Care Systems Analytics for MEDITECH
Users Guide

VMware Care Systems Analytics for MEDITECH Management Pack for
vRealize Operations Manager

This document supports the version of each product listed and
supports all subsequent versions until the document is replaced
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About This Book

The Care Systems Analytics for MEDITECH Users Guide describes how to use the VMware® Care Systems Analytics for MEDITECH Management Pack on vRealize Operations Manager to monitor your MEDITECH® system.

Intended Audience

This information is intended for anyone who needs to use the Care Systems Analytics for MEDITECH management pack.

This information assumes you are experienced with vRealize Operations Manager and MEDITECH. See VMware vRealize Operations Manager documentation at: http://www.vmware.com/support/. See your MEDITECH documentation, as needed.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation go to http://www.vmware.com/support/pubs.

Document Feedback

VMware welcomes your suggestions for improving our documentation. If you have comments, send your feedback to docfeedback@vmware.com.

Technical Support and Education Resources

The following sections describe the technical support resources available to you. To access the current version of this book and other books, go to http://www.vmware.com/support/pubs.

Online and Telephone Support

To use online support to submit technical support requests, view your product and contract information, and register your products, go to http://www.vmware.com/support.

Customers with appropriate support contracts should use telephone support for the fastest response on priority 1 issues. Go to http://www.vmware.com/support/phone_support.

Support Offerings

To find out how VMware support offerings can help meet your business needs, go to http://www.vmware.com/support/services.
VMware Professional Services

VMware Education Services courses offer extensive hands-on labs, case study examples, and course materials designed to be used as on-the-job reference tools. Courses are available onsite, in the classroom, and live online. For onsite pilot programs and implementation best practices, VMware Consulting Services provides offerings to help you assess, plan, build, and manage your virtual environment. To access information about education classes, certification programs, and consulting services, go to http://www.vmware.com/services.
VMware® Care Systems Analytics for MEDITECH is an IT management solution designed for healthcare organizations that use the MEDITECH® platform. The solution extracts system information from the MEDITECH SIRT share path and integrates it with VMware vRealize Operations Manager to create a single view of system performance across the Electronic Health Record (EHR) platform and supporting infrastructure.

Care Systems Analytics for MEDITECH is a management pack for vRealize Operations Manager. This is an intelligent operations management solution from VMware. The Care Systems Analytics for MEDITECH solution improves visibility into the overall performance of the MEDITECH system—from infrastructure to the point of care. It includes dashboards, widgets, and patented self-learning techniques to visualize and analyze performance indicators from MEDITECH specific departmental metrics and related infrastructure (physical and virtual).

Use this solution to help you increase collaboration across infrastructure, operations, and applications teams; reduce expensive and disruptive outages by providing insight into application, database, and infrastructure metrics; and anticipate and prevent potential problems, by quickly troubleshooting issues to resolution.

NOTE For the purposes of this guide:

The terms Management Pack, Adapter, and Solution are used interchangeably and generally apply to Care Systems Analytics for MEDITECH.

Figure 1-1. Flow of Care Systems Analytics for MEDITECH component data into the Operations Manager.
Operations Manager Features

NOTE Skip this section if you are already familiar with vRealize Operations Manager features and concepts.

The Operations Manager collects performance data from each object at every level of your virtual environment, from individual virtual machines and disk drives to entire clusters and data centers. It stores and analyzes the data, and uses that analysis to provide real-time information about problems, or potential problems, anywhere in your virtual environment.

The Operations Manager works with existing VMware products to add the following functionality:

- Combines key metrics into single scores for environmental health, efficiency, and capacity risk.
- Calculates the range of normal behavior for every metric and highlights abnormalities. Adjusts the dynamic thresholds as incoming data allows it to better define the normal values for a metric.
- Presents graphical representations of current and historical states of your entire environment or selected parts of it.

Figure 1-2. Sample Operations Manager Functions

Operations Manager Concepts

To use Care Systems Analytics for MEDITECH you need to understand the basic functions of the Operations Manager. See the VMware documentation specific to your Operations Manager at http://www.vmware.com/support/pubs.

