OMi Management Pack for Vertica

Software Version: 1.00

Linux and Windows ® operating systems

User Guide

Document Release Date: June 2017
Software Release Date: June 2013

Hewlett Packard Enterprise

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Chapter 2: OMi Management Pack for Vertica

The OMi Management Pack for Vertica (OMi MP for Vertica) works with Operations Manager i (OMi) and enables you to monitor Vertica cluster databases operating in a Big Data environment. The OMi MP for Vertica provides out of the box Management Template for monitoring Vertica databases in a Big Data environment. The Management Template comprises of a wide range of Aspects which enable monitoring the Vertica components. These out of the box Management Templates can be seamlessly deployed by administrators for monitoring Vertica databases in an environment.

Subject matter experts (SMEs) and developers can easily customize the management templates.

The OMi MP for Vertica also provides the following additional functionality to support a unified monitoring solution:

- Configuration Item (CI) based deployment and configuration
- Supports Run Time Service Model (RTSM) based deployment

The OMi MP for Vertica includes the following artifacts for monitoring Vertica databases:

- Vertica Management Templates
- Vertica Aspects
- Policy Templates

These artifacts are parameterized for easy deployment and the parameters can be modified before or after deployment.

Chapter 2: Getting Started

This section provides step by step information about using OMi MP for Vertica for monitoring Vertica cluster databases in a typical environment.

Task 1: Adding Nodes to the BSM 9.2x or OMi 10.x Console

Before you begin monitoring, you need to add the nodes.

1. Open the Monitored Nodes pane:

   On BSM 9.2x, click **Admin > Operations Management > Setup > Monitored Nodes**.

   On OMi 10.x, click **Administration > Setup and Maintenance > Monitored Nodes**.

2. In the Node Views pane, click  and then click **Predefined Node Filters > Monitored Nodes** to open the Create New Monitored Node dialog box.
3. Specify the Primary DNS Name, IP address, Operating System, and Processor Architecture of the node and click **OK**.

Task 2: Deploying the Vertica Discovery Aspect

To discover the Vertica CI on the added managed nodes, you must deploy the Vertica Discovery Aspect.

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > Vertica > Vertica Aspects.

3. In the **Vertica Aspects** folder, right-click the Vertica discovery Aspect, and then click **Assign and Deploy** item to open the Assign and Deploy Wizard.
4. In the **Configuration Item** tab, click the CI to which you want to deploy the Discovery aspect and then click **Next**.
5. Click **Next**.
6. *(Optional.)* If you do not want to enable the assignment immediately, on BSM 9.2x clear the **Enable Assigned Objects** and on OMi 10.x clear the **Enable Assignment(s)** check box. You can then enable the assignment later using the **Assignments & Tuning** pane.
7. Click **Finish**.

Task 3: Deploying Vertica Management Template

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.
2. In the Configuration Folders pane:

   Configuration Folders > Database Management > Vertica > Vertica Management Templates.
3. In the Vertica Management Templates folder, click the management template that you want to deploy, and then click **Assignments & Tuning** pane. The Assign and Deploy Item wizard opens.
4. In the **Configuration Item** tab, click the CI to which you want to assign the management template, and then click **Next**.
5. In the **Required Parameters** tab, you must specify the Vertica Instance User Name and Vertica Instance password,
   a. By default, the list shows only mandatory parameters. To see all parameters, click .
   b. Select the Vertica Instance Name parameter in the list, and then click . The Vertica Instance Name dialog box opens.
   c. By default, the list shows only mandatory parameters. To see all parameters, click the .

d. Select the Vertica Instance User Name parameter in the list, and then click the  . The Vertica Instance User Name dialog box opens.

e. Click **Value**, specify the value, and then click **OK**.

f. Select the Vertica Instance Password parameter in the list, and then click  . The Vertica Instance Password dialog box opens.

g. Click **Value**, specify the value, and then click **OK**.

6. Click **Next**.
7. *(Optional).* If you do not want to enable the assignment immediately, on BSM 9.2x clear the **Enable Assigned Objects** and on OMi 10.x clear the **Enable Assignment(s)** check box. You can then enable the assignment later using the **Assignments & Tuning** pane.
8. Click **Finish**.

> **Note:** The username given during the deployment of a management template must have required privileges for OMi MP for Vertica to collect data.

Chapter 3: Components

The OMi Management Pack for Vertica includes the following components for monitoring Vertica databases:

- Vertica Management Templates
- Vertica Aspects
- Parameters
- Dashboard for Vertica
- Tools

Vertica Management Templates

The Vertica Management Templates provide a complete management solution for monitoring Vertica databases. The management templates comprises of several Aspects which enables you to monitor Vertica databases based on the criticality and type of environment.By default, the OMi MP for Vertica comprises of a set of Management Templates. You can deploy the out-of-the-box management templates with the default settings or you can customize the management templates based on your requirements. In addition, you can also create management templates based on the monitoring requirements.

The OMi MP for Vertica comprises the Essential Vertica Management Template Management Template.

How to Access Vertica Management Template

1. Open Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In Configuration Folders, click **Configuration Folders > Database Management > Vertica > Essential Vertica Management Template**.

Deploying Vertica Management Templates

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > Vertica > Vertica Management Templates.

3. In the Vertica Management Templates folder, click the management template that you want to deploy, and then click **Assignments & Tuning** pane. The Assign and Deploy Item wizard opens.

4. In the **Configuration Item** tab, click the CI to which you want to assign the management template, and then click **Next**.

5. In the **Required Parameters** tab, you must specify the Vertica Instance User Name and Vertica Instance password.

   a. By default, the list shows only mandatory parameters. To see all parameters, click .

   b. Select the Vertica Instance Name parameter in the list, and then click . The Vertica Instance Name dialog box opens.

   c. By default, the list shows only mandatory parameters. To see all parameters, click .

   d. Select the Vertica Instance User Name parameter in the list, and then click . The Vertica Instance User Name dialog box opens.

   e. Click **Value**, type the value, and then click **OK**.

   f. Select the Vertica Instance Password parameter in the list, and then click the . The Vertica Instance Password dialog box opens.

   g. Click **Value**, type the value, and then click **OK**.

