.

Configure the Health-Workload Scoreboard Widget

You can define resources for the Health-Workload Scoreboard widget by editing the widget configuration.

You can also configure other widgets to provide resource selections to the Health-Workload Scoreboard widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Health-Workload Scoreboard widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define resources in the widget configuration.
- 2 Configure the image type and metric type options.

Option	Action
Select the image to show for each resource	Select an Image Type option.
Set the metric to show for each resource	Select a Metric option. If you select Workload , select the attribute to use for the workload score. If the attribute you select is not collected for the listed resources, those resources always show blue for unknown. You can filter the attribute list by typing part of the attribute name and pressing Enter to list only matching attributes.

- 3 Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 4 In the **List** pane, select the resources to show in the widget.

Option	Action
Select a specific resource	Type a full or partial name in the Search text box, click the right angle bracket (>), and double-click the resource in the search results.
Select multiple resources	Press Ctrl-click to select multiple resources or Shift-click to select a range of resources and click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selections icon on the toolbar at the top of the List pane.

The resources that you select appear in the **Selected Resources** pane.

- 5 (Optional) Select the resource and click the **Delete Resource** icon to delete a selected resource.
- 6 Click **OK** to save the widget configuration.

Heat Map Widget

The Heat Map widget contains graphical indicators that show the current value of two selected attributes for resources that belong to tag values that you select. In most cases, you can select only from internally generated attributes that describe the general operation of the resources, such as health or the active anomaly count. When you select a single resource kind, you can select any metric for that resource kind.

The Health Map widget has a General mode and an Instance mode.

General mode The widget shows a colored rectangle for each selected resource. The size of the rectangle indicates the value of one selected attribute. The color of the rectangle indicates the value of another selected attribute.

Instance mode Each rectangle represents a single instance of the selected metric for a resource. A resource can have multiple instances of the same metric. The rectangles are all the same size. The color of the rectangles varies based on the instance value. You can use instance mode only if you select a single resource kind.

In either mode, you can group the rectangles according to tag type and select the color range to use. By default, green indicates a low value and red indicates the high end of the value range. You can change the high and low values to any color and set the color to use for the midpoint of the range. You can also set the values to use for either end of the color range, or let vCenter Operations Manager define the colors based on the range of values for the attribute.

When you point to the rectangle for a resource, the widget shows the resource's name, group-by values, and the current values of the two tracked attributes. You can click **Show Sparkline** in the pop-up window to see a small sparkline of the tracked metric by the heat map color. You can click the **Resource Detail** icon to show the Resource Detail page for a selected resource.

If you configure the Heat Map widget as a provider to another widget, such as the Metric Graph widget, you can double-click a rectangle to select that resource for the widget. If the widget is in Metric mode, double-clicking a rectangle selects the resource associated with the metric and provides that resource to the receiving widget.

Configure the Heat Map Widget

The Heat Map widget contains graphical indicators that show the current value of two selected attributes for resources that belong to tag values that you select.

You can configure the widget to show different combinations of data, and you can save multiple configurations for the widget. You use the **Configuration** drop-down menu on the toolbar at the top of the Heat Map widget to select the widget configuration to use.

You must select the resources to show in the Heat Map widget by editing the widget. The Heat Map widget does not accept selections from other widgets. The Heat Map widget does not show data until you configure it.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Heat Map widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Select the tag to use for first-level grouping of the resources from the **Group By** drop-down menu.

If a selected resource does not have a value for this tag, it appears in a group called Other.

- 2 Select the tag to use to separate the resources into subgroups from the **Then By** drop-down menu.

If a selected resource does not have a value for this tag, it appears in a subgroup called Other.

- 3 Select a **Mode** option.

Option	Description
Instance	Track all instances of a metric for a resource with a separate rectangle for each metric.
General	Pick an individual instance of a metric for each resource and track only that metric.

- 4 If you selected General mode, select the attribute to use to set the size of the rectangle for each resource in the **Size By** list and the attribute to use to determine the color of the rectangle for each resource in the **Color By** list.

Resources that have higher values for the **Size By** attribute have larger areas of the widget display. You can also select fixed-size rectangles. The color varies between the colors you set based on the value of the **Color By** attribute.

In most cases, the attribute lists include only metrics that vCenter Operations Manager generates. If you select a resource kind, the list shows all of the attributes that are defined for the resource kind.

- 5 To track metrics only for resources of a particular kind, select the resource kind from the **Resource Kinds** drop-down menu.

- 6 If you selected **Instance** mode, select an attribute kind from the **Attribute Kinds** list.

The attribute kind determines the color of the rectangle for each resource.

- 7 Configure colors for the heat map.
 - a Click each of the small blocks under the color bar to set the color for low, middle, and high values.
The bar shows the color range for intermediate values. You can also set the values to match the high and low end of the color range.
 - b (Optional) Type minimum and maximum color values in the **Min Value** and **Max Value** text boxes.
If you leave the text boxes blank, vCenter Operations Manager maps the highest and lowest values for the **Color By** metric to the end colors. If you set a minimum or maximum value, any metric at or beyond that value appears in the end color.
- 8 To define the resources to show in the widget, select the tag values to monitor in the **Select which tags to filter** list.

If you select a resource kind, the widget shows only resources of that kind that meet the tag filter conditions.

When you select more than one value for the same tag, the widget includes resources that have either value. When you select values for two or more tags, the widget includes only resources that have all of the values that you select.
- 9 Click the **Capture new configuration** icon, type a name for the configuration, and click **OK** to save the configuration.

You must save a Heat Map widget configuration before you can use it.
- 10 (Optional) Select the configuration from the **Configuration** drop-down menu on the widget's toolbar to verify the Heat Map widget configuration.

Example: Heat Map Widget Configuration

Consider an environment that has these characteristics.

- Multiple physical servers, in multiple data servers, that are running multiple virtual servers.
- Each virtual server is defined as a resource in vCenter Operations Manager.
- Each resource has several attributes for which vCenter Operations Manager collects data.

For this environment, the following Heat Map widget configuration shows at a glance which virtual machines have anomalies, whether those anomalies are for KPIs, and on which physical servers the virtual machines reside.

- All resources that have a resource kind tag value of virtual machine are shown.
- The resources are grouped by physical server and then by data center.
- For each resource, the size of its rectangle is based on the number of current anomalies for that resource, and the color of its rectangle is based on the number of KPI breaches.

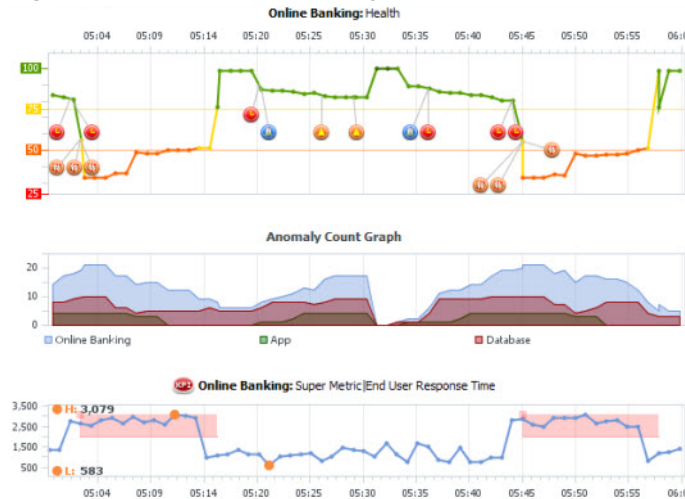
What to do next

You can update a Heat Map widget configuration by selecting it from the **Configuration** drop-down menu and clicking the **Update selected configuration** icon. You can delete a configuration by selecting it from the **Configuration** drop-down menu and clicking the **Delete selected configuration** icon.

Mashup Charts Widget

The Mashup Charts widget contains charts that show different aspects of the behavior of a selected resource. By default, the charts show data for the past six hours. The Mashup Charts widget shows the same information as the **Mashup** tab on the Alert Detail page.

Figure 3-12. Mashup Charts Widget



The Mashup Charts widget contains the following charts.

- A Health chart for the resource, which can include each alert for the specified time period. Click an alert to see more information, or double-click an alert to open the Alert Summary page.
- An Anomaly Count Graph for the resource, which is similar to the anomaly graph that the cross-silo analysis feature generates. The graph shows the number of anomalies for the resource and its children at the indicated time. For an application, it also shows the count for each tier in a stacked chart. A red line marks the noise threshold for the resource. An anomaly count higher than this threshold indicates a 90 percent probability of a problem and triggers an early warning alert.
- Metric graphs for any or all of the KPIs for any resource listed as a root cause resource. For an application, this chart shows the application and any tiers that contain root causes. You can select the KPI to include by selecting **Chart Controls > KPIs** on the widget toolbar. Any shared area on a graph indicates that the KPI violated its threshold during that time period. Click the top left of the shaded area to see details about the anomaly.

The Anomaly Count Graph chart and metric graphs reflect up to five levels of resources, including the selected resource and four child levels.

The toolbar at the top of the Mashup Charts widget contains icons that you can use to change the view.

Table 3-6. Mashup Charts Widget Toolbar Icons

Icon	Description
Allow zoom by X axis	When you click this icon, zooming the graph affects the X axis. You can use Zoom by X and Zoom by Y simultaneously.
Allow zoom by Y axis	When you click this icon, zooming the graph affects the Y axis. You can use Zoom by X and Zoom by Y simultaneously.
Zoom to fit	Changes all graphs to show the entire time period and value range.
Zoom the view	Click this icon and drag to outline a part of the hierarchy. The display zooms to show only the outlined section.

Table 3-6. Mashup Charts Widget Toolbar Icons (Continued)

Icon	Description
Pan	When you click this icon, dragging in the graph changes the time period. It does not zoom the graph.
Point Values	Click this icon and point to a graphed KPI data point to see its time and exact value. You can show values only if the selected time period is 24 hours or less.
Chart Controls	See Table 3-7 .
Date Controls	Select the time period to show on the graphs. You can select a period in the top box, or select start and end dates and times.

You use the **Chart Controls** drop-down menu at the top of the widget to select which charts to view.

Table 3-7. Chart Controls

Menu Item	Description
Show Charts	Select the types of graphs to include in the widget.
Layers	Select the types and subtypes of alerts to show on the metric graph. You can show change events, which are user-defined notifications that the vCenter Operations Manager OpenAPI sends to vCenter Operations Manager.
Show in Stacked Mode	Changes the Anomaly Count Graph to a single stacked graph that shows anomalies for all selected resources.
Resources	Select the resources to include in the Anomaly Count Graph.
KPIs	Select the KPI for which to include metric graphs.

Configure the Mashup Charts Widget

You can define the resource that the Mashup Charts widget shows by editing the widget configuration.

You can also configure other widgets to provide a resource to the Mashup Charts widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Mashup Charts widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define a resource in the widget configuration.
- 2 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 3 In the **List** pane, select the resource to show in the widget.

To find a specific resource, type all or part of the resource name in the **Search** text box and click the right angle bracket (>).

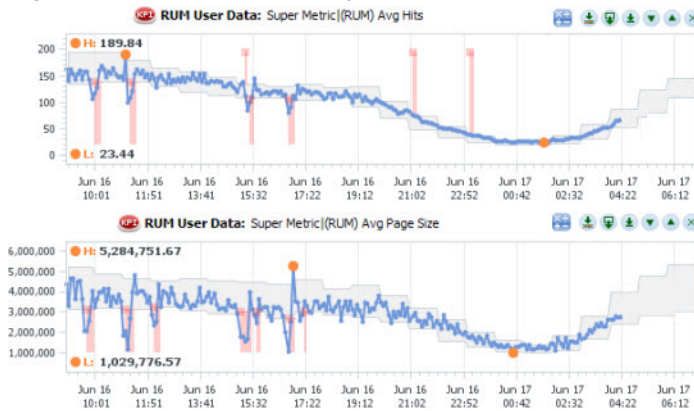
The name of the resource that you select appears after **Selected Resource**.

- 4 Click **OK** to save the widget configuration.

Metric Graph Widget

The Metric Graph widget shows a graph of the recent performance, and predicted future performance, of a metric. The important metrics count, which a vCenter Operations Manager administrator sets, determines the number of metrics that appear in the Metric Graph widget. The key in the graph indicates the maximum and minimum points on the line chart.

Figure 3-13. Metric Graph Widget



The toolbar at the top of the Metric Graph widget contains icons that you can use to change the view of the graphs.