The Operations Manager uses certain concepts that can help you understand the product, its interface, and how to use it.

Collecting Data

The Operations Manager collects data from any number of generally available management packs and custom integrations that interface with external element managers. To understand the concepts of data collection and how that data is managed with the Operations Manager, review the following terms.

- **Resources** - Solutions adapters, when loaded in to the Operations Manager, create a series of constructs to support the types of data collected and stored by the adapter. Resources are created as instances of the Resource Kind definition.

- **Resource Tags** - A type of information, such as Application or GEO Location. Creating resource tags and tag values makes it easier to find resources and metrics in the Operations Manager. With resource tags, you select the tag value assigned to a resource and view the list of resources that are associated with that tag value.

- **Management Packs** (Embedded Adapters) - Gather and send information from resources to the Operations Manager for processing. These are Java components that run as plug-ins in the Collector. They actively connect to a data source and pull values from it.
Adapter Instance - Defines the type of adapter to use to connect to a particular data source. It also defines the information that is required to identify and access that data source. The Operations Manager administrator must define an adapter instance for each data source that uses an embedded adapter. An adapter instance definition typically includes the data access method and a host, port, and credential. The exact information in a particular adapter instance definition depends on the type of adapter.

Attributes - Solutions adapters, when loaded in to the Operations Manager create a series of constructs to support the types of data collected and stored by the adapter. Attributes are created as definitions of data types of data points that can be collected by the Operations Manager.

Metric - An instance of an attribute for a specific resource. The Operations Manager collects these metrics, which are stored as data points with their associated value and timestamp.

Metric Value - A single data point, which is representative of a specific Resource, specific Attribute, specific timestamp and specific value.

Collect Cycle - Each management pack has adapter instances defined to specify a data source to collect from using that management pack’s capabilities. These adapter instances have a default data collection interval of 5 minutes. This interval can be adjusted if necessary, however is not recommended.

Analyzing Data

The Operations Manager performs analysis on the data collected.

Dynamic Thresholds - The Operations Manager defines dynamic thresholds for every metric based on the current and historical values of the metric. The normal range of values for a metric can differ on different days at different times because of regular cycles of use and behavior. The Operations Manager tracks these normal value cycles and sets the dynamic thresholds accordingly. High metric values that are normal at one time might indicate potential problems at other times. For example, high CPU use on Friday afternoons, when weekly reports are generated, is normal. The same value on Sunday morning, when nobody is at the office, might indicate a problem.

The Operations Manager continuously adjusts the dynamic thresholds. The new incoming data allows the Operations Manager to better define what value is normal for a metric. The dynamic thresholds add context to metrics that allow the Operations Manager to distinguish between normal and abnormal behavior.

Dynamic thresholds eliminate the need for the manual effort required to configure hard thresholds for hundreds or thousands of metrics. More importantly, they are more accurate than hard thresholds. Dynamic thresholds allow the Operations Manager to detect deviations based on the actual normal behavior of an object and not on an arbitrary set of limits.

The analytics algorithms take seven days to calculate the initial values for dynamic thresholds. Dynamic thresholds continue to improve as additional data is collected with significant quality beginning after about 4 weeks. Dynamic thresholds appear as line segments under the bar graphs for use metrics on the Details page and on the Scoreboard page. The length and the position of the dynamic threshold line segment depends on the calculated normal values for the selected use metrics. Dynamic thresholds also appear as shaded gray areas of the use metrics graphs on the All Metrics page.

Hard Thresholds - Unlike dynamic thresholds, hard thresholds can be set to capture fixed metric values. Several progressive levels of criticality can be defined using different fixed values. These values must be set and maintained manually, however they can be helpful in highlighting best practices and known absolute values.

Key Performance Indicators (KPI) - The Operations Manager defines attributes that are critical to the performance of an object as key performance indicators. KPI are weighted more heavily in the calculations that determine the health of an object. Graphs of KPI performance appear before other metrics in several areas of the product.
- **Alerts and Faults** - The Operations Manager generates alerts when events occur on the monitored objects, when data analysis indicates deviations from normal metric values, or when a problem occurs with one of the Operations Manager components. Use the symptoms and recommendations provided to aid your analysis of data.