6. Click **Next**.

7. *(Optional)*. If you do not want to enable the assignment immediately, clear the **Enable Assigned Objects** check box on BSM 9.2x and clear the **Enable Assignment(s)** check box on OMi 10.x.

You can then enable the assignment later using the Assignments & Tuning pane.

8. Click **Finish**.

> **Note:** The username given during the deployment of a management template must have required privileges for OMi MP for Vertica to collect data. To create a user on the node, you can use the script dbspiocr.sql. This script also contains information about the required list of privileges.

Essential Vertica Management Template

The Essential Vertica Management Template can be used to monitor Vertica cluster databases in an environment. It comprises of essential Vertica Aspects and Infrastructure Aspects for monitoring the availability, health, and performance of Vertica database environments.

You have Vertica databases running in an environment, and want to check the availability, health, and performance of the databases and monitor the Vertica database features - query, sessions, license. In such a scenario, you can deploy the Essential Vertica Management Template on all the Vertica CIs in the environment. The Essential Vertica Management Template comprises specific Aspects to monitor these features.

> **Note:** To use and deploy Infrastructure Aspects, you must install OMi Management Pack for Infrastructure software.

How to Access Essential Management Template

1. Open Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In Configuration Folder, click **Configuration Folders > Database Management > Vertica > Vertica Management Templates > Essential Vertica Management Template**.

User Interface Reference

Management Template - General

Provides an overview of the attributes of the Management Template.

UI Element	Description
Name	Essential Vertica Management Template
Description	Manages Vertica database areas such as availability, query performance, Vertica alerts, database resources, license usage and critical infrastructure areas of CPU, memory and disk.
ID	A unique identifier for this version of the Management Template.
Version ID	A unique identifier for this version of the management template.
Version	The current version of the Management Template. In this instance, the version of the Management Template is 1.0.
Change Log	Text that describes what is new or modified in this version of the management template.

Management Template - Topology View

UI Element	Description
Topology View	**Vertica Database Cluster** is the Topology View for Vertica Management Templates. It contains the Vertica related CI types that you want to manage using the Management Template.
CI Type	The type of configuration items that the Vertica Management Template enables you to manage. This is the type of CI to which the Management Template can be assigned. The Vertica Management Templates contains Vertica Database Cluster CI Type.

Management Template - Aspects

The Vertica Management Template contains the following Aspects:

- Vertica Base
- Vertica Database Alerts
- Vertica Database Availability
- Vertica Database Resource Availability
- Vertica Discovery
- Vertica License Usage
- Vertica Query Performance

- Vertica Session Usage
- Vertica System Infrastructure

The Essential Vertica Management Template contains the following Infrastructure Aspects:

Bandwidth Utilization and Network IOPS

Monitors I/O operations, and performance of the systems in the network. It monitors the network I/O operations and performance based on the bandwidth used, outbound queue length and average bytes transferred per second.

CI Type	Policy Template	Description	Policy Type
Computer	SI-NetworkUsageAndPerformance	This policy monitors the network usage of the system and shows error rates and collisions to identify potential network bottlenecks. This policy template monitors the physical NICs of only the vMA machines. It does not monitor performance data for package collision on the Windows operating system, as the BYNETIF_COLLISION metric is not available on it.	Measurement Threshold Template

CPU Performance

Monitors I/O operations, and performance of the systems in the network. It monitors the network I/O operations and performance based on the bandwidth used, outbound queue length and average bytes transferred per second.

CI Type	Policy Template	Description	Policy Type
Computer	SI-CPUSpikeCheck	This policy template monitors the variation in processor performance. A system experiences CPU spike when there is a sharp rise in the CPU usage immediately followed by a decrease in usage. **SI-CPUSpikeCheck** policy template monitors CPU time spent in user mode and system mode and total CPU time when the CPU is busy.	Measurement Threshold Template

Memory and Swap Utilization

Monitors memory performance of the system. Memory performance monitoring is based on Memory utilization (in percentage), Swap space utilization (in percentage), Free memory available (in MBs) and Free swap space available (in MBs).

CI Type	Policy Template	Description	Policy Type
Computer	SI-MemoryUsageAndPerformance	This policy template monitors the memory usage of the system and shows error rates and collisions to identify potential memory bottlenecks.	Measurement Threshold Template
	SI-SwapcapacityMonitor	This policy template monitors the swap space utilization of the system.	Measurement Threshold Template

Remote Disk Space Utilization

Monitors the space utilization of remote disk.

CI Type	Policy Template	Description	Policy Type
Computer	SI-LinixNFSUtilizationMonitor	This policy template monitors space utilization level for NFS remote filesystems on Linux platforms.	Measurement Threshold Template
	SI-LinuxCIFSUtilizationMonitor	This policy template monitors space utilization level for CIFS remote filesystems on Linux platforms.	Measurement Threshold Template

Space Availability and Disk IOPS

Monitors the disk I/O operations and space utilization of the system.

CI Type	Policy Template	Description	Policy Type
Computer	SI-FileSystemUtilizationMonitor	Monitors the utilization of file systems on the node.	Measurement Threshold Template

System Infrastructure Discovery

Discovers and gathers information regarding the system resources, operating system, and applications on a managed node.

CI Type	Policy Template	Description	Policy Type
Computer	SI-SystemDiscovery	This policy template gathers service information from the managed nodes such as hardware resources, operating system attributes, and applications.	Measurement Threshold Template

> **Note:** The username provided while deploying the management template must contain the required privileges for OMi MP for Vertica to collect data.

Vertica Aspects

Vertica Aspects are used to monitor the building blocks or units of a Vertica database. A Vertica Aspect comprises of policy templates, instrumentation, and parameters for monitoring the health and performance of Vertica databases. Each Vertica Aspect provides the ability to monitor a Vertica CI.

How to Access Vertica Aspects

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.
2. In Configuration Folders, click **Configuration Folders > Database Management > Vertica > Vertica Aspects**.

Creating Vertica Aspects

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.
2. In the Configuration Folders pane, click the configuration folder in which you want to create the new Aspect. If you need to create a new configuration folder, click  .
3. In the Management Templates & Aspects pane, click  , and then click  **Create Aspect**. The Create Aspect wizard opens.
4. In the General page, type a unique **Name** for the new aspect.