Table 3-8. Metric Graph Widget Toolbar Icons

Icon	Description
Split Graphs	When two or three time periods are selected, this icon shows the values for each period on a different graph.
Y Axis	Shows or hides the Y-axis scale.
Metric Graph	Shows or hides the line that connects the data points on the graph.
Trend Line	Shows or hides the trend line. The trend line filters out metric noise along the timeline by plotting each data point relative to the average of its adjoining data points.
Dynamic Thresholds	Shows or hides the dynamic threshold for each metric for the last 24 hours.
Show Entire Period Dynamic Thresholds	Shows or hides dynamic thresholds for the entire time period of the graph.
Anomalies	Shows or hides anomalies on the graph. Time periods when the metric violates a threshold are shaded. The color indicates the criticality of the violation. You can click the top-left corner of the shaded area to show details for an anomaly.
Show data point tips	Retrieves the metric readings for the graphed data points. Click the Show Data Values icon to show the values.
Zoom by X	When you click this icon, zooming the graph affects the X axis. You can use Zoom by X and Zoom by Y simultaneously.
Zoom by Y	When you click this icon, zooming the graph affects the Y axis. You can use Zoom by X and Zoom by Y simultaneously.
Zoom to fit	Changes all graphs to show the entire time period and value range.

Table 3-8. Metric Graph Widget Toolbar Icons (Continued)

Icon	Description
Zoom to Dynamic Thresholds	Changes the Y axis of the graphs to match the dynamic threshold of the metric.
Compress Graphs	Shortens the Y axis of all graphs to use less vertical space.
Zoom All Graphs	When you click this icon, zooming one graph changes all graphs to match.
Zoom the view	Click this icon and drag to outline a part of the hierarchy. The display zooms to show only the outlined section.
Pan	When you click this icon, dragging in the graph changes the time period. It does not zoom the graph.
Show Data Values	After you click the Show data point tips icon to retrieve the data, click this icon and point to a graphed data point to show its time and exact value. You can show values only if the selected time period is 24 hours or less.
Auto Refresh	Turns auto-refresh on or off.
Date Controls	<p>Select up to three time periods to show on the graph. For the first period, select a value in the top box or select start and end times and dates. To graph multiple periods, select the first period and select the previous periods to which to compare it. All periods must be the same length. If you set a start date and time for the second or third period, vCenter Operations Manager fills in the end time.</p> <p>NOTE For most time periods, vCenter Operations Manager includes predicted values for the near future. For example, if you select the last hour, vCenter Operations Manager also shows 15 minutes into the future. If you select the last day, vCenter Operations Manager predicts four hours into the future. Periods longer than 30 days do not show any future time. If a user-defined time period includes time in the future, vCenter Operations Manager shows predicted values for the defined future period.</p>
Generate Dashboard	Creates a new dashboard that contains only the Metric Graph widget, in self-provider mode, which shows the currently displayed metrics.
Remove All	Removes all graphs.

Each graph has a toolbar at the top right. The icons on this toolbar affect only that graph.

Table 3-9. Individual Graph Icons

Icon	Description
Data Source	Point to this icon to see the name of the data source, or adapter instance, for the metric. For super metrics, the name is vCenter Operations Manager.
Show Correlated Metrics	Appears only if vCenter Operations Manager determines that the behavior or anomalies of other metrics are correlated to this metric. When you click this icon, a pop-up window opens that shows the correlated metrics, including the resource, the metric name, and the percentage of correlation. You can also display a column that shows the type of correlation, either Anomaly, in which the anomalies of the metrics are correlated, or Behavior, in which the behavior of the metrics is correlated. If the widget is not in self-provider mode, you can select a correlated metric to add it to the widget display.
Save a Chart Snapshot	Downloads the current graph image as a PNG file, which you can display or save.
Save a Fullscreen Snapshot	<p>Downloads the current graph image as a full-page PNG file, which you can display or save.</p> <p>NOTE For both snapshots, the default file name contains the resource, attribute group, and metric name.</p>
Download tab-separated data	Downloads the data points currently shown on the graph to a tab-separated CSV file. Each file includes the resource name and metric name and, for each value, date and time of the collected metric, the value, and the lower and upper bounds of dynamic thresholds. You can open or save the file.
Move Down	Moves the graph down one position.

Table 3-9. Individual Graph Icons (Continued)

Icon	Description
Move Up	Moves the graph up one position.
Close	Removes the graph.

Configure the Metric Graph Widget

You can select the metrics that the Metric Graph widget shows by editing the widget configuration.

You can also configure other widgets to provide metric selections to the Metric Graph widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Metric Graph widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define metric selections in the widget configuration.
- 2 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 3 In the **List** pane, select one or more resources.

Option	Action
Select a specific resource	Select the resource in the list. You can type all or part of the resource name in the Search text box and click the right angle bracket (>) to search for the resource.
Select multiple resources	<ol style="list-style-type: none"> a Press Ctrl-click to select multiple resources or Shift-click to select a range of resources. b Click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selection icon on the toolbar at the top of the List pane.

The metrics for the resources appear in the **Metric Selector With Resource Selection** pane.

- 4 In **Metric Selector With Resource Selection** pane, select the metrics to show in the widget.

Option	Action
Select a specific resource	Double-click the metric.
Select multiple metrics	<ol style="list-style-type: none"> Press Ctrl-click to select multiple metrics or Shift-click to select a range of metrics. Click the Perform Multi-Select icon on the toolbar at the top of the Metric Selector With Resource Selection pane.
List the metrics that are common to multiple selected resources	Click the Show Common Metrics icon on the toolbar at the top of the Metric Selector With Resource Selection pane.

The metrics that you select appear in the **Selected Metrics** pane.

- 5 (Optional) Manage the metrics in the **Selected Metrics** pane.

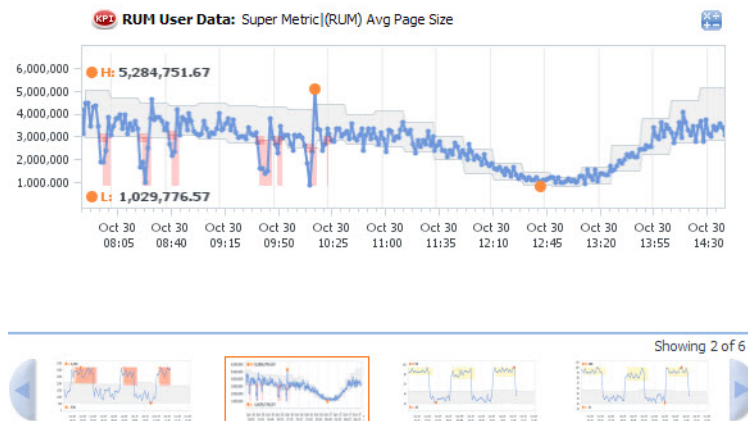
Option	Action
Change the order of a metric in the list	Select the metric and drag and drop it to another position in the list.
Remove a metric from the list	Select the metric and click the Remove Selected Metrics icon on the toolbar at the top of the Selected Metrics pane.
Select all of the metrics in the list	Click the Select All icon on the toolbar at the top of the Selected Metrics pane.
Remove all of the metrics from the list	Click the Clear Selections icon on the toolbar at the top of the Selected Metrics pane.

- 6 Click **OK** to save the widget configuration.

Metric Graph (Rolling View) Widget

The Metric Graph (Rolling View) widget shows a full chart for one selected metric at a time. Miniature graphs for the other selected metrics appear at the bottom of the widget. You can click a miniature graph to see the full graph for that metric, or set the widget to rotate through all selected metrics at an interval that you define. The key in the graph indicates the maximum and minimum points on the line chart.

Figure 3-14. Metric Graph (Rolling View) Widget



The toolbar at the top of the Metric Graph (Rolling View) widget contains icons that you can use to change the view of the graphs.

Table 3-10. Metric Graph Widget Toolbar Icons

Icon	Description
Y Axis	Shows or hides the Y-axis scale.
Metric Graph	Shows or hides the line that connects the data points on the graph.
Trend Line	Shows or hides the trend line. The trend line filters out metric noise along the timeline by plotting each data point relative to the average of its adjoining data points.
Dynamic Thresholds	Shows or hides the dynamic threshold for each metric for the last 24 hours.
Show Entire Period Dynamic Thresholds	Shows or hides dynamic thresholds for the entire time period of the graph.
Anomalies	Shows or hides anomalies on the graph. Time periods when the metric violates a threshold are shaded. The color indicates the criticality of the violation. You can click the top-left corner of the shaded area to show details for an anomaly.
Show data point tips	Retrieves the metric readings for the graphed data points. Click the Show Data Values icon to show the values.
Zoom by X	When you click this icon, zooming the graph affects the X axis. You can use Zoom by X and Zoom by Y simultaneously.
Zoom by Y	When you click this icon, zooming the graph affects the Y axis. You can use Zoom by X and Zoom by Y simultaneously.
Zoom to fit	Changes all graphs to show the entire time period and value range.
Zoom to Dynamic Thresholds	Changes the Y axis of the graphs to match the dynamic threshold of the metric.
Zoom the view	Click this icon and drag to outline a part of the hierarchy. The display zooms to show only the outlined section.
Pan	When you click this icon, dragging in the graph changes the time period. It does not zoom the graph.
Show Data Values	After you click the Show data point tips icon to retrieve the data, click this icon and point to a graphed data point to show its time and exact value. You can show values only if the selected time period is 24 hours or less.
Date Controls	<p>Select up to three time periods to show on the graph. For the first period, select a value in the top box or select start and end times and dates. To graph multiple periods, select the first period and select the previous periods to which to compare it. All periods must be the same length. If you set a start date and time for the second or third period, vCenter Operations Manager fills in the end time.</p> <p>NOTE For most time periods, vCenter Operations Manager includes predicted values for the near future. For example, if you select the last hour, vCenter Operations Manager also shows 15 minutes into the future. If you select the last day, vCenter Operations Manager predicts four hours into the future. Periods longer than 30 days do not show any future time. If a user-defined time period includes time in the future, vCenter Operations Manager shows predicted values for the defined future period.</p>

Configure the Metric Graph (Rolling View) Widget

You can select the metrics that the Metric Graph (Rolling View) widget shows by editing the widget configuration.

You can also configure other widgets to provide metric selections to the Metric Graph (Rolling View) widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

- Open the Edit Widget window for the Metric Graph (Rolling View) widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define metric selections in the widget configuration.
- 2 Configure the transition interval and chart toolbar options.

Option	Description
AutoTransition Interval	Type the metric graph rotation interval, in seconds. The graph switches after the number of seconds that you specify.
Show Chart Toolbar	Specify whether to include the toolbar on the widget display.

- 3 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 4 In the **List** pane, select one or more resources.

Option	Action
Select a specific resource	Select the resource in the list. You can type all or part of the resource name in the Search text box and click the right angle bracket (>) to search for the resource.
Select multiple resources	<ol style="list-style-type: none"> Press Ctrl-click to select multiple resources or Shift-click to select a range of resources. Click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selection icon on the toolbar at the top of the List pane.

The metrics for the resources appear in the **Metric Selector With Resource Selection** pane.

- 5 In **Metric Selector With Resource Selection** pane, select the metrics to show in the widget.

Option	Action
Select a specific resource	Double-click the metric.
Select multiple metrics	<ol style="list-style-type: none"> Press Ctrl-click to select multiple metrics or Shift-click to select a range of metrics. Click the Perform Multi-Select icon on the toolbar at the top of the Metric Selector With Resource Selection pane.
List the metrics that are common to multiple selected resources	Click the Show Common Metrics icon on the toolbar at the top of the Metric Selector With Resource Selection pane.

The metrics that you select appear in the **Selected Metrics** pane.

- 6 (Optional) Manage the metrics in the **Selected Metrics** pane.

Option	Action
Change the order of a metric in the list	Select the metric and drag and drop it to another position in the list.
Remove a metric from the list	Select the metric and click the Remove Selected Metrics icon on the toolbar at the top of the Selected Metrics pane.

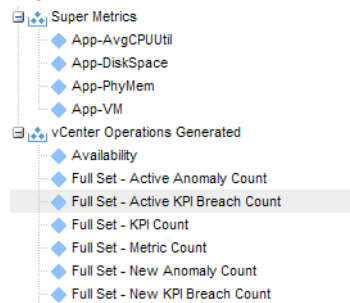
Option	Action
Select all of the metrics in the list	Click the Select All icon on the toolbar at the top of the Selected Metrics pane.
Remove all of the metrics from the list	Click the Clear Selections icon on the toolbar at the top of the Selected Metrics pane.

- Click **OK** to save the widget configuration.

Metric Selector Widget

The Metric Selector widget shows attribute packages for one or more resources that you select in the Alerts, Generic Scoreboard, Health Status, Health Tree, Health-Workload Scoreboard, Heat Map, Resources, Root Cause Ranking, VC Relationship, or VC Relationship (Planning) widget.