**Accessing Care Systems Analytics for MEDITECH**

Access and view Care Systems Analytics for MEDITECH status, on vRealize Operations Manager, through the user interface. The user interface includes:

- **Dashboards** - The tabs near the top of the **Home** page are your dashboards. The user groups to which you belong determine which dashboards are available to you. Operations Manager administrators assign you to one or more user groups when they create your user account. To switch to a different dashboard click its tab or select it from the **Dashboards** menu. Click the **Home** tab at any time to return to your **Home** page.

- **Widgets** - The panes on a dashboard are called widgets. A widget is a visualization of information about attributes, objects, applications, or the overall processes in your environment. Each dashboard contains one or more widgets. If your user account has the necessary access rights, you can customize dashboards and widgets.

Use the **Dashboard** tab for an overview of the performance and condition of your infrastructure.

**Figure 1-3.** vRealize Operations Manager User Interface with Care Systems Analytics for MEDITECH Dashboards
**MEDITECH Components Monitored in Care Systems Analytics**

The Care Systems Analytics for MEDITECH management pack provides integration between the Operations Manager and the MEDITECH environment. The MEDITECH environment includes:

- **MEDITECH application** - MEDITECH's tool for MEDITECH application monitoring. It consolidates data collected from various resources into a single data file, the SIRT file. The Care Systems Analytics for MEDITECH management pack uses the MEDITECH SIRT file to gather information about resources and metrics from the environment running MEDITECH.

- **MEDITECH SIRT file** - MEDITECH's resource data file, the Statistical Information Retrieval Tool (SIRT). This file:
  - Allows for important site statistical information to be communicated back to the MEDITECH from the MEDITECH installation site.
  - Allows MEDITECH to be more proactive in supporting customers.

- **DKACT** - DKACT is a time sharing protection mechanism describing the length of the queue for a certain resource or database structure.

- **ANP Server Information** - Spikes seen here indicate that the ANP service is not able to keep up with disk activity.

- **mtJo Lock Retries** - A metric that should be close to flatline.

- **HCIS** - Healthcare Information System.

- **NPR** - Non-Procedural Representation Language.

- **M/AT** - MEDITECH Advanced Technology.

- **File Servers** - Responsible for all database and file management functions within the MEDITECH environment.

- **Background Job Clients** - Designated application machines design for background processing.
Monitoring with Care Systems Analytics for MEDITECH

Use the vRealize Operations Manager Web console for MEDITECH monitoring and analysis tasks.

Log In to the vRealize Operations Manager User Interface

Access to the MEDITECH component monitoring data is through the vRealize Operations Manager user interface.

Prerequisites

- Verify that the Care Systems Analytics for MEDITECH is installed in your vRealize Operations Manager. See the VMware documentation for the vRealize Operations Manager at [http://www.vmware.com/support/pubs](http://www.vmware.com/support/pubs).
- Verify that you are using a supported Web browser.

Procedure

1. In your Web browser, type the URL for the vRealize Operations Manager user interface.
   
   \[https://<vrops>/\]
   
   where \(<vrops>\) is the IP address or fully qualified host name of your vRealize Operations Manager. This can be, for example, the Product UI of an Analytics cluster node.

2. Type your user name and password.

3. Click Login.

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

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

Monitor 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, the Operations Manager determines a health score, which is a 0 to 100 ranking. One of the ways that the 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>
<thead>
<tr>
<th>COLOR</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>76 to 100</td>
</tr>
<tr>
<td>Yellow</td>
<td>51 to 75</td>
</tr>
<tr>
<td>Orange</td>
<td>26 to 50</td>
</tr>
</tbody>
</table>
Care Systems Analytics for MEDITECH Dashboards

Care Systems Analytics for MEDITECH resource monitoring data is displayed in default Care Systems Analytics for MEDITECH dashboards.