   Click **Next**.
5. Each aspect enables you to manage one feature or characteristic of one or more types of CIs. In the **CI Types** page, select one or more **Available CI Type(s)** to which this aspect can be assigned, and then click  to add them to the list of assigned CI types. (Press **CTRL** to select several CI types.)

Click **Next**.

6. In the Instrumentation page, click to add instrumentation to the aspect. The Add Instrumentation dialog box opens, which enables you to select the instrumentation that you want to add.

   Instrumentation consists of one or more programs, which are deployed to nodes on which the Operations Agent is installed. The programs are scripts or executables that can be used by policies.

   Click **Next**.

7. *(Optional).* In the Aspects page, click , and then click **Add Existing Aspect**. The Add Existing Aspect dialog box opens, which enables you to select an existing aspect that you want to nest within this aspect. Click an aspect, and then click **OK**.

   If suitable Aspects do not exist, click , and then click the **Add New Aspect** to create them from here.

   Click **Next**.

8. In the Policy Templates page, click . The Add Policy Template to Aspect dialog box opens. Select the policy templates that you want to add, and then click **OK**. (Press **CTRL** to select several policy templates.)

9. If no suitable policy templates exist:

   a. Click and then select **Add New Policy Template** on BSM 9.2x or**Add New Policy Template from List** on OMi 10.x. The Select New Policy Template dialog box opens.

   b. Select a **Management Template** policy template from the **Type** drop-down list. Click **OK**.

   c. In the Policy Related Information window, specify the **Name** and click **OK**. The policy template is added to the list of existing policy templates.

10. In the Policy Templates page, select the **Version** of the policy templates that you want to add.

    Each modification to a policy template is stored in the database as a separate version. Aspects contain specific versions of policy templates. If a new version of a policy template becomes available later, you have to update the aspect to include the latest version, if that is what you want.

11. *(Optional).* In the Policy Templates page, click the policy template to which you want to add a deployment condition, click , and then click **Edit Deployment Condition**. The Edit Deployment Condition dialog box opens, which enables you to specify deployment conditions for the selected policy template. Set the condition and then click **OK**.

In the Policy Templates page, click **Next**.

12. In the Parameters page, you see a list of all the parameters from the policy templates that you added to this aspect.

    To combine parameters:

    a. Press **CTRL** and click the parameters that you want to combine.

    b. Click . The Edit/Combine Parameters dialog box opens.

    c. Type a **Name** for the combined parameters.

    d. *(Optional).* Specify a **Description**, **Default Value**, and whether the combined parameter is **Read Only**, an **Expert Setting**, or **Hidden**.

       You can set either a specific default value, or you can click **From CI Attribute** and then browse for a CI attribute. When you specify a CI attribute, Operations Management sets the parameter value automatically during deployment of the policy templates, using the actual value of this attribute from the CI. You can also set conditional parameter values here.

       Read Only prevents changes to the parameter value when the aspect is assigned to a configuration item. Hidden also prevents changes, but additionally makes the parameter invisible. Users can choose whether to show expert settings when they make an assignment.

    e. Click **OK**.

    You can also edit the parameters without combining them, to override the defaults in the policy template. Click one parameter, and then click . The Edit/Combine Parameters dialog box opens.

13. In the Create Aspect wizard, click **Finish** to save the aspect and close the wizard. The new aspect appears in the Management Templates & Aspects pane.

Deploying Vertica Aspects

> **Note:** Developers can deploy Aspects only for testing. If you want to monitor an application or service, deploy a management template.

1. Open the Management Templates & Aspects pane:

On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects > Configuration Folders > Database Management > Vertica > Vertica Aspects**.

On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects > Configuration Folders > Database Management > Vertica > Vertica Aspects**.

2. In the Management Templates & Aspects pane, click the aspect that you want to deploy, and then click  . The Assign and Deploy wizard opens.
3. In the **Configuration Item** tab, click the configuration item to which you want to assign the aspect, and then click **Next**.
4. In the **Required Parameter** tab, specify a value for each parameter:
   a. *(Optional).* By default, the list shows only mandatory parameters. To see optional parameters, click  . You can also click  **Show Expert Parameters** to see expert parameters.
   b. Select a parameter in the list, and then click  . The Edit Parameter dialog box opens.
   c. Click **Value**, specify the value, and then click **OK**.

   Click **Next**.
5. *(Optional)*. If you do not want to enable the assignment immediately, clear the **Enable Assigned Objects** check box on BSM 9.2x or clear the **Enable Assignment(s)** check box on OMi 10.x. You can then enable the assignment later using the Assignments & Tuning pane.
6. Click **Finish**.

List of Vertica Aspects

Vertica Aspects are used to monitor the building blocks or units of a Vertica database - query, sessions ,alerts, and database resources. A Vertica Aspect comprises of policy templates, instrumentation, and parameters for monitoring the health and performance of Vertica databases. Each Vertica Aspect provides the ability to monitor a Vertica configuration item (CI).

User Interface Reference

General	Provides an overview of the general attributes of the Vertica Aspects.
CI Type	The type of CIs that the Vertica Aspects can be assigned to. This is the

	type of CI to which the management template can be assigned. The Vertica Aspects contain the Vertica Database Cluster CI type.
Instrumentation	It is a single package which contains the binaries for discovery, collection, and data logging. In this case, Vertica_Monitoring is the instrumentation file.
Aspects	Provides an overview of any Aspects that the Vertica Aspect contains. You can expand each item in the list to see more details about the nested aspect. The Vertica Base Aspect is part of all the other Aspects.
Policy Templates	Provides an overview of the policy templates that the Vertica Aspect contain. You can expand each item in the list to see more details about the policy template.

The OMi MP for Vertica comprises of the following Aspects:

Vertica Database Alerts

This Aspect forwards the alerts and tuning recommendations coming from Vertica. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_Alerts	Monitors Vertica generated alerts.	ConfigFileTemplate
	Vertica_TuningTips	Monitors Vertica tuning recommendations.	ConfigFile Template

Vertica Database Availability

This Aspect monitors the Vertica Database Node Availability, Critical Nodes Status, and Processes. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ AviDbnode	Monitors the available database node name.	Measurement Threshold Template
	Vertica_ CrtclDbNode	Monitors the critical database node name.	
	Vertica_ ProcStatus	Monitors the vertica processes (status,spread).	