Figure 3-15. Metric Selector Widget



You can expand each attribute group to view its metrics. When the widget shows metrics for only one resource, metrics that have anomalies are yellow.

The toolbar at the top of the Metric Selector widget contains icons that you can use to change the view.

Table 3-11. Metric Selector Widget Toolbar Icons

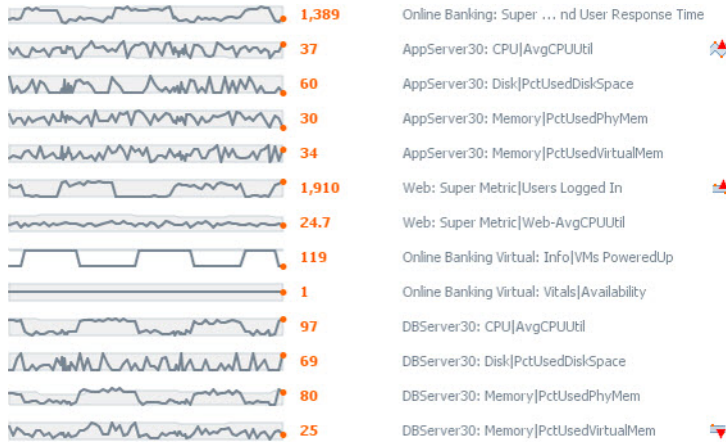
Icon	Description
Move To Graph	Select one or more metrics and click this icon to make the metrics appear in the Metric Graph widget. You can also double-click any attribute to make it appear in the Metric Graph widget.
Show Common Metrics	If you selected multiple metrics in the providing widget, click this icon to show only those metrics that are common to all resources. Click the icon again to list all of metrics for the resources. This icon appears only if you selected multiple metrics in the providing widget.
Show Metrics Collecting	Shows only currently collected metrics for the resources. Click the icon again to show all metrics.
Search	To find a particular metric group, metric instance, or metric, type all or part of its name in the Search text box, select the type of value you are searching for, and click this icon.

The only configuration option for the Metric Selector widget is the widget title.

Metric Sparklines Widget

The Metric Sparklines widget shows simple graphs that contain the values of selected metrics over time and provides a quick view of the trends in KPIs.

Figure 3-16. Metric Sparklines Widget



If all of the metrics in the widget are for a resource that another widget provides, the resource name appears at the top right of the widget.

The toolbar at the top of the Metric Sparklines widget contains icons that you can use to change the view.

Table 3-12. Metric Sparklines Widget Toolbar Icons

Icon	Description
Auto Refresh	Refreshes the widget data.
Date Controls	Select the time period to show on the graphs. You can select a period in the top box, or select start and end dates and times.
Remove All	Removes all graphs from the widget.

Configure the Metric Sparklines Widget

You can select the metrics that the Metric Sparklines widget shows by editing the widget configuration.

You can also configure other widgets to provide metric selections to the Metric Sparklines widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Metric Sparklines widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define metric selections in the widget configuration.

- 2 (Optional) Select one or more tag values in the list to the left of the **List** pane to filter the resources that appear in the **List** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resources that have either value. When you select values for two or more tags, the list includes only resources that have all of the values that you select. When you click the **Invert Result** icon, the list includes only resources that do not match the tag values that you select.

- 3 In the **List** pane, select one or more resources.

Option	Action
Select a specific resource	Select the resource in the list. You can type all or part of the resource name in the Search text box and click the right angle bracket (>) to search for the resource.
Select multiple resources	a Press Ctrl-click to select multiple resources or Shift-click to select a range of resources. b Click the Perform Multi-Select Interaction icon on the toolbar at the top of the List pane.
Clear all of your selections	Click the Clear Selection icon on the toolbar at the top of the List pane.

The metrics for the resources appear in the **Metric Selector With Resource Selection** pane.

- 4 In **Metric Selector With Resource Selection** pane, select the metrics to show in the widget.

Option	Action
Select a specific resource	Double-click the metric.
Select multiple metrics	a Press Ctrl-click to select multiple metrics or Shift-click to select a range of metrics. b Click the Perform Multi-Select icon on the toolbar at the top of the Metric Selector With Resource Selection pane.
List the metrics that are common to multiple selected resources	Click the Show Common Metrics icon on the toolbar at the top of the Metric Selector With Resource Selection pane.

The metrics that you select appear in the **Selected Metrics** pane.

- 5 (Optional) Manage the metrics in the **Selected Metrics** pane.

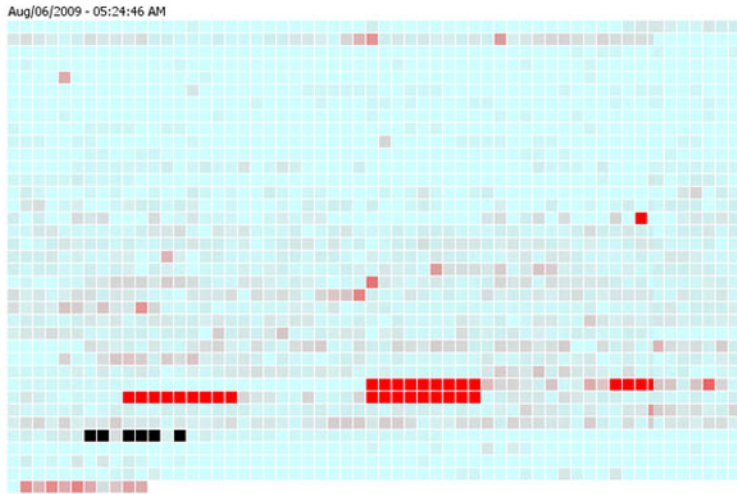
Option	Action
Change the order of a metric in the list	Select the metric and drag and drop it to another position in the list.
Remove a metric from the list	Select the metric and click the Remove Selected Metrics icon on the toolbar at the top of the Selected Metrics pane.
Select all of the metrics in the list	Click the Select All icon on the toolbar at the top of the Selected Metrics pane.
Remove all of the metrics from the list	Click the Clear Selections icon on the toolbar at the top of the Selected Metrics pane.

- 6 Click **OK** to save the widget configuration.

Metric Weather Map Widget

The Metric Weather Map widget provides a graphical display of the changing values of a single metric for multiple resources over time. The widget uses colored icons to represent each value of the metric. Each icon location represents the metric value for particular resources. The color of an icon changes to show changes in the value of the metric.

Figure 3-17. Metric Weather Map Widget



Watching how the map changes can help you understand how the performance of the metric varies over time for different resources.

The map does not show the real-time performance of the metrics. You select the time period, how fast the map refreshes, and the interval between readings. For example, you might have the widget play the metric values for the last day, refreshing every half second, and have each change represent five minute's worth of metric values.

To view the resource that an icon represents, click the resource. A hyperlink of the resource name appears. You can click the hyperlink to show the Resource Detail page for the resource.

The toolbar at the top of the Metric Weather Map widget contains the icons that you can use to view the graph.

Table 3-13. Metric Weather Map Widget Toolbar Icons

Icon	Description
Pause and Play	Start or stop the display. The icon remains in the same state if you leave the widget display and return.
Display Filtering Criteria	View the current settings settings for the widget, including the current metric.

Configure the Metric Weather Map Widget

You define the metric that the Metric Weather Map widget shows by editing the widget configuration. You must edit the widget to select the metric to show. You cannot configure the Metric Weather Map widget to accept a metric selection from another widget. The Metric Weather Map widget does not show data until you configure it.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.

- Open the Edit Widget window for the Metric Weather Map widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Configure the appearance of the widget display.

Option	Action
Image Redraw Rate	Select how often the widget gets new metric data and updates the display. This option is the same as the Widget Refresh Interval for other widgets.
Metric History	Select the time period for the weather map, from the previous hour to the last 30 days.
Metric Sample Increment	Select the interval between metric readings. For example, if you set this option to one minute and set the Metric History to one hour, the widget has a total of 60 readings for each metric.
Group by	To group the resources by tag value, select the tag.
Sort by	To sort the resources by resource name or metric value, select Resource name or Metric value .
Frame transition interval	Type how fast the icons change to show each new value. You can select the interval between frames or the number of frames per second (fps).
Start over delay (seconds)	The number of seconds for the display to remain static when it reaches the end of the Metric History period, the most current readings, before it starts over again from the beginning.
Colors	Select the colors in the weather map. Click each of the small blocks under the color bar to set the color for minimum, middle, and maximum values. The bar shows the color range for intermediate values. You can also set the values to match the high and low end of the color range. If you do not type values in the Min Value and Max Value text boxes, vCenter Operations Manager maps the actual minimum and maximum values of the metric over the time period to the end colors. If you set a minimum or maximum value, any metric at or beyond that value appears in the end color.

- 2 To filter the resource kinds in the **Resource Kinds** pane, select one or more tag values in the **Select which tag to show pane** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resource kinds that have either value. When you select values for two or more tags, the list includes only resource kinds that have all of the values that you select.

- 3 In the **Resource Kinds** pane, select a resource kind.

The metrics for the resource kind appear in the **Metrics** pane.

- 4 (Optional) Type all or part of the resource kind name in the **Search** text box and click the right angle bracket (>) to search for a specific resource kind.

The metrics for the resource kind appear in the **Metrics** pane.

- 5 In the **Metrics** pane, select the metric to show in the widget.

You can click the **Show Common Metrics** icon at the top of the list to show only metrics that are shared by all resources of the selected resource kind.

- 6 Click **OK** to save the widget configuration.

- 7 (Optional) To verify the filtering settings that you configured for the widget, click the **Display Filtering Criteria** icon on the widget's toolbar.

The filtering criteria appears in a pop-up window.

Resources Widget

The Resources widget lists the resources that are defined in vCenter Operations Manager.

Figure 3-18. Resources Widget

Name	Health	Resource Kind	Data Source	Collection Status
Partner DB Tier	94	Tier	Tivoli software	Accepting Data
Partner Middle Tier	0	Tier	Tivoli software	Not Receiving Data
Partner Web Tier	97	Tier	Tivoli software	Accepting Data
Partner Network App	96	Application	EMC smarts	Accepting Data
ERP DB Tier	80	Tier	Tivoli software	Accepting Data
ERP Middle Tier	100	Tier	Tivoli software	Accepting Data
ERP App	96	Application	EMC smarts	Accepting Data
CRM DB Tier	86	Tier	Tivoli software	Accepting Data
CRM Middle Tier	84	Tier	Tivoli software	Accepting Data
CRM App	85	Application	EMC smarts	Accepting Data
DB Tier	80	Tier	Tivoli software	Accepting Data
App Tier	65	Tier	Tivoli software	Accepting Data
Web Tier	95	Tier	keynote	Accepting Data
RUM User Data	96	Tier	keynote	Accepting Data
BPM Data	94	Tier	EMC smarts	Accepting Data
Account Management App	65	Application	Tivoli software EMC smarts	Accepting Data
Virgo-OS-linux	100	ServerData	EMC smarts	Accepting Data

The toolbar at the top of the Resources widget contains icons that you can use to set the data to view in the widget.

Table 3-14. Resources Widget Toolbar Icons

Icon	Description
Reset Grid Sort	Returns all column sorting to the default settings.
Reset Interaction	Returns the widget to its initial configured state and undoes any widget interactions made from providing widgets.
Resource Detail	Select a resource and click this icon to show the Resource Detail page for the resource.
Perform Multi-Select Interaction	Press Ctrl-click to select multiple individual resources or Shift-click to select a range of resources and click this icon.
Search	To find a particular resource, type all or part of its name in the Search text box and click this icon.

Configure the Resources Widget

You can configure the Resources widget to show specific resources. You can also configure filters to limit the resources that the widget shows and specify the default sort order of the resources.

The filtering criteria that you define applies whether you define resources in the Resources widget configuration or another widget provides resources to the Resources widget. If a resource that another widget provides does not meet the filtering criteria, it does not appear in the widget.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Resources widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Type a value in the **Pagination number** text box to configure the number of resources that appear on each page in the Resources widget.
- 2 Select a **Mode** option to specify whether the widget shows the selected child or parent resources.
If you select **Children** or **Parents**, the selected resources themselves do not appear.
- 3 Select the tag values in the **Select which tags to filter** list to configure the Resources widget to show only resources that have certain tag values.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the widget shows resources that have either value. When you select values for two or more tags, the widget shows only resources that have all of the values that you select. When you click the **Invert Result** icon, the widget shows only resources that do not match the tag values that you select.
- 4 Click one or more categories in the **Filter By** list and select status values to configure the Resources widget to show only resources that have specific status values.
- 5 To set the default sort order for the resources that the Resources widget shows, select sort criteria in the **Sort Data By** pane.