MEDITECH Health Overview Dashboard

The MEDITECH Health Overview dashboard displays an overall view of the hierarchy of MEDITECH resources to detect anomalies from the normal behavior assessed by the analytics engine. It shows details of key metrics and health. This dashboard contains the following widgets.

- Environment Overview
- Health of selected Object (Past 7 Days)
- Machines - Highest Mem Trans Faults/s - Past 24hr
- Machines - ANP Server Page Faults/sec - Past 7 Days

Figure 2-1. MEDITECH Health Overview Dashboard Sample

Table 2-1. Default Health Color Ranges

<table>
<thead>
<tr>
<th>COLOR</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>1 to 25</td>
</tr>
<tr>
<td>Grey</td>
<td>In vRealize Operations Manager, Grey is shown when a metric value is unknown, or “?”, or a resource is currently not collecting data through the Management Pack's adapter instance.</td>
</tr>
</tbody>
</table>
MEDITECH App Analysis Dashboard

Use the MEDITECH App Analysis dashboard to view MEDITECH application and the specific databases that support each application. The applications and databases listed are specific to your installation of MEDITECH. This dashboard contains the following widgets.

- Apps
- Databases supporting selected App

Figure 2-2. MEDITECH App Analysis Dashboard Sample

MEDITECH Database Analysis Dashboard

Use the MEDITECH Database Analysis dashboard to view metrics associated with each MEDITECH databases. Selecting one or more databases in the Databases widget displays associated metrics in the Metric Picker widget. You can use this to identify which databases store which metrics. This dashboard contains the following widgets.

- Databases
- Metric Picker
  - Double-click a metric in the Metric Picker to display the Metric Chart for that metric.
- Metric Chart
MEDITECH Server Top-N Dashboard

The MEDITECH Server Top-N dashboard provides widgets that display performance information for several key metrics. This dashboard contains the following widgets.

- **DKACT widgets**
  
  DKACT widgets show activity for this a time sharing protection mechanism describing the length of the queue for a certain resource or database structure.
  
  VMAGIC DKACT avg hold time
  
  VMAGIC DKACT avg wait time
  
  VMAGIC DKACT uses/sec
  
  VMAGIC DKACT avg queue length

- **Semaphore Acquires**

- **ANP widgets**
  
  ANP Server Information widgets indicate when the ANP service is not able to keep up with the listed activity.
  
  - ANP Server Page Fault/sec
  
  - ANP Server Conditional Replace/sec
  
  - ANP Server mtJo Index File Searches/sec
  
  - ANP mtJo Lock Retries
  
  - C: Avg Read/sec
- C: Avg Write/sec
- C: Free Space
- E: Avg Read/sec
- E: Avg Write/sec
- C: Free Space

Figure 2-4. MEDITECH Server Top-N Dashboard Sample
MEDITECH Server Analysis Dashboard

The MEDITECH Server Analysis dashboard provides widgets that display information about MEDITECH server machines. This dashboard contains the following widgets:

- Machine List
- Machine Metric Chart

Click a machine metric from the Machine List widget to view the status in the Machine Metric Chart.

**Figure 2-5. MEDITECH Server Analysis Dashboard Sample**

The metrics included in this dashboard, are:

- ANP Server Page File Faults/sec
- VMAGIC DKACT avg queue length
- VMAGIC DKACT avg hold time (ms)
- VMAGIC DKACT avg wait time (ms)
- VMAGIC DKACT uses/sec
- Semaphore Acquires
- C: Avg Reads/sec
- C: Avg Writes/sec
- C: Free Space
- E: Avg Reads/sec
- E: Avg Writes/sec
- E: Free space
Review Overall Health Indicators

The Overall Health dashboard provides visibility to the components in your environment.

Procedure

1. Select the MEDITECH Overall Health dashboard tab.
2. View overall resource health. From the MEDITECH Hierarchy widget, click the resource to view.

The hierarchy relationships are parent to child, in order, from Ring to HCIS to App to Database. Machines are not linked in the hierarchy relationships.
Review Health Root Cause Detail in vRealize Operations Manager

The Troubleshooting pages provide visibility to health details of component resources in your environment.