Vertica Database Resource Availability

This Aspect monitors the Vertica Database Resources such as Resource Queue and Locks, Disk Resource. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ DiscRsrcRjctnCnt	Monitors the number of disk resource rejection.	Measurement Threshold Template
	Vertica_LockCnt	Monitors the number of queries that are locked.	
	Vertica_LocksInfo	Monitors Vertica locks information.	
	Vertica_ MemoryUtilPerPool	Monitors the percentage of memory utilization per resource pool.	
	Vertica_ RsrcCntInQueue	Monitors the number of resources that are in queue.	
	Vertica_ RsrcRejectionCnt	Monitors the number of resource rejection.	

Vertica Discovery

This Aspect discovers the Vertica database clusters and nodes running in the environment. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Computer, Vertica	Vertica Discovery	Discovers Vertica instances in the environment.	Service-Auto Discovery Template

Vertica License Usage

This Aspect monitors the license usage of Vertica databases. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ LicenseStatus	Monitors Vertica license status.	ConfigFile Template
	Vertica_ LicenseUsagePct	Monitors the percentage of Vertica license usage.	Measurement Threshold Template

Vertica Query Performance

This Aspect monitors the Vertica Query Performance metrics - Long Running Query, Workload and distribution. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ LngRuninQuryMon	This policy template collects the time required for a long running query.	Measurement Threshold Template
	Vertica_ ParallelQueryCnt	This policy template monitors the number of queries running in parallel.	

Vertica Session Usage

This Aspect monitors the session usage of Vertica databases. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ SessionCntPct	Monitors the percentage of session count.	Measurement Threshold Template

Vertica System Infrastructure

This Aspect monitors the system infrastructure health - Disk Utilization, CPU, IO, Network and Memory usage of the Vertica nodes. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ AvgCpuUsagePct	Monitors the percentage of average CPU usage.	ConfigFile Template
	Vertica_ AvgMmryUsagePct	Monitors the percentage of average memory usage.	Measurement Threshold Template
	Vertica_ FreeDskSpcPct	Monitors the percentage of available disk space.	
	Vertica_IOUsage	Monitors the IO usage.	ConfigFileTemplate
	Vertica_ NwBndwidthUsage	Monitors the network bandwidth usage (transfer, receive, kbytes/sec).	ConfigFileTemplate

Vertica Base

This Aspect is the base for monitoring Vertica database. It contains the configuration and scheduler policies. It contains the following policy templates:

CI Type	Policy Template	Policy Description	Policy Type
Vertica	Vertica_ Configuration	Vertica Configuration	ConfigFile Template
	Vertica_High	Runs JDBC collector every high schedule.	Scheduled Task Template
	Vertica_Low	Runs JDBC collector every low schedule.	
	Vertica_ Medium	Runs JDBC collector every medium schedule.	
	Vertica_ VeryHigh	Runs JDBC collector every high schedule.	
	Vertica_Log	Monitors the Vertica log file.	Logfile Entry Template
	Vertica_ Messages	Interception of messages submitted by Vertica programs.	Open Message Interface Template

Parameters

Parameters are variables that are an integral component of Vertica Management Templates, Vertica Aspects, and Policy Templates. Each parameter corresponds to a variable. Parameters contain default values that are used for monitoring the different components of Vertica databases. You can also modify the values of the variables to suit your monitoring requirements.

Types of Parameters

The parameters are grouped as follows:

Mandatory Parameters - These parameters contain the essential information required by policy templates. For example, Vertica instance name is a mandatory parameter.

Expert Parameters - These parameters can be used by SMEs and Administrators.

Vertica Parameters

OMi MP for Vertica contains the following generic parameters:

Parameter	Parameter Type	Description	Default Value
Vertica Instance Host Name	N/A	Vertica Instance Name where Vertica instance is running.	
Vertica Instance	Mandatory	Name of the Vertica instance.	CI.name
Vertica Instance User Name	Mandatory	Vertica User Name with the required privileges for OMi MP for Vertica to collect data.	
Vertica Instance Password	Mandatory	Password for Vertica User Name.	***
Vertica JDBC Connection URL	Mandatory	JDBC Connection URL for Vertica.	Database_ dbconnectstring

Parameter	Parameter Type	Description	Default Value
Frequency of High Scheduler	Expert	Frequency for the scheduler which is expected to run for high intervals (in minutes).	15
Frequency of Low Scheduler	Expert	Frequency for the scheduler which is expected to run for short intervals (in hours).	24
Frequency of Medium Scheduler	Expert	Frequency for the scheduler which is expected to run for medium intervals (in hours).	1
Frequency of Very High Scheduler	Expert	Frequency for the scheduler which is expected to run for very high intervals (in minutes).	5
Frequency of Vertica log	N/A	Frequency for monitoring Vertica log with defined patterns.	1 minute
Frequency	N/A	Frequency of monitoring Vertica metrics by a policy template. For example, the frequency of monitoring Vertica Database availability.	
Threshold	N/A	Threshold of a policy template. For example, the threshold of monitoring available database nodes.	
Severity	N/A	Severity level of a policy template. For example, the severity of monitoring critical database nodes	

Parameter	Parameter Type	Description	Default Value
		count.	
Vertica Log Path	N/A	Vertica log file path for the Vertica instance.	Vertica_Log - l
Vertica Port Number	N/A	The port number used by the Vertica instances	CI.appllication_port

Note: The frequency, threshold, and severity parameters are defined for each policy template. For example, the Vertica_AvlDbNode policy template contains the following parameters:

- Frequency of monitoring Vertica database availability
- Threshold of monitoring Vertica database availability
- Severity of monitoring Vertica database availability

Tuning Parameters

You can edit the parameters of the Vertica Management Templates that are already deployed to the CIs.

1. Open the Assignments & Tuning pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Assignments & Tuning**.

   On OMi 10.x, click **Administration > Monitoring > Assignments & Tuning**.