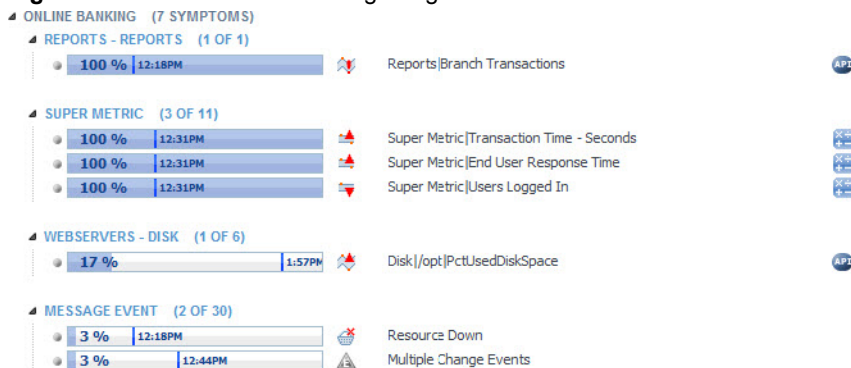
You can sort up to four column values and by any of the standard columns, except for Resource Identifier.
- 6 Click **OK** to save the widget configuration.
- 7 (Optional) Click the **Display Filtering Criteria** icon on the Resources widget's toolbar to verify the filtering settings that you configured for the widget.

The filtering settings appear in a pop-up window.

Root Cause Ranking Widget

The Root Cause Ranking widget provides an instant view of the probable causes of health degradation for a selected resource. The widget shows information about metrics on related resources that contributed to alerts on the resources, including the percentage likelihood that the metric contributed to the cause. vCenter Operations Manager bases the percentage likelihood on the number of symptoms and when the symptoms occurred relative to the alert.

Figure 3-19. Root Cause Ranking Widget



You can view root causes in Symptom mode and Resource mode.

Symptom mode	Shows the likely root cause container resources ranked by the analytical algorithm on the container resource. You can double-click a resource to see the symptom groups ranked by percentage of possible resources that exhibit symptoms in the group. You can double-click a group to see the top five individual symptoms ranked by percentage of possible resources that exhibit the symptom. You can double-click a symptom, or select it and click Show Bar Details , to open a pop-up window that shows detailed information about the symptom. This is the default mode.
Resource mode	Lists the individual root cause resources ranked by number of anomalies. Double-click a resource, or select it and click Show Bar Details , to list the individual anomalies.

A change event symptom might include different types of events that have different messages. If all of the change events for a symptom are the same type, the message appears to the right of the symptom bar. If the message does not fit, you can point to the message to see the full message. If the symptom includes different messages, **Multiple Change Events** appears.

NOTE If the Health Status widget provides resources to the Root Cause Ranking widget and you click at a point in the past on the health score graph for a resource, the Root Cause Ranking widget shows root causes for the time that you selected.

The toolbar at the top of the Root Cause Ranking widget contains icons that you can use to view the graph.

Table 3-15. Root Cause Ranking Widget Toolbar Icons

Icon	Description
Auto Refresh	Refreshes the widget data.
Show Bar Details	Opens a new window that shows detailed information about the threshold violations that contributed to the selected root cause.
Perform Interaction	Shows the first five alarming metrics for the resource of the selected symptom in either the Metric Graph or Metric Sparklines widget. You must include either the Metric Graph widget or the Metric Sparklines widgets on the dashboard and set it to receive data from the Root Cause widget to use this feature.
Change mode	Switches between Resource mode and Symptom mode.

You can double-click a root cause symptom to open a pop-up window that lists the individual threshold violations that comprise the symptom. You can then click the **Copy to Clipboard** button to copy the list to the clipboard. You might want to use this feature if you are opening a problem ticket or sending an email message about the alert. To see the Dynamic Dashboard for a root cause resource, select it in the pop-up window and click the **Dynamic Dashboard** button.

Configure the Root Cause Ranking Widget

You can configure the Root Cause Ranking widget to show specific resources.

You can also configure other widgets to provide resources to the Root Cause Ranking widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Root Cause Ranking widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Set **Self Provider** to **On** to define resources in the widget configuration.
- 2 Select a **Bars Show** option to specify whether to show bars for symptoms or resources.
If you select **Resources**, you can choose how many bars to show.
- 3 Select the tag values to include in the **Select which tags to filter** list.
You can use icons on the toolbar at the top of the **Select which tags to filter** pane to collapse, expand, and deselect all of the tags in the list.
When you select more than one value for the same tag, the widget includes resources that have either value. When you select values for two or more tags, the widget includes resources that have all of the selected values.
- 4 Click **OK** to save the widget configuration.

Tag Selector Widget

The Tag Selector widget lists all defined resource tags and tag values. You can select one or more tag values to change the information that appears in the Alerts, Configuration Overview, Health Status, Root Cause Ranking, and Health Tree widgets.

If you select more than one value for the same tag, the widget includes resources that have either value. If you select values for two or more tags, the widget includes only resources that have all of the tags you select.

The toolbar at the top of the Tag Selector widget contains icons that you can use to change the view.

Table 3-16. Tag Selector Widget Toolbar Icons

Icon	Description
Collapse All	Collapses all expanded tag branches.
Expand All	Expands all tag branches.
Deselect All	Clears any selected tag values.
Perform Multi-Select Interaction	Press Ctrl-click to select multiple individual tag values or Shift-click to select a range of tag values and click this icon.
Invert Result	Includes resources that do not match the tag values that you select.

The only configuration option for the Tag Selector widget is the widget title.

Top-N Analysis Widget

The Top-N Analysis widget lists the top five items, or another number that you specify, of a type that you select. For example, you might select the five metrics that show the highest volatility or the five most or least healthy tiers in an application. Viewing the extreme performers in any category can help you to assess the overall performance of your environment.

Figure 3-20. Top-N Analysis Widget

Duration	Applications
Duration: 15m:55s	Alert 1360
15m:48s	Alert 1053
15m:48s	Alert 2130
13m:52s	Alert 1399
13m:50s	Alert 1785
13m:49s	Alert 1433
13m:34s	Alert 1610
13m:33s	Alert 1956
13m:33s	Alert 2311
13m:32s	Alert 1645
13m:29s	Alert 2349
13m:28s	Alert 2026
13m:19s	Alert 410
13m:16s	Alert 1468
13m:12s	Alert 1887

The toolbar at the top of the Top-N Analysis widget contains icons that you can use to change the view.

Table 3-17. Top-N Analysis Widget Toolbar Icons

Icon	Description
Auto Refresh	Refreshes the widget data.
Resource Detail	Select a resource and click this icon to show the Resource Detail page for the resource.
Display Filtering Criteria	Shows the filtering settings for the widget in a pop-up window.

Configure the Top-N Analysis Widget

You can select the metric that the Top-N Analysis widget considers when it builds its list by editing the widget configuration. The Top-N Analysis widget does not show data until you configure it.

You can configure other widgets to provide a metric selection to the Top-N Analysis widget. See [“Configure Widget Interactions,”](#) on page 26.

Prerequisites

- Verify that you have the necessary access rights to perform this task. Your vCenter Operations Manager administrator can tell you which actions you can perform.
- Open the Edit Widget window for the Top-N Analysis widget. See [“Edit a Widget Configuration,”](#) on page 26.

Procedure

- 1 Configure the appearance of the widget display.

Option	Action
Period Length	How far in the past the widget looks at data.
Bars Count	By default, the widget shows the top five items in the category you select. You can change the count to 10 or 15, or select User Defined and type a number in the text box.
Depth	Select a value from 1 to 10.
Application Health and Performance	The application health and performance categories for which the widget can show information. Tag mode and Metric mode have different lists. This list appears only in Tag mode.
Problem and Alert Analysis	The problem and alert analysis categories for which the widget can show information. Tag mode and Metric mode have different lists. This list appears only in Tag mode.
Metric Analysis	The metric analysis categories for which the widget can show information. Tag mode and Metric mode have different lists. This list appears only in Metric mode.

- 2 Select a **Widget Mode** option.

Option	Description
Tag	Shows items that are related to resources.
Metric	Shows items that are related to specific metrics. Because Metric mode requires you to select a specific metric, it does not provide results if the Top-N Analysis widget accepts resources from the Application Overview or Tag Selector widget.

- 3 If you selected Tag mode, select a resource tag in the **Select which tag to show** list.
Only tags that are relevant to top-n analysis appear in the resource tag list.
- 4 If you selected Metric mode, select one or more tag values in the **Select which tag to show** pane to filter the resource kinds in the **Resource Kinds** pane.

You can use icons on the toolbar at the top of the list to collapse, expand, and deselect all of the tags in the list.

When you select more than one value for the same tag, the list includes resource kinds that have either value. When you select values for two or more tags, the list includes only resource kinds that have all of the values that you select.
- 5 Select a resource kind in the **Resource Kinds** pane.
The metrics for the resource kind appear in the **Metrics** pane.
- 6 (Optional) Type all or part of the resource kind name in the **Search** text box and click the right angle bracket (>) to search for a specific resource kind.
The metrics for the resource kind appear in the **Metrics** pane.
- 7 In the **Metrics** pane, select the metric to show in the widget.

You can click the **Show Common Metrics** icon at the top of the list to show only metrics that are shared by all resources of the selected resource kind.
- 8 Click **OK** to save the widget configuration.

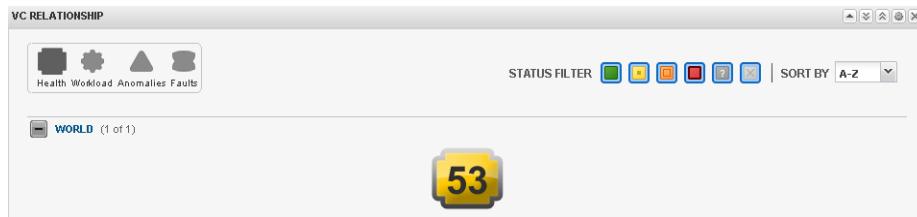
- 9 (Optional) To verify the filtering settings that you configured for the widget, click the **Display Filtering Criteria** icon on the widget's toolbar.

The filtering settings appear in a pop-up window.

VC Relationship Widget

The VC Relationship widget provides performance and relationship data for objects in your virtual environment. It uses badges to represent derived metrics and give you a high-level, broad view of the performance and condition of your virtual environment.

Figure 3-21. VC Relationship Widget



Objects appear in hierarchy levels. If a badge does not have a green status, the object has a potential problem. You can double-click a badge to see the Resource Detail page for that object.

The toolbar at the top left of the widget contains icons that you can use to change the object display.

Table 3-18. VC Relationship Widget Icons

Icon	Description
Show Health Values	Changes the object display to show health ratings. The health rating gives you a quick overview of the current state of a resource. vCenter Operations Manager examines internally generated metrics and uses its proprietary analytics formulas to determine the health rating. Internally generated metrics include the total number of alerts and anomalies and the number of active alerts.
Show Workload Values	Changes the object display to show workload scores. The workload score is a combination of the metrics that show the demand on an object. These metrics include CPU use and memory use. If an object has a workload score that is greater than 100, you might need to allocate more resources to the object or move some tasks to other objects.
Show Anomalies Values	Changes the object display to show anomalies scores. The anomalies score indicates how abnormal an object's behavior is based on the object's historical metrics. A low anomalies score indicates that an object is behaving in accordance with its established historical parameters. A high number of anomalies typically indicates a problem or situation that requires your attention.
Show Faults Values	Changes the object display to show fault scores. The faults score indicates the degree of problems that the object is experiencing. It includes events such as loss of redundancy in NICs or HBAs, memory checksum errors, HA failover problems, and CIM events.

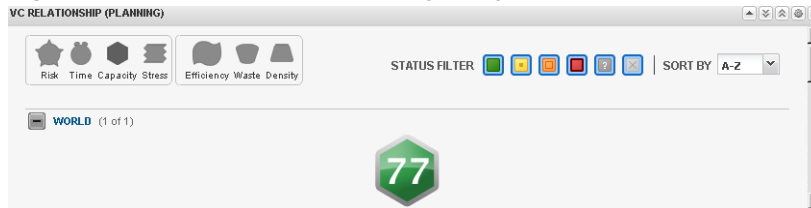
You can use the **Status Filter** buttons to filter objects by state and the **Sort By** drop-down menu to sort objects by name or value. In large inventories, filtering can help you quickly find objects that have degraded performance characteristics.

The only configuration options for the VC Relationship widget are the widget title and widget refresh settings.

VC Relationship (Planning) Widget

The VC Relationship (Planning) widget provides use and available badge metric information (risk, time, capacity, stress, efficiency, waste, and density) for the resources in your virtual environment. You can use this information to plan for capacity upgrades or rebalance the workload in your virtual infrastructure.