Procedure

Choose a method:

- From MEDITECH Overall Health.
  a Select the MEDITECH Overall Health > resource.
     When you hover over a resource a status summary pop up appears.
  b View the resource detail. Double-click the resource in the MEDITECH Hierarchy widget or click the details link in the summary pop-up.

- Through vRealize Operations Manager Troubleshooting.
  a An Object Relationship resource page displays the health status detail tabs and widgets. Select Environment, and select a MEDITECH object. Click the Troubleshooting tab and click the All Metrics tab.
  b Double-click a metric from the list of metrics in the All Metrics tab to view the metric activity.
The Care Systems Analytics for MEDITECH is integrated with multiple Operations Manager widgets. For more advanced user who wants to understand deeper details of resource health in your vRealize Operations Manager, see the following sections describe some of these widgets.

**Custom Relationship Widget**

The Custom Relationship widget is a customizable widget that shows metric types for resource kinds that you select. You specify the order in which the resource kinds appear in the widget display, set up metric mappings for the resource kinds, define user interface labels, and set color range boundaries for each mapped metric.

**Configure the Custom Relationships**

The Custom Relationship widget does not show any data until you configure it. You must select the metric icons and resource kinds to show in the widget display, configure metric mappings for each selected resource kind, and provide units of measure and color range boundaries for each mapped metric.

You can also configure other widgets to provide resources to the Custom Relationship widget. When you select a resource in a providing widget, including resources that have resource kinds that are not configured in the Custom Relationship widget, the Custom Relationship widget highlights the related resources.

**Procedure**

For vRealize Operations Manager, choose from the listed options, as needed.

- Select Administration > Object Relationships.
- Select Administration > Global Settings, to obtain color range values for health-related metrics from global settings.
- Select Content > Dashboards > New or Existing Dashboard > Widget List > Object Relationship or Object Relationship (Advanced).
  - Click Add sign (+) or Edit (pencil).
  - Click Widget list > drag widgets to dashboard workspace.

**Health Status Widget**

The Health Status widget shows the health score for selected resources. You can also configure the widget to show a custom metric and specify colors for metric ranges.

Health status is a 0 to 100 ranking that the 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.
Procedure

1. Click the Health Overview dashboard.
2. Click a resource in the Environment Overview.

   The Health of the selected Object displays the status chart.

**Figure 3-1. Health of Selected Object (Status) Widget**

If the 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 the Operations Manager encounters a data gathering problem.

**Configure the Health Status Widget in vRealize Operations Manager**

You can filter the resources that the Health Status widget shows in vRealize Operations Manager by editing the widget configuration. You can also configure the widget to show a custom metric.

You edit the health chart widget after you add it to the dashboard. The changes you make to the options create a custom widget with the selected charts.

The charts are based either on Health, Risk, or Efficiency alert status, or you can base them on a selected metric. You can include a single object, multiple objects, or all objects of a selected type.

**Prerequisites**

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

**Procedure**

To customize the data that appears in the dashboard widget, click Content in the left pane. Then click Dashboards.

1. On the Dashboards toolbar, click the add (+) icon to add a dashboard or the Edit (pencil) icon to edit the selected dashboard.
2. In the Dashboard workspace, on the left, click Widget List, and drag a widget to the right pane of the dashboard.
3. On the title bar of the selected widget, click the Edit (pencil) icon to access the configuration options.
4. Modify the configuration options, as needed.

The options include: Title, Refresh Content, Refresh Interval, Self Provider, Mode, Order By, Pagination number, Period Length, Metric, and Object Tag Tree.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Enter a custom title that identifies this widget from other instances that are based on the same widget template.</td>
</tr>
<tr>
<td>Refresh Content</td>
<td>Enable or disable the automatic refreshing of the data in this widget.</td>
</tr>
<tr>
<td></td>
<td>If not enabled, the widget is updated only when the dashboard is opened or when you click the Refresh button on the widget in the dashboard.</td>
</tr>
</tbody>
</table>
Refresh Interval
If you enable Refresh Content, specify how often to refresh the data in this widget.