2. In the **Browse Views** tab, select the Vertica Database Cluster that contains the CI for which you want to tune parameters. Alternatively, you can use the **Search** tab to find a CI.
3. In the list of Vertica CIs, click a CI. The Assignments pane shows details of any existing assignments for the Vertica CI.
4. Click the assignment for which you want to tune parameters. The Details of Assignment pane shows the current parameter values.
5. In the Assignment Details pane, change the parameters:
   a. *(Optional.)* By default, the list shows only mandatory parameters. To see all parameters, click 

b. Select a parameter in the list, and then click  .

- For standard parameters, the Edit Parameter dialog box opens.

  Click **Value**, type the value, and then click **OK**.

- For instance parameters, the Edit Instance Parameter dialog box opens.

  Change the instance values if necessary, and then for each instance value, change dependent parameter values. After you change the instances and dependent parameter values, click **OK**.

6. Operations Management deploys the new parameter values to the relevant Operation Agents.

Tools

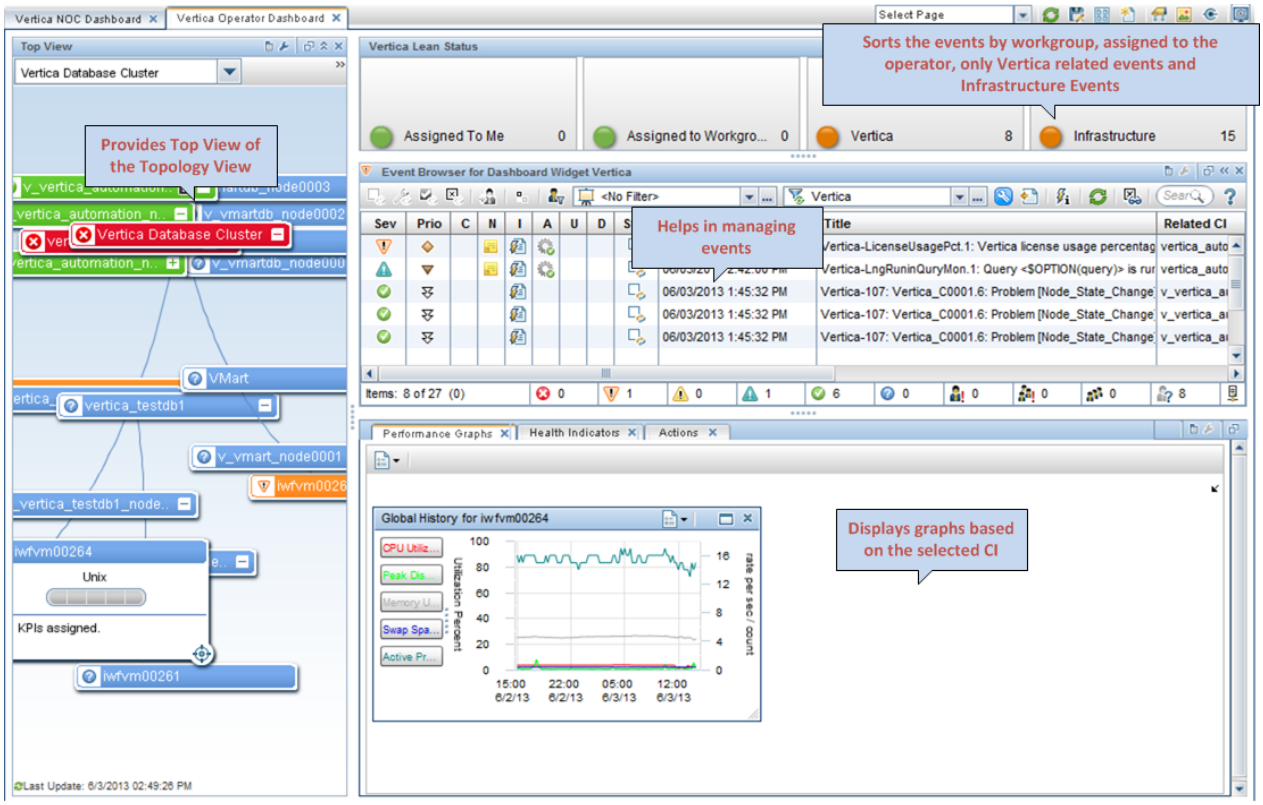
The OMi MP for Vertica is packaged with tools which enable administering and monitoring the Vertica CIs. It comprises the following tools:

Tool	Description
Start Vertica Monitoring	Starts Vertica monitoring on the managed node.
Stop Vertica Monitoring	Stops Vertica monitoring on the managed node.
Restart Vertica Monitoring	Restarts Vertica monitoring on the managed node.

Chapter 4: Dashboard for Vertica

Dashboard for Vertica on OMi is a platform for monitoring Vertica database cluster and its nodes. It is used to manage alerts, view metrics, filter events based on Vertica Topology view, and drill down to the cause of the problem. It provides an overview of the overall state of the Vertica database cluster and its nodes.

The following figure shows the **Vertica Operator Dashboard**.



Monitoring Vertica

Vertica database cluster performs distributed data storage and SQL statement execution. Vertica provides workload management scheme to enable concurrent workloads to run efficiently against the database.

Vertica includes monitoring of individual elements such as:

- System Resources
- Vertica Database

Vertica monitoring requires Metrics collection, such as system and service metrics, from the nodes in any cluster to know the health of the Vertica cluster. The data is also used for generating alerts and correlating events to find the root cause of problems.

Key features of Dashboard for Vertica

- Capability to drill down into performance problems, reported events, and metrics.
- Real time health and topology of the Vertica environment.

Creating Dashboard for Vertica in MyBSM

You can use MyBSM tools to create a customized dashboard view of your environment.

To create an Event Dashboard page using BSM 9.2x, see ***User Guide > Operations Management > Event Dashboards > How to Create an Event Dashboard Page in MyBSM*** in the *Business Service Management Online Help*.

To create an Event Dashboard page using OMi 10.x, see ***User Guide > My Workspace > Dashboard > Monitoring Dashboard > How to Create a Monitoring Dashboard Page in MyWorkspace*** in the *Operations Manager i Online Help*.

Viewing Dashboard for Vertica

To view the Vertica Dashboard, follow these steps:

1. Open the Dashborad pane:

   On BSM 9.2x, click **MyBSM**.

   On OMi 10.x, click **Workspaces > My Workspace > Dashboards > Monitoring Dashboard**.
2. Click *Vertica NOC Dashboard* or *Vertica Operator Dashboard* from the **Select Page** drop down list.