Figure 3-22. VC Relationship (Planning) Widget



The VC Relationship (Planning) widget uses badges to represent derived metrics and give you a high-level, broad view of the condition of your virtual environment. Objects appear in hierarchy levels. If a badge does not have a green status, the object has a potential problem. You can double-click a badge to see the Resource Detail page for that object.

The toolbar at the top left of the widget contains icons that you can use to change the object display.

Table 3-19. VC Relationship Widget Icons

Icon	Description
Show Risk Values	Changes the object display to show risk scores. The risk score indicates potential future problems that might affect the performance of your system. vCenter Operations Manager calculates the risk score based on the time remaining and stress scores.
Show Time Remaining Values	Changes the object display to show time remaining scores. The time remaining score indicates how much time remains before the resources of the object are exhausted. vCenter Operations Manager calculates the score by resource type (for example, CPU use or disk I/O) based on historical data for the pattern of use for the resource type. You can use the time remaining score to plan provisioning of physical or virtual resources for the object or rebalance the workload in your virtual infrastructure.
Show Capacity Values	Changes the object display to show capacity scores. The capacity score indicates how close a virtual object is to exhausting its available computing resources. Computing resources include disk space, memory size, and network capacity.
Show Stress Values	Changes the object display to show stress scores. The stress score indicates the historic workload of the object.
Show Efficiency Values	Changes the object display to show efficiency values. The efficiency score helps you identify optimization opportunities in your system. vCenter Operations Manager calculates the efficiency score based on the scores of the waste and density badges.
Show Waste Values	Changes the object display to show waste scores. The waste score indicates over-provisioning in your virtual infrastructure or for a specific object. vCenter Operations Manager calculates waste for each resource type, such as CPU, memory, and disk, for each object in the environment. You can use the waste score to identify the amount of resources that you can reclaim and provision to other objects in your environment.
Show Density Values	Changes the object display to show density scores. The density score indicates the consolidation ratios, such as virtual machine per host, virtual CPUs per physical CPU, virtual memory per physical memory, and so on. You can use the density score to achieve higher consolidation ratios and cost savings.

You can use the **Status Filter** buttons to filter objects by state and the **Sort By** drop-down menu to sort objects by name or value. In large inventories, filtering can help you quickly find objects that have degraded performance characteristics.

The only configuration options for the VC Relationship (Planning) widget are the widget title and widget refresh settings.

Introducing Common Tasks

With vCenter Operations Manager, you can perform a large number of monitoring and troubleshooting tasks, including tracking anomalies, handling alerts, and optimizing resources based on predictive information that vCenter Operations Manager generates. The best way to learn the full feature set of vCenter Operations Manager is to get hands-on experience with the system.

Before you can perform these tasks, a vCenter Operations Manager administrator must configure the resources that vCenter Operations Manager monitors and start data collection. For information about configuring vCenter Operations Manager, see the *VMware vCenter Operations Manager Enterprise Administration Guide*.

For information about all monitoring and troubleshooting tasks, see the vCenter Operations Manager online help.

NOTE Your ability to use any vCenter Operations Manager feature depends on the access rights that a vCenter Operations Manager administrator assigns to you. If you cannot use a feature, contact your administrator to find out if your access rights should be adjusted.

This chapter includes the following topics:

- [“Logging in and Using vCenter Operations Manager,”](#) on page 73
- [“Monitoring Day-to-Day Operations,”](#) on page 75
- [“Handling Alerts,”](#) on page 80
- [“Optimizing Your Resources,”](#) on page 89

Logging in and Using vCenter Operations Manager

The vCenter Operations Manager client is a Web-based application. You use vCenter Operations Manager by typing the URL of your vCenter Operations Manager server or vApp in a Web browser.

Log In to vCenter Operations Manager

After you install vCenter Operations Manager and the vCenter Operations Manager services are running, you can use a supported Web browser to connect to the vCenter Operations Manager server and use the vCenter Operations Manager user interface.

Prerequisites

Verify that you have a supported Web browser.

Procedure

- 1 In your Web browser, type the vCenter Operations Manager URL.

Option	Description
vCenter Operations Manager Standalone	<code>https://ip_address</code>
vCenter Operations Manager vApp	<code>https://ip_address/vcops-custom</code>

ip_address is the IP address or fully qualified host name of the vCenter Operations Manager server or vApp.

- 2 Type your user name and password.
- 3 Click **Login**.

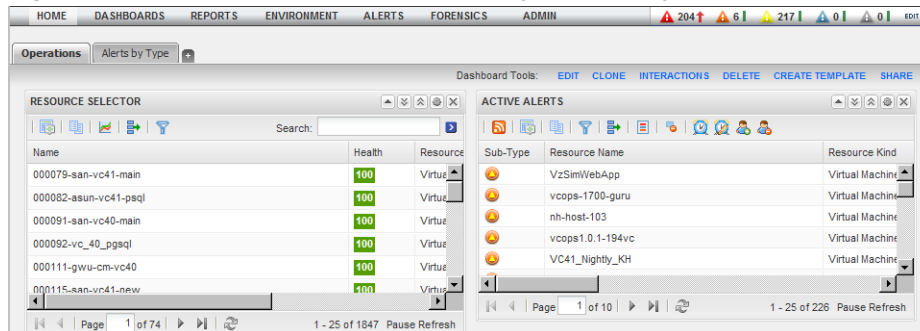
After you log in, the vCenter Operations Manager Home page appears in your browser window.

NOTE If your vCenter Operations Manager session is inactive for 30 minutes, it times out and you must log in again.

Using the vCenter Operations Manager User Interface

After you log in to vCenter Operations Manager, your Home page appears in the browser window.

Figure 4-1. Example vCenter Operations Manager Home Page



The Home page contains the following components.

Dashboards

The tabs near the top of the Home page are your dashboards. In the example, the dashboards are **Operations** and **Alerts by Type**. The user groups to which you belong determine which dashboards are available to you. A vCenter Operations Manager administrator assigns you to one or more user groups when he or she creates your user account. You can switch to a different dashboard by clicking its tab or selecting it from the **Dashboards** menu. You can click **Home** at any time to return to your Home page.

Widgets

The panes on a dashboard are called widgets. A widget is a collection of related information about attributes, resources, applications, or the overall processes in your environment. Each dashboard contains one or more widgets. In the example, the **Operations** dashboard contains the Resource Selector and Active Alerts widgets. If your user account has the necessary access rights, you can customize dashboards and widgets.

Menus

You use the menus at the top of your Home page to select and use vCenter Operations Manager features. For example, you use the **Reports** menu to generate reports, the **Alerts** menu to view alerts, and the **Forensics** menu to use forensics features.

Icons

You click icons on pages and widgets to perform tasks in the user interface. For example, you can click the icons in a widget to expand, collapse, resize, or remove the widget. When you point to an icon, a tooltip appears that describes the function of the icon.

Using Breadcrumbs

When you move away from your Home page, a breadcrumb appears in the top left corner of the page under the menu bar. Breadcrumbs help you navigate the user interface and determine where you are.

In the example, you can click **Environment Overview** in the breadcrumb to return to the Environment Overview page.



Modify Workspace User Preferences

You can change the color scheme for your workspace, specify the time zone that vCenter Operations Manager uses when it displays times in your workspace, and change your password.

Procedure

- 1 Click **User Preferences** at the top of your Home page.
- 2 Modify your workspace user preferences.

Option	Action
Change your password	Click change next to Password , type your current password and new password, and click OK .
Change the color scheme	Select a color scheme from the Scheme drop-down menu.
Change the time zone	Select an option from the Time Preference drop-down menu. Select Browser to use the time settings on your computer or Host to sync your vCenter Operations Manager session with the time on the vCenter Operations Manager server.

- 3 Click **OK** to save your changes.

Monitoring Day-to-Day Operations

Monitoring day-to-day operations involves evaluating the overall health of your enterprise and identifying health problems for specific resources.

For each resource, vCenter Operations Manager determines a health score, which is a 0 to 100 ranking. One of the ways that vCenter Operations Manager indicates the health of a resource is to show a colored indicator. The color is based on the range of the health score.

Table 4-1. Default Health Color Ranges

Color	Range
Green	76 to 100
Yellow	51 to 75

Table 4-1. Default Health Color Ranges (Continued)

Color	Range
Orange	26 to 50
Red	1 to 25
Blue	0

View an Overview of Resource Health

You can view a graphical representation of the health of all vCenter Operations Manager resources that have a specific resource tag value on the Environment Overview page.

Procedure

- 1 Select **Environment > Environment Overview** to view the Environment Overview page.
- 2 Select one or more resource tag values in the left pane.
- 3 Click the **Group** tab.

The **Group** tab shows a colored icon that represents the current health of each resource that has the selected tag value. If you point to a colored icon, a tooltip appears that describes the resource that the icon represents.

Option	Action
View the health icons for any time in the past six hours	Move the slider at the bottom of the Group tab to the left. The slider moves in five-minute increments.
View detailed information for a resource	Click the icon for the resource and click the Show Detail icon on the toolbar.

Identify Health Problems for a Specific Resource

You can use the Resource Detail page to identify health problems for a specific resource. For a global resource, the Resource Detail page contains information about the current state of the resource, its metrics, and its place in the resource tree. For a virtual resource, the Resource Detail page shows information about the main performance characteristics, key metrics, and events for the virtual resource.

Procedure

- 1 Select **Environment > Environment Overview**.
- 2 (Optional) In the left pane, expand a resource tag and select a tag value that is assigned to the resource.
Selecting a tag value can shorten the resource list and make it easier to find a specific resource.
- 3 Select the resource on the **List** tab.
- 4 Click the **Show Detail** icon.

The Resource Detail page appears for the resource.

Resource Detail Information for Global Resources

For global resources, the Resource Detail page contains information about the current state of the resource, its metrics, and its place in the resource tree. Because problems might be related to or caused by the behavior of related resources, the Resource Detail page also shows details for child or parent resources.

For complete information about using the Resource Detail page, see the online help.

Health Status Pane

Located in the upper left of the Resource Detail page, this pane shows the current health score of the resource. A health score is a 0 to 100 ranking that vCenter Operations Manager determines for each resource. The Health Status pane shows the current health score of a global resource and a graph that shows how the health score has changed over the last six hours.

NOTE If vCenter Operations Manager does not receive metrics for a resource at a particular time, it cannot calculate the health score for that time and it shows a score of -1 on the graph. A -1 score can occur if collection is turned off for a resource or if vCenter Operations Manager encounters a data gathering problem.

Root Cause Ranking Pane

This pane shows information about metrics on related resources that contributed to alerts, including the percentage likelihood that the metrics contributed to a root cause. vCenter Operations Manager bases the percentage likelihood that a metric contributed to a root cause on the number of symptoms and when the symptoms occurred relative to the alert.

For more information about the information in the Root Cause Ranking pane, see [“Understanding Health Symptoms,”](#) on page 79.

Health Tree Pane

This pane shows the section of the resource hierarchy around a global resource, including all of the parent container resources that hold the resource. If the resource is a container, the health tree also shows all of the child resources that the container resource holds.

Metric Selector and Metric Graph Panes

When you click a resource in the Health Tree pane, the metric groups for the resource appear in the Metric Selector pane. You can expand a metric group to view the individual metrics in the group. You can double-click a metric in the Metric Selector pane to view a graph for the metric in the Metric Graph pane. Metric graphs show the recent performance and predicted future performance of metrics for a resource.

Resource Detail Information for Virtual Resources

For virtual resources, the Resource Detail page shows information about performance characteristics, key metrics, and events. The information on the Resource Detail page is organized in several panes.

For resource pools and folders, the Resource Detail page shows the same information that it does for global resources.

Status Pane

Located in the upper left of the Resource Detail page, this pane contains aggregated information about the health, workload, anomalies, and faults of the selected resource. The default history graph period is six hours. You can click metric icons to switch the metric to view.

Workload Pane

This pane shows information about space use and read and write capacity. The Space bar represents the amount of space used. The IOPs (input/output operations per second), Throughput, and Latency bars provide read and write capacity information.

Object Resources Pane

This pane contains details about the virtual hardware resources that are allocated to the selected object.

Key Metrics Pane

This pane contains the metrics of greatest interest related to the performance characteristic that you select. In the default Key Metrics view, vCenter Operations Manager selects the four most interesting metrics, through bubbling, by following these criteria.

- From all metrics, vCenter Operations Manager selects KPIs that are violating their thresholds. It sorts KPIs by display order (CPU, memory, network I/O, and disk I/O).
- From all remaining metrics, vCenter Operations Manager adds non-KPI metrics that are violating their thresholds to the list by display order.
- vCenter Operations Manager adds other metrics to the list by display order.