Self Provider
Indicates whether the objects for which data appears in the widget are defined in the widget or provided by another widget.
- On. You define the objects for which data appears in the widget.
- Off. You configure other widgets to provide the objects to the widget using the dashboard widget interactions options.

Mode
Determines if the widget displays data for the selected objects, child objects, or parent objects.
If you select Children or Parents, the selected objects do not appear in the widget. Only the related objects.

Order By
Determines how the object charts appear in the widget.
You can order them based on score or name, and in ascending or descending order.

Pagination Number
Number of charts that appears on a page.
If you prefer scrolling through the charts, select a higher number. If you prefer to page through the results, select a lower number.

Period Length
Amount of time that is displayed in the chart.

Metric
Determines the source of the data.
- Health, Risk, or Efficiency. The displayed charts are based on one of these alert badges.
- Custom. The displayed charts are based on the selected metric and use either alert symptom state colors or the selected custom color. If you apply custom colors, type the value in each box that is the highest or lowest value that should be that color.
For example, if you select Custom, define the metric as Badge | Anomaly, and set Yellow Bound as 1, Orange as 10, and Red as 20, the charts display the changes from yellow to orange or red based on the anomaly metric values at each point in time.

Object Tag Tree
Object or object types for which to display charts.
If you select a tag with more than one object, the widget displays charts for each object. If you select more than one tag, the widget displays charts only for the objects that are members of all the tags.
If you select two tags as your widget does not display any charts, there were no common objects between the two tags.
The Care Systems Analytics for MEDITECH integrated with the vRealize Operations Manager provides additional monitoring options. For more advanced users who want to configure additional widget based monitoring actions in vRealize Operations Manager, the following sections provide quick start steps for common tasks.

Troubleshooting Practices

Review the following items for basic troubleshooting Care Systems Analytics for MEDITECH integrated with vRealize Operations Manager.

Procedure

- To view troubleshooting details in vRealize Operations Manager.

  From Home, select Alerts > Symptoms. View Anomalies > All Metrics. Select a metric to view summary information and click through to view more granular information about what is affecting the health of this resource.

View an Overview of Resource Health

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

Procedure

1. Select Administration 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.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>View the health icons for any time in the past six hours</td>
<td>Move the slider at the bottom of the Group tab to the left. The slider moves in five-minute increments.</td>
</tr>
<tr>
<td>View detailed information for a resource</td>
<td>Click the icon for the resource and click the Show Detail icon on the toolbar.</td>
</tr>
</tbody>
</table>
**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**.
2. Select an object from the **Groups and Applications** or **Inventory Trees** lists.
3. Click the **Detail** tab.
4. Select an item from the list to view additional details
   
   The **Resource Detail** page appears for the resource.

**View the Alerts Page**

By default, the Alerts 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 and select from the type of Alert to view: Health, Risk, Efficiency.
2. Select an Alert to view the details.
   
   By default, if you do not have an object selected, the Alerts from All Objects in the environment are displayed.
3. (Optional) Filter the alert list.

<table>
<thead>
<tr>
<th>OPTION</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show alerts for resources that have a specific value</td>
<td>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.</td>
</tr>
<tr>
<td>Show alerts for resources that do not have a specific value</td>
<td>Select one or more resource tag values in the resource tag list and click the <strong>Invert Result</strong> icon. For example, if you select New York and London, alerts for all resources that are not in either city appear in the list.</td>
</tr>
<tr>
<td>Show alerts for resources that have a specific resource name or resource kind</td>
<td>Type a full or partial name in the <strong>Search</strong> text box and click the right angle bracket (&gt;).</td>
</tr>
<tr>
<td>Show alerts for a specific time period</td>
<td>Select a date from the <strong>Start Date</strong> and <strong>End Date</strong> menus and click the right angle bracket (&gt;).</td>
</tr>
<tr>
<td>Show alerts that have a specific type or subtype</td>
<td>Click one or more of the alert type icons at the top of the alert list.</td>
</tr>
<tr>
<td>Remove an alert type or alert status filter</td>
<td>Click the icon again to toggle it off.</td>
</tr>
<tr>
<td>Remove all resource filters</td>
<td>Click the <strong>Deselect All</strong> icon at the top of the resource tag list.</td>
</tr>
</tbody>
</table>

4. (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.
Configure Alerts to Send Notifications

You can use the Operations Manager advanced configuration options to configure email or text alert notifications. For detailed information, VMware technical documentation at http://www.vmware.com/support/pubs.