User Permissions

To access user-defined pages, you must have certain permissions.

For more information about setting up a dashboard in BSM 9.2x, see ***User Guide > MyBSM > How to Set Up the MyBSM Workspace > User Permissions in MyBSM*** in the *Business Service Management Online Help*.

For more information about setting up a dashboard in OMi 10.x, see ***User Guide > My Workspace > How to Set Up My Workspace > User Permissions in Workspaces*** in the *Operations Manager i Online Help*.

Dashboard View

The OOTB dashboard is designed for Operators and IT Administrators. These dashboards can be customized based on your requirements.

- **Dashboard for Operator**

  Vertica Operator Dashboard provides an overview of the alerts generated for your Vertica cluster. To view the dashboard, perform the following steps:

  On BSM 9.2x, click **MyBSM > Select Page** (drop-down list) **> Vertica Operator Dashboard**.

  On OMi 10.x, click **Workspaces > My Workspace > Dashboards > Monitoring Dashboard > Select Page** (drop-down list) **> Vertica Operator Dashboard**.

  Components on the Vertica Operator Dashboard are as follows:

  - Top View
  - Events Browser
  - Performance Graphs
  - Health Indicators
  - Actions
  - Lean Status Bar

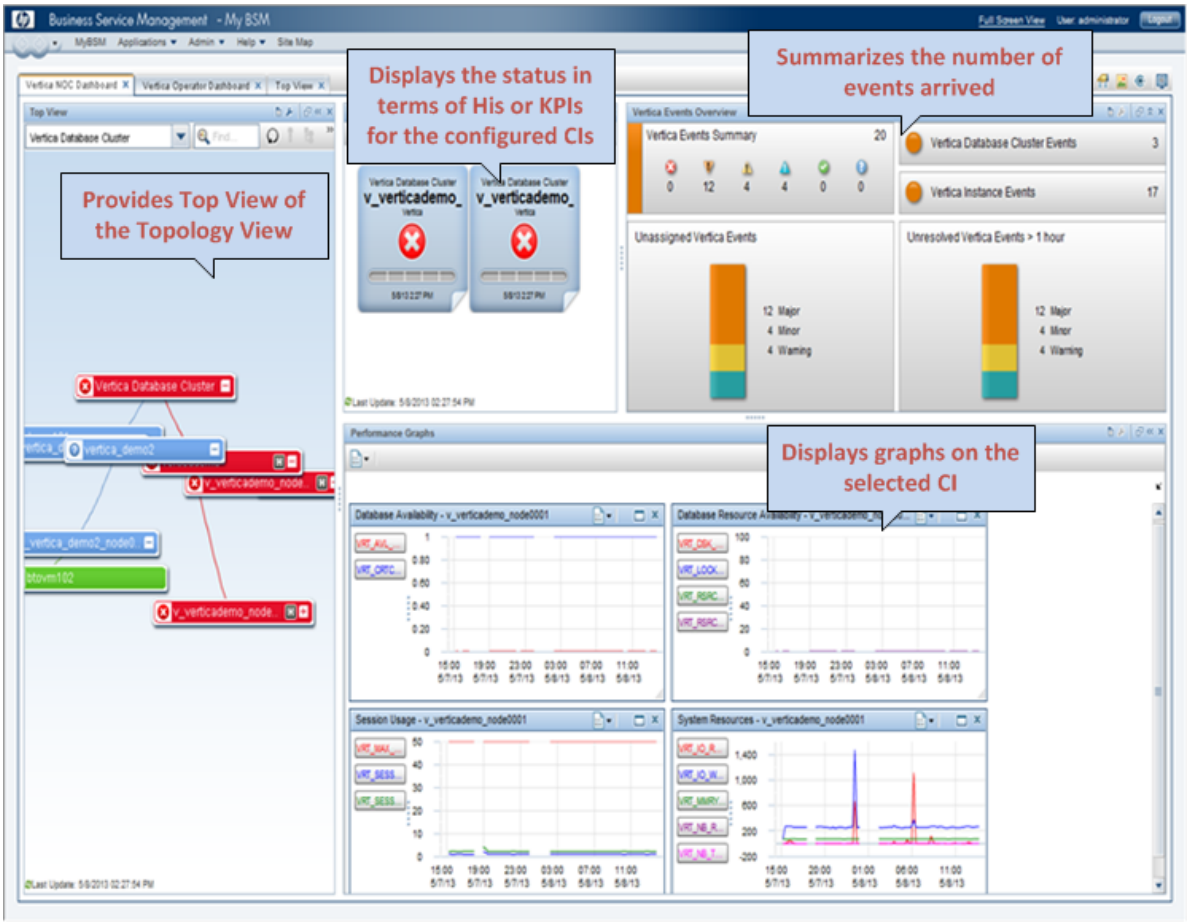
- **NOC Dashboard for IT Administrators**

  Network Operation Center (NOC) Dashboard provides an overall view of the health of the environment. To view the dashboard, perform the following steps:

  On BSM 9.2x, click **MyBSM > Select Page** (drop-down list) **> Vertica NOC Dashboard**.

  On OMi 10.x, click **Workspaces > My Workspace > Dashboards > Monitoring Dashboard > Select Page** (drop-down list) **> Vertica NOC Dashboard**.

  The following figure shows the Vertica NOC Dashboard:



Components on the Vertica NOC Dashboard are as follows:

- Top View
- Event Dashboard
- Performance Graphs
- Watch list for Vertica CIs such as NAMENODE and JOBTRACKER

Filters

Filters enable you to display events based on the selection of Vertica Topology View. You can apply filter in the Event Browser to limit the number of events arrived. To define a filter in the Event Browser, select the **<No Filter>** drop down list or **Manage Event Filters** dialog box.

You can filter events based on the view and CI type. Vertica Dashboard consists of the following OOTB filters:

- Filter based on View:
  - Vertica Database Cluster
- Filter based on CI Type:
  - Vertica Database Cluster Events
  - Vertica Instance Events

Using Vertica Dashboard

Vertica Dashboard is installed as a part of the OMi Content Pack for Vertica.

The **Top View** on the dashboard provides the complete topology of the Vertica cluster and the connected nodes.