Metric Details Pane

This pane occupies the middle of the Resource Detail page. The information that appears in this pane depends on the metric that you select to view in the Status pane.

Table 4-2. Information in the Metric Details Pane

Metric	Description
Health	Shows information for workload, anomalies, and faults.
Workload	Shows information for CPU and memory used by the currently selected resource, by the hypervisor, and by the child objects of the selected resource. You can point to colored sections in the bars to view information about the objects that they represent.
Anomalies	Contains a list of symptoms for all child container objects of the currently selected resource. A symptom is a metric that contributes to the health state of an objects. See “Understanding Health Symptoms,” on page 79.
Faults	Shows information for faults. A fault score indicates the degree of problems that the object is experiencing. It includes events such as loss of redundancy in NICs or HBAs, memory checksum errors, HA failover problems, and CIM events.

Related Objects Pane

This pane shows values for the currently selected performance characteristic of all objects that are related to the selected resource. Depending on the resource type that you selected (virtual machine, datacenter, or vCenter Server system), this pane shows parent objects, peer objects, and child objects.

Events and Health Pane

This pane appears in the lower third of the Resource Detail page when you click Health in the Status pane. You can expand this pane to view the graph of the current health metric values. If an administrator configures it, the graph contains events that might affect the selected resource. You can use the icons at the top of the pane to change the display.

Events and Workload Pane

This pane appears in the lower third of the Resource Detail page when you click Workload in the Status pane. You can expand this pane to view the graph of recent workload metric values. If an administrator configures it, the graph shows events that might affect the selected resource. You can use the icons at the top of the pane to change the display.

Events and Anomalies Pane

This pane appears in the lower third of the Resource Detail page when you click Anomalies in the Status pane. You can expand this pane to view the graph of anomalies. If an administrator configures it, the graph shows corresponding events that might affect the selected resource. You can use the icons at the top of the pane to change the display.

Events and Faults Pane

This pane appears in the lower third of the Resource Detail page when you click Faults in the Status pane. You can expand this pane to view a graph of faults. If an administrator configures it, the graph shows corresponding events that might affect the selected resource. You can use the icons at the top of the pane to change the display.

Storage and Network Pane

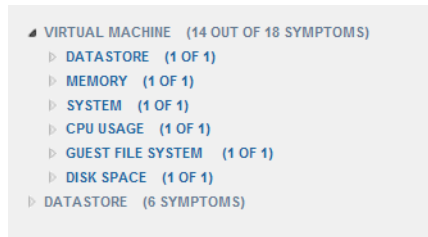
For objects that have storage and network resources, this pane shows basic storage-related metrics. The pie chart uses both volume and color to present information. The volume of the pie chart represents the amount of used disk space. The color coding visualizes the nearness of the moment when disk space is exhausted.

Understanding Health Symptoms

A symptom is a metric that contributes to the health state of an object. For a global resource, you view health symptoms in the Root Cause Ranking pane on the Resource Detail page. For a virtual resource, you view health symptoms in the Metric Details pane on the Resource Detail page.

The Resource Detail page lists symptoms by child resource kinds. The parentheses after the resource kind name contain information about the number of symptoms that are violating their thresholds for the resource group.

Figure 4-2. Example of a Symptom Group

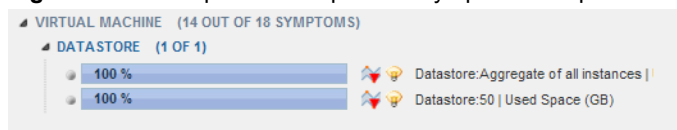


The example shows a portion of the type of information that you might see when you view health symptoms for a virtual machine. **Virtual Machine (14 out of 18 Symptoms)** indicates that 14 of the 18 metrics that contribute to the health of the virtual machine are violating their thresholds.

Metrics that are violating their thresholds appear in metric groups. The parentheses after a metric group name contain the number violations for the metrics in the metric group. In the example, **Datastore (1 of 1)** indicates that the virtual machine has a threshold violation for the Datastore metrics group, **Memory (1 of 1)** indicates that the virtual machine has a threshold violation for the Memory metrics group, and so on.

When you expand a metrics group, the list of metrics that are violating their thresholds appears. In each metric row, you can check the percentage of objects that have threshold violations for the metric. A vertical blue line represents the point in time when the first symptom became active.

Figure 4-3. Example of an Expanded Symptom Group



In the example, the metrics that are violating their thresholds in the Datastore metrics group are **Datastore:Aggregate of all instances |** and **Datastore:50 | Used Space (GB)**.

The icons in a metric row add information about the metric values that the row contains. When you point to an icon, a tooltip appears that describes the meaning of the icon. In the example, the first icon is **Below dynamic threshold**, which indicates that the metric value is below the dynamic threshold. The second icon is **Active Anomaly Exist**, which indicates that the health symptom is still active. You can double-click a metric row to view details about the selected symptom.

Handling Alerts

An alert is a notification that informs you of an abnormal condition that might require attention. Handling alerts involves viewing alerts, determining which alerts to respond to, managing alerts in the user interface, and identifying alert trends.

View Alerts on the Alerts Overview Page

By default, the Alerts Overview page shows alerts for all resources. You can filter the alert list by resource, alert type and subtype, and alert status. You can also search for alerts generated for particular resources and during a specific time period.

Procedure

- 1 Select **Alerts > Alerts Overview**.
- 2 (Optional) Filter the alert list.

Option	Action
Show alerts for resources that have a specific value	Select one or more resource tag values in the resource tag list. If you select more than one value for the same tag, the list includes resources that have either value. If you select values for two or more different tags, the list includes only resources that have all of the selected values.
Show alerts for resources that do not have a specific value	Select one or more resource tag values in the resource tag list and click the Invert Result icon. For example, if you select New York and London, alerts for all resources that are not in either city appear in the list.
Show alerts for resources that have a specific resource name or resource kind	Type a full or partial name in the Search text box and click the right angle bracket (>).
Show alerts for a specific time period	Select a date from the Start Date and End Date menus and click the right angle bracket (>).
Show alerts that have a specific type or subtype	Click one or more of the alert type icons at the top of the alert list. For example, click the Smart (Early Warning) , Smart (KPI Breach) , and Smart (KPI Prediction) icons to show all smart alerts.
Show alerts that have a specific status	Click one or more of the alert status icons at the top of the alert list. For example, click the Active Alerts icon and the Own Alerts icon to show the active alerts assigned to you.
Remove an alert type or alert status filter	Click the icon again to toggle it off.
Remove all resource filters	Click the Deselect All icon at the top of the resource tag list.

- 3 (Optional) Click a column header and use the controls in the pop-up menu to sort the alert list or add or remove columns from the display.

Alerts Overview Page Information

The information on the Alerts Overview page is organized in multiple columns.

Table 4-3. Columns on the Alerts Overview Page

Column Name	Description
Critical Level	A color-coded icon that indicates the criticality level of the alert. See “Alert Criticality Levels,” on page 81.
Sub-Type	An icon that indicates the subtype of the alert. See “Alert Types and Subtypes,” on page 81.
Start Time	The date and time that vCenter Operations Manager first generated the alert.
Duration	How long the alert lasted.

Table 4-3. Columns on the Alerts Overview Page (Continued)

Column Name	Description
Status	An icon that indicates whether the alert is active or canceled.
Resource Name	The resource that is associated with the alert.
Resource Kind	The kind of resource for which vCenter Operations Manager generated the alert.
Metric	The metric that violated a threshold and triggered the alert.
Root Cause	The symptom that most likely indicates the start of the chain of events that led to the alert.
Worst Sub Containers	If the alert is for a resource that contains other container resources, such as an application that contains tiers, this column contains icons that represent the subcontainers that most likely contributed to the alert.
Id	A sequential alert ID number.
Type	An icon that indicates the type of alert. See “Alert Types and Subtypes,” on page 81.
Cancel Time	The date and time that a user canceled the alert.
Info	For external notification alerts, this column might contain additional information that was sent along with the alert message.
Update Time	The date and time that the alert was most recently updated.
Resource Identifiers	Up to five identifiers that uniquely identify the resource. Resource identifiers are often the same as the resource name. Multiple resources can have the same name. The adapter type determines the identifiers that appear.
Control State	An icon that indicates whether the alert is open, assigned, suspended, or suppressed.
Resource Id	The ID of the resource that is associated with the alert.
User Name	If the alert is assigned to a user, the name of the user.

Alert Criticality Levels

Every alert has a criticality level that specifies how serious the problem is and how quickly you should take action.

Table 4-4. Alert Criticality Levels

Level	Color	Value
Critical	Red	5
Immediate	Orange	4
Warning	Yellow	3
Info	Blue	2

vCenter Operations Manager predictive Smart Alerts, KPI prediction, and early warning alerts are always critical alerts. Other types of alerts might be of any criticality, depending on the alert type and how the attribute that triggered the alert is configured.

You can color code alerts by criticality on the Alerts Overview page and in the Alerts widget.

Alert Types and Subtypes

vCenter Operations Manager generates several types of alerts, and each alert type has its own triggers and contents. An alert might be caused by abnormal behavior of one or more metrics for a resource, including a tier or application, or when a fingerprint predicts an upcoming problem.

By default, vCenter Operations Manager generates all types of alerts except for classic abnormality alerts. Because they do not involve KPIs, classic abnormality alerts are unlikely to require any action.

Smart Alerts

A Smart Alert is triggered when an internally calculated value indicates that a problem occurs, or soon will occur. The internally calculated value can be a correlated prediction of future behavior or a dynamic threshold breach on a KPI. Except for metrics that are designated as KPIs, Smart Alerts do not depend on user-defined values. Smart Alerts have certain subtypes.

Table 4-5. Smart Alert Subtypes

Subtype	Description	Determined By
KPI DT Breach	A KPI breached one of its internally calculated dynamic thresholds.	Analytics based on a user-defined KPI.
KPI Prediction	vCenter Operations Manager predicts that a KPI will soon breach a threshold. The current combination of metrics might match a stored metric fingerprint that predicts the breach, or a metric that is correlated with the KPI has breached its threshold. KPI Prediction alerts are always critical.	Analytics based on a user-defined KPI.
Early Warning	vCenter Operations Manager correlation algorithms calculate a greater than 90 percent chance above the noise threshold that there is a problem with an application. Early Warning alerts are always critical.	Analytics based on application topology.

Classic Alerts

A classic alert is an alert that is generated by classic monitoring software. It relies on user-defined hard thresholds, not vCenter Operations Manager dynamic thresholds or other advanced calculations. Classic alerts have certain subtypes.

Table 4-6. Classic Alert Subtypes

Subtype	Description	Reason
KPI HT Breach	A user-defined KPI breached a user-defined hard threshold.	A user-defined KPI breached one of its user-defined hard thresholds.
Abnormality	A non-KPI metric breached one of its internally calculated dynamic thresholds.	A single non-KPI metric breached one of its dynamic thresholds.
Notification	A non-KPI metric breached a user-defined hard threshold. Typical system and network management applications send this type of alert.	A single non-KPI metric breached one of its internally calculated dynamic thresholds.

Administrative Alerts

An administrative alert indicates a problem with vCenter Operations Manager, the monitoring software from which it collects data, or the enterprise network. Administrative alerts have certain subtypes.

Table 4-7. Administrative Alert Subtypes

Subtype	Description
System	A vCenter Operations Manager component failed.
Environment	vCenter Operations Manager stopped receiving data from one or more resources. A problem might exist with the resource, the monitoring software, or the network infrastructure.

Resolve an Alert

How you resolve an alert depends on the alert's type and criticality level and your organization's rules, procedures, and priorities. You can view information about the event that triggered an alert, its effects, and its likely causes, on the Alert Summary page. The Alert Summary page usually contains enough information to determine who in your enterprise should respond to the alert.

The top of the Alert Summary page shows the alert type, when the alert started, the duration of the alert, and the associated resource or metric. The rest of the page is divided into separate panes.

NOTE Do not follow this procedure to resolve administrative system alerts.

Procedure

- 1 Select **Alerts > Alerts Overview** and double-click the row for the alert in the alert list.
- 2 Examine the information in the Reason pane on the Alert Summary page and determine the action to take.

The Reason pane contains specific information about the alert, including the type of trigger that caused it, the resource or metric for the trigger and details about the trigger.

Option	Action
The alert is for an application, tier, or container	Identify the owner of the resource.
The alert is for a KPI	Identify the service level agreement (SLA) that is associated with the KPI.

- 3 Examine the information in the Impact pane on the Alert Summary page.

The Impact pane shows health information for the last six hours for the resource for which the alert was generated, including any subcontainers in the resource. For a tier, the pane shows a health graph for the application that contains the tier and the current health of all of the tiers in the application. The pane also shows a graph for up to five metrics. Breaching KPIs appear first, followed by breaching super metrics, non-breaching KPIs, and non-breaching super metrics.