The Operations Manager generates an anomaly when a metric violates the dynamic threshold. You can define an alert associated with the anomaly and define a notification for that alert.

Alerts appear in the Operations Manager user interface on the Alerts Overview page, in the alert watch list, and in the Alerts widget. When the Operations Manager administrator sets up the alert notification feature, then users can find out about alerts even when they are not using the Operations Manager.

Notifications are alert notifications that meet the filter criteria in the notification rules before they are sent outside vRealize Operations Manager. You configure notification rules for the supported outbound alert options so that you can filter the alerts that are sent to the selected external system.

You use the notifications list to manage your rules. You use the notification rules to limit the alerts that are sent to the external system. To use notifications, the supported outbound alert plug-ins must be added and running.

Using notification rules, you can limit the data that is sent to the following external systems.

- Standard Email. You can create multiple notification rules for various email recipients based on one or more of the filtering options. If you add recipients but do not add filtering options, all the generated alerts are sent to the recipients.
- REST. You can create a rule that limits the alerts that are sent to the REST notification target, a host running REST Web services, so that you do not need to implement filtering on that target system.
- SNMP.

Procedure

1. Create an Alert. Select Content > Alert Definitions > add (+) icon to add a definition.
2. Create and manage Notification rules. Select Content > Notifications > add (+) icon to add a rule, or select a rule and click the Edit (pencil) icon to edit the exiting rule.
3. In the Method area, select REST Plug-In, Standard Email Plug-In, or SNMP Plug-In.
4. Complete notification rule settings and click Save.

Configure Attributes

Configure attributes to define conditions for monitoring your resources.

Create Tiered Health Trees

You can create a heat map and have a hierarchy in a custom widget with all resources, names, status health tree shows relationship between resources. The basic procedure includes:

- Create a dashboard
- Add widgets to the dashboard
- Add resources and tags

Procedure

1. Create a dashboard. Select Content > Dashboards > add (+) icon.
2. In the New Dashboard page, enter a name and select the number of columns to use on the dashboard.
3. Build the dashboard by selecting widgets.
   a. Click the **Widget List** add (+) icon.
   b. Drag each widget from the widgets to the right pane. For example the widget, **Health Tree**.
   c. Click **Save**.

   The new dashboard is empty.

4. Alternatively, build the dashboard by using a dashboard template.
   a. Click the **Templates List** to show the available dashboard templates.
   b. Drag a dashboard template to the right side of the window. For example the widget, **Health Tree**.
   c. Click **OK**.

   The new dashboard is empty.

5. Add content to the new dashboard for the widgets to display.
   a. Click the **Edit (pencil) icon** and select items to display in the dashboard.
   b. As needed, select and apply elements in the Edit Dashboard page, including **Widget Interactions** and **Dashboard Navigations**.
   c. Click **Save** to save the dashboard configuration.

### Edit Dashboards for Widget Resource Interaction

You can add functions to a dashboard that all users can see and use. Applying these changes through the Resource Interaction file affects all users and the display of all affected dashboards. For example, if you have an external package or plug-in for additional metrics you can add selecting it to a dashboard pull-down menu.

**Prerequisites**

This procedure requires that you have permissions to access and modify files on the Operations Manager virtual machine and the MEDITECH component virtual machine.

**Procedure**

1. Review widget file specifications.
   Select **Content > Dashboards > Edit (pencil) icon**.
   
   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.

2. Configure a widget navigations.
   Select **Dashboard Navigations**.
   
   To link the widgets from one dashboard to another, you create dashboard navigations.

3. Configure widget interactions.
   Select **Widget Interactions**.
   
   You can also configure other widgets to provide a resource to an existing widget. 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.

4. Click **Save** to save the widget configuration.