The **Vertica Events Overview** window is the central console for all the events arriving for Vertica Configuration Items (CIs). By default, it displays the events that are filtered, based on the Vertica Topology view. In the context of an event, the Health Indicators (HIs), Actions, and Performance Graphs tabs are refreshed. In the context of an event from the pop-up menu, the operator can drill down into details, launch the graphs for detailed analysis of the problem, and manage events. For more information, see *Event Browser* section in the *Business Service Management Concepts Guide* and *Operations Manager i Concepts Guide*.

The **Watch list** tab helps you to configure the most critical CIs.

The **Performance Graphs** tab displays the default graphs and helps in drill down and analysis of the data.

Components of Vertica Dashboard

Vertica Dashboard consists of the following components:

- **Top View:** Provides the top view of the Vertica topology view.
- **Event Summary:** Summarizes the number of events arriving for Vertica elements. The events are filtered based on the Vertica view.
- **Event Browser:** Event Browser helps in managing events and for drill down into problems.
- **Performance Graphs:** Displays graphs for Vertica, based on the CI selected in the Top View.

- **Lean Status Bar:** It helps the operator to sort the events by workgroup, assigned to the operator, only Vertica - related events, and infrastructure events.
- **Watch list:** Watch list shows the status in terms of HIs or Key Performance Indicators (KPIs) for the configured CIs. You can configure the Watch list by selecting the CIs from the Top View.

  For more information on the above components, see the *OMi Online Help*.

> **Note:** The Out-Of-the-Box (OOTB) components do not include **Watch list** as it needs actual CIs. Customize the Watch list after installing the OMi Content Pack for Vertica and the dashboard files.

Chapter 5: Customizing OMi MP for Vertica

OMi MP for Vertica can be customized to suit your monitoring requirements. You can edit the existing Vertica Management Templates or create new Vertica Management Templates to monitor any database environment.

Customizing OMi MP for Vertica before Deployment

You can customize OMi MP for Vertica to optimally and seamlessly monitor the Vertica databases in your environment. OMi MP for Vertica provides the following customization scenarios:

- Editing Vertica Management Templates
- Creating Vertica Management Templates

Editing Vertica Management Templates

You can edit the Vertica Management Templates to modify the following:

- Parameters
- Aspects

Editing Parameters

Use Case: You are using Essential Vertica Management Template to monitor Vertica databases in your environment. You are monitoring the resource availability in the environment and want to modify the corresponding parameters.

To closely monitor the resource availability in your environment, you must modify the parameters - frequency of monitoring resources, threshold of monitoring resource pool, and severity of monitoring resource pool.

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folders pane:

   Configuration Folders > Database Management > Vertica > Vertica Management Templates > Vertica Management Template.

3. Select the **Vertica Management Template** from the list, and then click  . The Edit Management Template dialog box opens.
4. Click the **Parameters** tab. The list of parameters appear.
5. Double-click the corresponding parameter. The Edit/Combine Parameters window appears.
6. You can change the default value by using the drop down text.
7. Click **OK**. The Edit Management Template dialog box opens.
8. Click **OK**. The version of the Vertica Management Template is incremented.

> **Note:** The version number of the Vertica Management Template is incremented when any customizations are made to the Vertica Management Template.

Editing Aspects

Use Case: You are using Essential Vertica Management Template and do not want to use some Aspects which are part of the Management Template.

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.

2. In the Configuration Folder pane:

   Configuration Folders > Database Management > Vertica > Vertica Management Templates > Essential Vertica Management Template.

3. Select the **Essential Vertica Management Template** from the list, and then click . The Edit Management Template dialog box opens.
4. Click the **Aspects** tab. The list of Aspects appear.
5. Select the Aspect that you want to delete from the list. For example, you want to delete the Vertica Session Usage Aspect.
6. Click to delete the selected Aspect.
7. Click **OK**. The version of the Vertica Management Template is incremented.

Creating Vertica Management Templates

1. Open the Management Templates & Aspects pane:

   On BSM 9.2x, click **Admin > Operations Management > Monitoring > Management Templates & Aspects**.

   On OMi 10.x, click **Administration > Monitoring > Management Templates & Aspects**.
2. In the Configuration Folders pane:

   Configuration Folders > Database Management > Vertica.
3. Select the Vertica configuration folder and if you need to create a new configuration folder, click . The Create Configuration Folder opens.
4. Type the name of the new configuration folder and the description. For example, you can type the new configuration folder name as Test.
5. Click **OK**. The new configuration folder is created.

   Configuration Folders > Database Management > Vertica > Test.
6. In the Management Templates & Aspects pane, select the new configuration folder and click and then click **Management Template**. The Create Management Template wizard opens.
7. In the **General** tab, type a **Name** for the new Vertica management template.

   Click **Next**.
8. An Vertica management template enables you to manage Vertica configuration items and all the related dependent CIs. Select from the list as the Topology View.
9. Click an item in the topology map to select the **CI Type** of the configuration items that this

management template enables you to manage. This is the type of CI to which the management template can be assigned. For example, you can select Vertica to monitor Vertica databases.

Click **Next**.

10. In the **Aspects** tab, click , and then click **Add Existing Aspect** to add existing Aspects to the new Vertica Management Template. The Add Existing Aspect dialog box opens. Select the Aspects that you want to add, and then click **OK**.

    If suitable Aspects do not exist, click the , and then click **Add New Aspect** to create them from here.

11. For each aspect that you add, you must specify at least one **Target CI**.

    Click an aspect in the list, and then in the topology map click the CI types you want the aspect to monitor when this management template is assigned. (Press **CTRL** to select several CI types.) Each CI type that you select here must correspond to one of the CI types assigned within the aspect itself (or a child of one of those CI types). For example, you can select Vertica CI from the topology map.

12. In the **Parameters** tab, you see a list of all the parameters from the aspects that you added to this management template.

    To combine parameters:

    a. Press **CTRL** and click the parameters that you want to combine.

    b. Click the . The Edit/Combine Parameters dialog box opens.

    c. Type a **Name** for the combined parameters.

    d. *(Optional.)* Specify a **Description**, **Default Value**, and whether the combined parameter is **Read Only**, an **Expert Setting**, or **Hidden**.