- 4 If the information in the Impact pane indicates that KPIs were breached, identify the SLAs that are associated with the KPIs.
- 5 Examine the information in the Root Cause pane on the Alert Summary page.

The Root Cause pane shows the likely root cause container resources, ranked by analytical algorithm on the container resource. You can perform actions on the Root Cause pane to view symptom information.

Option	Action
Show the symptom groups for a resource	Double-click the resource. Symptom groups are ranked by percentage of possible resources that exhibit the symptoms in the group.
Show the top five individual symptoms in a symptom group	Double-click the symptom group. Symptoms are ranked by percentage of possible resources that exhibit the symptom.
List the individual anomalies that comprise a symptom	<p>Double-click the symptom. A pop-up window opens that lists the individual anomalies.</p> <ul style="list-style-type: none"> ■ To copy the list to the clipboard, click the Copy to Clipboard icon. This feature is useful if you are opening a problem ticket or sending an email message about the alert. ■ To graph an anomaly, select an anomaly in the pop-up window and click the Dynamic Dashboard icon.

- 6 Identify the owner of the root cause resource.

Option	Action
The Root Cause pane indicates multiple tiers	Examine the first tier and identify its owner. Select all metrics that have 50 percent or greater probability.
The Root Cause pane indicates a single resource	Select all metrics that have 50 percent or greater probability.

- 7 Hand off resolution of the alert to the owner that you identified in [Step 6](#).

Provide the highest-probability abnormal metrics from the Root Cause pane and the URL of the Alert Summary page. For predictive alerts, also provide due time and probability information from the Reason pane.

- 8 Notify the owner that you identified in [Step 2](#) and any other interested parties.

Provide SLA and KPI breach information, the URL of the Alert Summary page, and the name of the person responsible for resolving the alert.

Resolving Administrative System Alerts

An administrative system alert indicates a problem with one of the vCenter Operations Manager components. When you resolve an administrative system alert, follow certain recommended procedures.

For information about resolving administrative system alerts, see the *VMware vCenter Operations Manager Enterprise Administration Guide* or the online help.

Troubleshoot an Alert

The person responsible for fixing the condition that caused an alert typically uses the Alert Detail page to troubleshoot the problem.

The Alert Detail page contains information that can help you diagnose the cause of the behavior that resulted in the alert and determine how to prevent the alert from happening again.

Procedure

- 1 Select **Alerts > Alerts Overview** and double-click the row for the alert in the alert list.
- 2 On the Alert Summary page, click the **Troubleshoot** button.

The Alert Detail page appears for the alert.

Alert Detail Information

The Alert Detail page contains information that can help you diagnose the cause of the behavior that resulted in the alert and determine how to prevent the alert from happening again.

For detailed information about using each pane and tab on the Alert Detail page, see the online help.

Reason Pane

This pane contains specific information about the alert, including the type of trigger that caused it, the resource or metric for the trigger, and details about the trigger.

Impact Pane

This pane shows health information for the last six hours for the resource for which the alert was generated, including any subcontainers in the resource. For a tier, the pane shows a health graph for the application that contains the tier and the current health of all of the tiers in the application. The pane also shows a graph for up to five metrics. Breaching KPIs appear first, followed by breaching super metrics, non-breaching KPIs, and non-breaching super metrics.

Mashup Tab

This tab contains mashup charts, which show different aspects of the behavior of a resource. Mashup charts include a health chart, an anomaly count graph, and metric graphs.

- The health chart includes each alert for the specified time period.
- The anomaly count graph shows the number of anomalies for the resource and its children at a specific time. For an application, the anomaly graph shows the anomaly count for tiers that contain root cause metrics for the resource. A red line marks the noise threshold for the resource. An anomaly count higher than the red line indicates a 90 percent probability of a problem and triggers an early warning alert.
- Metric graphs appear for all of the KPIs for any resource that is listed as a root-cause resource. For an application, the root-cause resource is the application and tiers that contain root causes.

Timeline Tab

This tab shows all of the anomalies that contributed to an alert. The anomalies appear in a dual-drag timeline that starts with the beginning of the first anomaly and ends with the current time or, if the alert was canceled, the cancel time.

Relationships Tab

This tab shows a resource relationship chart for the resource for which an alert was generated. Resource relationship charts show the structure of the topography around a specific resource, including parent and child resources.

Metric Charts Tab

This tab shows metric graphs for the resource for which an alert was generated. Metric graphs show the recent performance and predicted future performance of metrics.

Correlations Tab

You can show the behavior or anomaly correlations to the KPI metrics that contributed to an alert on this tab. Each metric has a percentage correlation. The larger the number, the more closely the metrics are related.

Notes Tab

You can add and view notes for an alert on this tab.

Managing Alerts

You can suspend, suppress, and take or release ownership of multiple alerts on the Alerts Overview page. When you perform an action on an alert, the alert's status changes. You can also manage a single alert on the Alert Detail page.

Take Ownership of an Alert

When you take ownership of an alert, you acknowledge that the alert is yours. Taking ownership of an alert is important if multiple operators manage alerts in your environment. You can take ownership of multiple alerts on the Alerts Overview page.

You can also take ownership of alerts in the Alerts widget.

Procedure

- 1 Select **Alerts > Alerts Overview** and select the alert or alerts in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 2 Click the **Take Ownership** icon.
- 3 Click **Yes** in the confirmation dialog box.

When you own the alert, the **Assigned Alerts** icon appears in the Control State column and your user name appears in the User Name column in the alert list.

Suspend an Alert

When you suspend an alert, you can specify a number of minutes. If the problem condition exists after the time elapses, vCenter Operations Manager reactivates the alert. You can suspend multiple alerts on the Alerts Overview page.

When you suspend an alert, you take ownership of it. You cannot suspend an alert that another user owns.

You can also suspend alerts in the Alerts widget.

NOTE Suspending an alert does not cancel its cancel cycle. The alert is still canceled according to the cancel cycle value set when the resource or application was configured.

Procedure

- 1 Select **Alerts > Alerts Overview** and select the alert or alerts in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 2 Click the **Suspend** icon.
- 3 Type the number of minutes to suspend the alert and click **OK**.

When the alert is suspended, the **Suspended Alerts** icon appears in the Control State column in the alert list.

Suppress an Alert

When you suppress an alert, you can specify a specific number of days. If the problem condition exists after the time has elapsed, vCenter Operations Manager reactivates the alert. You can suppress multiple alerts on the Alerts Overview page.

When you suppress an alert, you take ownership of it. You cannot suppress an alert that another user owns.

You can also suppress alerts in the Alerts widget.

NOTE Suppressing an alert does not cancel its cancel cycle. The alert is still canceled according to the cancel cycle value set when the resource or application was configured.

Procedure

- 1 Select **Alerts > Alerts Overview** and select the alert or alerts in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 2 Click the **Suppress** icon.
- 3 Type the number of days to suppress the alert and click **OK**.

When the alert is suppressed, the **Suppressed Alerts** icon appears in the Control State column in the alert list.

Release Ownership of an Alert

You release ownership of an alert when you need to return a suspended or suppressed alert to the open state. You can release ownership of multiple alerts on the Alerts Overview page.

You can also release ownership of alerts in the Alerts widget.

Procedure

- 1 Select **Alerts > Alerts Overview** and select the alert or alerts in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 2 (Optional) Filter the alert list.

Option	Action
Show only assigned alerts	Click the Assigned Alerts icon.
Show only alerts that you own	Click the Own Alerts icon.

- 3 Select the alert in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 4 Click the **Release Ownership** icon.
- 5 Click **Yes** on the confirmation dialog box.

When ownership of the alert is released, the **Open Alerts** icon appears in the Control State column in the alert list.

Cancel an Alert

You can cancel an alert on the Alerts Overview page.

NOTE You cannot cancel an alert on the Alert Detail page or in the Alerts widget.

Procedure

- 1 Select **Alerts > Alerts Overview** and select the alert or alerts in the alert list.
You can press Ctrl-click to select multiple alerts or Shift-click to select a range of alerts.
- 2 Click the **Cancel Alert** icon.

Manage a Single Alert

You can suspend, suppress, and take or release ownership of a single alert on the Alert Detail page.

Procedure

- 1 Select **Alerts > Alerts Overview** and double-click the row for the alert in the alert list.
- 2 On the Alert Summary page for the alert, click the **Troubleshoot** button.
- 3 On the Alert Detail page for the alert, click the icon for the alert operation.

Option	Action
Take ownership of the alert	Click the Take Ownership icon. Owning an alert means that you acknowledge the alert is yours. Taking ownership is important when multiple operators manage alerts.
Release ownership of the alert	Click the Release Ownership icon. You release ownership of an alert when you need to return a suspended or suppressed alert to the open state.
Suspend the alert	Click the Suspend This Alert icon. You can suspend an alert for a number of minutes. If the problem condition exists after the time has elapsed, vCenter Operations Manager reactivates the alert.
Suppress the alert	Click the Suppress This Alert icon. You can suppress an alert for a number of days. If the problem condition exists after the time has elapsed, vCenter Operations Manager reactivates the alert.

View Alerts in the Alert Watch List

The alert watch list shows the number of alerts for each criticality level and the trend.

vCenter Operations Manager determines the trend by comparing the sum of all alerts of a particular type during the current time period to the average of the alerts during the previous three time periods. The trend can be up, down, or no change.

You can change several alert watch list settings, including the refresh interval and baseline time period. You can also filter the alerts that appear in the alert watch list. See [“Change the Alert Watch List Settings,”](#) on page 88.

Procedure

- 1 Find the alert watch list in the upper right corner of the browser window.

The alert watch list appears on all vCenter Operations Manager pages.

- 2 Point to the icon for an alert criticality level.

The alerts that have that criticality level appear in a pop-up window.

- 3 Double-click an alert in the pop-up window to view the Alert Summary page for the alert.

Change the Alert Watch List Settings

You can change the default refresh interval and baseline time period for the alert watch list and the number of alerts that appear when you point to a criticality icon. You can also filter the alerts in the alert watch list.

Procedure

- 1 Click **Edit** to the right of the alert watch list.

- 2 In the **Refresh Time** text box, type how often, in seconds, to refresh the alert watch list.

The default is 30 seconds.

- 3 In the **Baseline Time** text box, type the time period, in minutes, that the alert watch list uses when it compares the total alerts in the current time period to the average number of the alerts in the previous three time periods.

The default is 30 minutes.

- 4 Filter the alerts that appear in the alert watch list.

Option	Description
Show alerts only for resources that have certain tag values	Select the tag values in the Select which tags to filter list. If you select more than one value for the same tag, the alert watch list shows resources that have either value. If you select values for two or more different tags, the alert watch list shows resources that have all of the selected values.
Limit alerts to specific criticality levels	Select the check boxes for the criticality levels to include in the alert watch list in the Criticality Level Range pane.
Limit alerts to only values that you specify	Click the links in the Filter By pane and select the values to include in the alert watch list. If you select a combination of the Open, Assigned, Suspended, and Suppressed alert control states, all of the alerts that match your selections appear in the alert watch list. If you select Own Alerts and one or more other states, only the alerts that you own that match the other states appear in the alert watch list.

- 5 In the **Number of alerts to show in tooltip** pane, select the number of alerts that appear when you point to a criticality icon in the alert watch list.

- 6 Click **Save** to save your changes.

Optimizing Your Resources

You can use the information provided by the vCenter Operations Manager forensics features to analyze performance and capacity and balance the resources in your environment. You can also use forensics features to assess whether any mission critical resources are at risk of reaching capacity in the future.

View the Top and Bottom Performers

You can view the top or bottom performers in specific categories on the Top-N Analysis page. For example, you can show the most or least healthy tiers in an application, the most volatile KPIs, or the top root cause metrics. Viewing the extreme performers in a category can help you assess the overall performance of your environment.

The Top-N Analysis widget contains similar information to the Top-N Analysis page, but it offers fewer options.

Procedure

- 1 Select **Forensics > Top-N Analysis**.
- 2 Click the **Configure** icon at the top right of the Resource Health pane.
- 3 (Optional) Change the Top-N analysis default configuration settings.

Option	Description
Time Period	Change the time period for the data that appears on the Top-N Analysis page. The default is the last 30 days.
Depth	Select the number of levels to show for parent-child relationships for the selected entity. For example, if you select 1, the widget shows information for applications and tiers. If you select 2, the widget also shows information for resources that are children of tiers. The default is 10.
Bars Count	Select the number of items to show on the page. The default is five items.

- 4 Select a resource in the resource tree.

You can use the icons at the top of the Configuration window to expand or collapse the tree and clear your selection.

- 5 Click **Save** to save the Top-N analysis configuration.

The Configuration window closes, the Top-N Analysis page appears, and the Resource Health pane shows the health of the selected resource for the configured time period.

- 6 In the Tools pane, select the check box for each type of information to view.

The information appears in the right pane.

- 7 Click an object in the right pane to view the Resource Detail page for the object.

Perform Capacity Analysis for a Selected Metric

The vCenter Operations Manager capacity analysis feature uses the performance history of a metric to predict its future growth and when it is likely to reach a specified limit. You can use this information to plan when to perform infrastructure upgrades, such as adding disk storage to a server or increasing your network capacity.

To perform capacity analysis, you select a metric to use, such as PctUsedDiskSpace, and a limiting value, such as 95 percent full. vCenter Operations Manager examines the past and current performance of the metric and its analytics algorithms determine the cycles in the metric's values. vCenter Operations Manager uses this analysis to extrapolate the metric's likely future performance.

The capacity analysis results show when the metric is likely to exceed the value you set, the predictability of the metric (higher predictability indicates a higher signal-to-noise ratio), and other information about its behavior. For more information, see [“Interpreting Capacity Analysis Results,”](#) on page 91.

NOTE Capacity analysis works best and is most useful with metrics that tend to show long-term trends in one direction, such as disk space use and network traffic.

Procedure

- 1 Select **Forensics > Capacity Analysis**.
- 2 (Optional) Filter the resources on the **List** tab by selecting one or more tag values in the **Resources-Tags** list.

Option	Action
Show resources that have a specific value	Select one or more resource tag values in the resource tag list. If you select more than one value for the same tag, the list includes resources that have either value. If you select values for two or more different tags, the list includes only resources that have all of the selected values.
Show resources that do not have a specific value	Select one or more resource tag values in the resource tag list and click the Invert Result icon. For example, if you select New York and London, all resources that are not in either of those cities appear in the resource list.

- 3 On the **List** tab, select the resource that contains the metric to use in the analysis.

The attribute groups for the selected resource appear in the Metrics pane.

- 4 (Optional) Filter the metrics in the Metrics pane.

Option	Action
Show only KPI metrics	Click the KPI Metric icon.
Find a particular metric group, metric instance, or metric	Type a full or partial name in the Search text box, select the value type from the drop-down menu, and click >.

- 5 In the Metrics pane, expand the group that contains the metric and double-click the metric.

The performance information for the metric appears in the center pane.

- 6 (Optional) To change the graph's range, type the minimum and maximum values to show in the **Y-max** and **Y-min** text boxes and click the arrow to the right of each text box.

By default, the graph's range depends on the past performance of the metric.

- 7 To set limit values for the graph, type a value in the **Threshold** text box and click the **Upper** or **Lower** icon to indicate whether the value represents an upper or lower threshold.

You can also drag the slider to the left of the graph to set the limit value.

- 8 In the **Probability** text box, type the percentage of metric values that must be out of threshold within a 24-hour period before it is considered a breach.

- 9 Select the time period for the forecast from the **Show Forecast** drop-down menu.

- 10 Click the **Forecast This!** button.

The capacity analysis predictions appear in the Analysis Results pane.

- 11 (Optional) Save the current configuration.

- a Click the **Capture New** icon.
- b Type a name for the configuration in the **Configuration** text box.
- c Click **OK**.

You can return to a saved configuration later by selecting it from the **Configuration** drop-down menu. Only you can use configurations that you save.

- 12 (Optional) Click an icon at the top of the Analysis Results pane to save the forecast data.

You can save the data as a snapshot or full-screen snapshot, or download it to a tab-separated CSV file.

What to do next

After you perform a capacity analysis, you can change any criteria, such as the forecast period or the limit value, and click **Forecast This!** again.

If you saved the configuration, you can select it from the **Configuration** drop-down menu and click the **Update selected configuration** or **Delete selected** icon to update or delete the configuration.

Interpreting Capacity Analysis Results

Capacity analysis results appear in the Analysis Results pane on the Capacity Analysis page and include the following information

- The amount of time until vCenter Operations Manager predicts that the metric will breach the limit that you set and the date and time it is predicted to occur.
- The predictability of the metric's behavior, which is expressed as a decimal between 0 and 1. Higher values indicate more predictable behavior and more certainty in the predicted beach time.
- If the analytics mechanisms detect a correlation between the behavior of the selected metric and another metric, the degree of the correlation. You can click the value to open a pop-up window that shows the correlated metrics, including the resource, the metric name, and the percentage of correlation. You can also display a column that shows the type of correlation, either **Anomaly**, in which the metrics' anomalies are correlated, or **Behavior**, in which the metrics' behavior is correlated.
- The predicted minimum and maximum values within the forecast period and when vCenter Operations Manager expects them to occur.
- A metric graph that shows recent behavior and the predicted behavior for the forecast period. The graph includes a line that shows the most likely predicted value. A shaded area appears around the area to indicate the confidence bound of the prediction.
- A graph that shows the calculated cycles in the metric's behavior. Captions below the graph indicate the period and relative strength of each cycle. You can click **All Cycles** to show a pop-up window that contains information about the cycles.

NOTE Depending on your screen resolution, you might need to click the thin bar at the top of the page to collapse the Resources-Tags pane and Metrics pane to show the cycle graph.

Comparing Metric Values for Virtual Objects

With the VC Analysis view, you can compare the metric values of different objects in your virtual environment by using predefined heat maps or creating your own custom heat maps.

A heat map contains rectangles of different colors and sizes. Each rectangle represents an object in your virtual environment. The color of a rectangle represents the value of one metric, and the size of a rectangle represents the value of another metric. For example, one predefined heat map shows the total memory and percentage of memory use for each virtual machine. Larger rectangles are virtual machines that have more total memory. Green indicates low memory use and red indicates high memory use.

vCenter Operations Manager updates heat maps in real time as it collects new values for each object and metric. The colored bar below a heat map is the legend. The legend identifies the values that the endpoints represent and the midpoint of the color range.

Heat map objects are grouped by parent. A heat map that shows virtual machine performance groups virtual machines by the ESX hosts on which they run.

Compare the Performance of Selected Metrics

You can use the information provided by the heat maps on the VC Analysis page to compare the performance of selected metrics in the virtual infrastructure and balance the load across ESX hosts and virtual machines.

Prerequisites

If the combination of metrics to compare is not available in a predefined heat map, create a custom heat map. See [“Create a Custom Heat Map,”](#) on page 94.

Procedure

- 1 Select **Forensics > VC Analysis**.
- 2 From the **Focus Area** drop-down menu, select a metric group.
All metric heat maps that are related to the selected group appear in the list of heat maps.
- 3 From the **Smallest Box Shows** drop-down menu, select the object type to be represented by the colored boxes in the heat map.
The list of heat maps updates based on your selection.
- 4 Select a heat map from the list.
The heat map of the selected metrics appears, sized and grouped according to your selection.
- 5 Use the heat map to compare the resources and metric values for all of the objects in your virtual environment.
- 6 (Optional) To view the list of names and metric values for all of the objects in the heat map, expand the Details pane in the lower third of the VC Analysis page.
You can click column headers to sort the list by column. If you sort the list by a metric column, you can view the highest or lowest values for the metric on top.
- 7 (Optional) To view more information about a particular object in the heat map, point to the rectangle that represents the object and click the **Details** link in the pop-up window.

What to do next

Based on your findings, reorganize the objects in your virtual environment to balance the load among ESX hosts, clusters, or datastores.

Find the Best or Worst Performing Objects

You can find the objects that have the highest or lowest values for a particular metric on the VC Analysis page.

Prerequisites

If the combination of metrics to compare is not available in a predefined heat map, create a custom heat map. See [“Create a Custom Heat Map,”](#) on page 94.

Procedure

- 1 Select **Forensics > VC Analysis**.
- 2 From the **Focus Area** drop-down menu, select a metric group.
All metric heat maps that are related to the selected group appear in the list of heat maps.
- 3 From the **Smallest Box Shows** drop-down menu, select the object type to be represented by the colored boxes in the heat map.
The list of heat maps updates based on your selection.
- 4 Select a heat map from the heat map list.
The heat map of the selected metrics appears, sized and grouped according to your selection.
- 5 Expand the Details pane.
The name and metrics values for each object in the heat map appear in the list.
- 6 Click the column heading for the metric.
You can view the best or worst performing objects at the top of the column. The Details list is sorted based on the metric value that you select. You can click the header again to reverse the sort order.
- 7 (Optional) To view more information about a particular object in the heat map, point to the rectangle that represents the object and click the **Details** link in the pop-up window.

Identify Objects that Operate Outside of a Defined Metric Range

Objects must operate within a specified range of values to use resources efficiently. High metric values might mean an overload, which can lead to performance problems, and low metric values indicate inefficiency or waste of resources. You can analyze the operation of different object types within or outside the defined range for each metric on the VC Analysis page.

Prerequisites

Create a custom heat map to track the metric and set the minimum and maximum values to the top and bottom of the range for the metric. See [“Create a Custom Heat Map,”](#) on page 94.

Procedure

- 1 Select **Forensics > VC Analysis**.
- 2 Select a metric group from the **Focus Area** drop-down menu.
All metric heat maps that are related to the selected group appear in the list of heat maps.
- 3 Select the object type for the colored boxes in the heat map to represent from the **Smallest Box Shows** drop-down menu.
The list of heat maps updates based on your selection.

- 4 Select your custom heat map in the heat map list.

Because you set the endpoints for the graphed colors in your custom heat map, any object that shows the endpoint color, either green and red or orange and blue, is outside of the defined range. Objects that operate within the defined range show intermediate colors.

- 5 (Optional) To view the list of names and metric values for all objects on the heat map, expand the Details pane.

You can click column headings to sort the list by column. If you sort the list by a metric column, you can view the highest or lowest values for that metric on top.

- 6 (Optional) If you notice an object in the heat map that operates outside of the defined range, point to the rectangle that represents the object and click the **Details** link to view more information about the object performance.

Create a Custom Heat Map

If the predefined heat maps do not meet your needs, you can create a custom heat map. When you create a custom heat map, you select every aspect of the heat map, including the objects and metrics it tracks, the colors that it uses, and the endpoints for its values. A custom heat map can analyze one metric or two metrics in the same metric group.

Procedure

- 1 Select **Forensics > VC Analysis**.
- 2 Click **Customize**.
- 3 Click the **Add new configuration** icon in the upper right corner of the heat map configuration window.
- 4 In the confirmation dialog box, type a description for the custom heat map and click **OK**.
- 5 Select the type of object for which to display the metric from the **Smallest Box** drop-down menu.

You can select only objects that are parents to your selection.

- 6 Select how to group metric boxes in the custom heat map from the **Group By** drop-down menu.
- 7 From the **Then By** drop-down menu, select the next level of organization for metric boxes that are already grouped by the criterion that you selected from the **Group By** drop-down menu.
- 8 Click in the **Color By** drop-down menu and double-click the metric to be represented in the heat map.

You can use these methods to find a metric in the list.

Option	Action
Show the metrics in a group	Expand the metric group.
Find a particular metric	Type a full or partial name in the Search text box and click the right angle bracket (>).
Filter the list	Select a value type from the drop-down menu.

- 9 Select the metric to be tracked by color in the heat map from the **Color Focus** drop-down menu.

The custom heat map appears under this category in the **Focus Area** drop-down menu on the VC Analysis page.

- 10 (Optional) To analyze a second metric value in the same group, click in the **Size By** drop-down menu and double-click the metric to use.

You can use these methods to find a metric in the list.

Option	Action
Show the metrics in a group	Expand the metric group.
Find a particular metric	Type a full or partial name in the Search text box and click the right angle bracket (>).
Filter the list	Select a value type from the drop-down menu.

- 11 (Optional) If you selected a second metric from the **Size By** drop-down menu, select the type of metric to be tracked by the size of boxes in the heat map from the **Size Focus** drop-down menu.
- 12 Type the minimum and maximum values to represent the end colors of the heat map in the **Color Picker** text boxes.
- If you do not specify a minimum value, the custom heat map uses the lowest collected metric value for the end color. If you do not specify a maximum value, the custom heat map uses the highest collected metric value for the end color.
- 13 (Optional) If you specified a maximum value, select the **Extend** check box to extend the maximum color range to the highest observable **Color By** value for the smallest boxes on the heatmap.
- 14 (Optional) To change the color scheme of the custom heat map, click the **Templates** link and select a different color scheme.
- 15 Click **Save** to save the custom heat map.
- The custom heat map appears in the **Configuration** drop-down menu.
- 16 Click **Close** to close the heat map configuration window.
- The custom heat appears in the list of heat maps on the VC Analysis page.

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