       You can specify either a specific default value, or you can click **From CI Attribute** and then browse for a CI attribute. When you specify a CI attribute, Operations Management sets the parameter value automatically during the deployment of the underlying policy templates, using the actual value of this attribute from the CI. You can also change values of conditional parameters. (The conditions are read-only and cannot be changed at management template level.)

       Read Only prevents changes to the parameter value when the management template is assigned to a configuration item. Hidden also prevents changes, but additionally makes the parameter invisible when the management template is assigned, and during parameter tuning.

Users can choose whether to show expert settings when they make an assignment.

e. Click **OK**.

You can also edit the parameters without combining them, to override the defaults in the aspects or policy templates. Click one parameter, and then click . The Edit/Combine Parameters dialog box opens.

13. In the Create Management Template wizard, click **Finish** to save the management template and close the wizard. The new management template appears in the Management Templates & Aspects pane.

Appendix A: Data Source and Metrics

The following table provides information about the metrics that are logged into the data source:

Data source Name: VERTICA_DATA

Class Name	Data Type	Category Type	Metric Name	Metric Label
VERTICA_METRICS	KEY	UTF8	VRT_DB_NAME	Cluster Name
VERTICA_METRICS	GGE	R64	VRT_PRLL_QURY_CNT	Parallel Query Count
VERTICA_METRICS	GGE	R64	VRT_LIC_USAGE	License Util
VERTICA_METRICS	GGE	R64	VRT_DATA_SIZE_TB	Used Data Size (TB)
VERTICA_METRICS	GGE	R64	VRT_LIC_SIZE_TB	License Size(TB)
VERTICA_METRICS	GGE	R64	VRT_TRNSCTION_CNT	Total Trans Count
VERTICA_METRICS	GGE	R64	VRT_UTILITY_CNT	Total Utility Count
VERTICA_METRICS	GGE	R64	VRT_QUERY_CNT	Total Query Count
VERTICA_NODE_ STATUS	KEY	UTF8	VRT_DBNODE_ INSTANCE	Node Instance Name
VERTICA_NODE_ STATUS	GGE	R64	VRT_AVL_NODE	Available
VERTICA_NODE_ STATUS	GGE	R64	VRT_CRTCL_NODE	Critical
VERTICA_DB_ METRICS	KEY	UTF8	VRT_DBNODE_ INSTANCE	Node Instance Name
VERTICA_DB_ METRICS	GGE	R64	VRT_SESSION_CNT_ PCT	Session Util
VERTICA_DB_ METRICS	GGE	R64	VRT_SESSION_CNT	Session Count
VERTICA_DB_ METRICS	GGE	R64	VRT_MAX_SESSION	Max Sessions
VERTICA_DB_ METRICS	GGE	R64	VRT_RSRC_CNT	Resource Count

Class Name	Data Type	Category Type	Metric Name	Metric Label
VERTICA_DB_METRICS	GGE	R64	VRT_LOCK_CNT	Lock Count
VERTICA_DB_METRICS	GGE	R64	VRT_RSRC_RJCT_CNT	Rsrc Rejection Count
VERTICA_DB_METRICS	GGE	R64	VRT_DSK_RS_RJCT_CNT	Dsk Rsrc Rjction Cnt
VERTICA_DB_METRICS	GGE	R64	VRT_CPU_USAGE	CPU Util
VERTICA_DB_METRICS	GGE	R64	VRT_IO_READ_KB_SEC	IO Read(Kb/Sec)
VERTICA_DB_METRICS	GGE	R64	VRT_IO_WRITE_KB_SEC	IO Write(Kb/Sec)
VERTICA_DB_METRICS	GGE	R64	VRT_NB_TX_KB_SEC	NB Transfer (Kb/Sec)
VERTICA_DB_METRICS	GGE	R64	VRT_NB_RX_KB_SEC	NB Receive (Kb/Sec)
VERTICA_DB_METRICS	GGE	R64	VRT_MMRY_USAGE	Memory Util
VERTICA_POOL_METRICS	KEY	UTF8	VRT_NODE_POOL	Node/Pool Name
VERTICA_POOL_METRICS	ATT	UTF8	VRT_DBNODE_INSTANCE	Node Instance Name
VERTICA_POOL_METRICS	ATT	UTF8	VRT_POOL_NAME	Resource Pool Name
VERTICA_POOL_METRICS	GGE	R64	VRT_RSRC_UTIL	Mmry Util/Pool
VERTICA_POOL_METRICS	GGE	R64	VRT_USD_POOL_MMRY_GB	Mmry Used/Pool (GB)
VERTICA_POOL_METRICS	GGE	R64	VRT_POOL_MMRY_GB	Total Mmry/Pool (GB)
VERTICA_STRG_METRICS	KEY	UTF8	VRT_NODE_STORAGE	Node/Storage Path
VERTICA_STRG_METRICS	ATT	UTF8	VRT_DBNODE_INSTANCE	Node Instance Name

Class Name	Data Type	Category Type	Metric Name	Metric Label
VERTICA_STRG_ METRICS	ATT	UTF8	VRT_STORAGE_PATH	Storage Path
VERTICA_STRG_ METRICS	ATT	UTF8	VRT_STORAGE_ USAGE	Storage Usage
VERTICA_STRG_ METRICS	GGE	R64	VRT_USED_DISK_GB	Usage Dsk Space (GB)
VERTICA_STRG_ METRICS	GGE	R64	VRT_FREE_DISK_GB	Free Dsk Space (GB)
VERTICA_STRG_ METRICS	GGE	R64	VRT_DISK_UTIL	Disk Util
VERTICA_LONG_ TRANS	KEY	UTF8	VRT_DB_POOL	Cluster/Pool Name
VERTICA_LONG_ TRANS	ATT	UTF8	VRT_DB_NAME	Cluster Name
VERTICA_LONG_ TRANS	GGE	R64	VRT_DURATION_SEC	Query Duration (Sec)
VERTICA_LONG_ TRANS	ATT	UTF8	VRT_NODE	Node Instance Name
VERTICA_LONG_ TRANS	ATT	UTF8	VRT_QUERY	Long Running Query
VERTICA_LONG_ TRANS	ATT	UTF8	VRT_RSRC_POOL	Resource Pool Name

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We appreciate your feedback!