



Veeam ONE

Version 10a

Monitor User Guide

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Contacting Veeam Software

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Should you have a technical concern, suggestion or question, visit the Veeam Customer Support Portal at www.veeam.com/support.html to open a case, search our knowledge base, reference documentation, manage your license or obtain the latest product release.

Company Contacts

For the most up-to-date information about company contacts and offices location, visit www.veeam.com/contacts.html.

Online Support

If you have any questions about Veeam products, you can use the following resources:

- Full documentation set: www.veeam.com/documentation-guides-datasheets.html
- Community forum at forums.veeam.com

About This Document

This document provides information about Veeam ONE Monitor. The document includes configuration details and information about capabilities that Veeam ONE Monitor offers for Veeam Backup & Replication, VMware vSphere and Microsoft Hyper-V infrastructures.

This document does not include information about working with Veeam ONE alarms. For more information on configuring and using Veeam ONE alarms, see [Veeam ONE Working with Alarms Guide](#).

Intended Audience

The guide is designed for anyone who plans to use the Veeam ONE solution. It is primarily aimed at administrators managing Veeam Backup & Replication, VMware vSphere and Microsoft Hyper-V environments, but can also be helpful for other current and perspective Veeam ONE users.

About Veeam ONE Monitor

Veeam ONE Monitor comes as a part of the integrated Veeam ONE solution. It is the primary tool for monitoring Veeam Backup & Replication, VMware vSphere, and Microsoft Hyper-V environments. Veeam ONE Monitor provides complete visibility of the virtual and backup infrastructure and allows you to:

- Manage, view and interact with alarms and monitoring data
- Analyze performance of virtual and backup infrastructure objects
- Keep an eye on multi-tenant environments
- Track the efficiency of data protection in the virtual environment
- Generate reports and administer monitoring settings
- Speed up troubleshooting and quickly isolate root causes of performance issues before they become problems.

With Veeam ONE Monitor, you can monitor the virtual and backup environment from different perspectives:

- **Virtual infrastructure monitoring**

Veeam ONE Monitor discovers the virtual infrastructure and provides complete visibility of its health status and performance. With predefined and custom alarms, performance charts, dashboards, reports, and an extensive knowledge base, you can always stay aware of the important events and eliminate potential problems in the virtual environment.

- **vCloud Director monitoring**

Veeam ONE Monitor provides monitoring capabilities for multi-tenant clouds provisioned with VMware vCloud Director. A comprehensive view of cloud resources allows you to sustain consistent processes for vCloud Director operational framework and maintain established service levels.

- **Business view monitoring**

Veeam ONE Monitor allows you to monitor and alert on the virtual infrastructure presented from the business perspective – the perspective that is based on your company needs and priorities. You can group virtual infrastructure objects by such criteria as business unit, department, purpose, SLA and so on.

- **Data protection monitoring**

Veeam ONE integrates with Veeam Backup & Replication to collect real-time statistics from backup servers. You can track the latest status of data protection operations in the managed environment, receive immediate alarms whenever a potential problem can cause data loss, monitor performance of backup infrastructure components to optimize workloads, and plan capacity of backup infrastructure resources.

Accessing Veeam ONE Monitor

To access Veeam ONE Monitor:

1. Log on to the machine where Veeam ONE Monitor Client is installed.
2. From the Microsoft Windows Programs menu, choose **Veeam ONE Monitor**.
3. In the authentication window, specify the FQDN or IP address of a server where the Veeam ONE Server component runs and enter the credentials of the account used to connect to Veeam ONE Monitor. To connect using credentials of the account under which you are logged on to the machine, select the **Use Windows session authentication** check box.

The user account must either:

- Be a member of the *Veeam ONE Administrators* or *Veeam ONE Read-Only Users* group. For more information on user groups, see section [Security Groups](#) of the Veeam ONE Deployment Guide.
This prerequisite applies both to the VMware vSphere and Microsoft Hyper-V platforms.
- Have permissions assigned to objects in the vCenter Server or vCloud Director inventory hierarchy. For more information on assigning permissions to objects, see [Veeam ONE Multi-Tenant Monitoring and Reporting](#).
This prerequisite applies to the VMware vSphere platform only.

4. Click **Connect**.

Other Ways to Access Veeam ONE Monitor

To gain a faster access to Veeam ONE Monitor, you can launch it without providing user credentials in the authentication window.

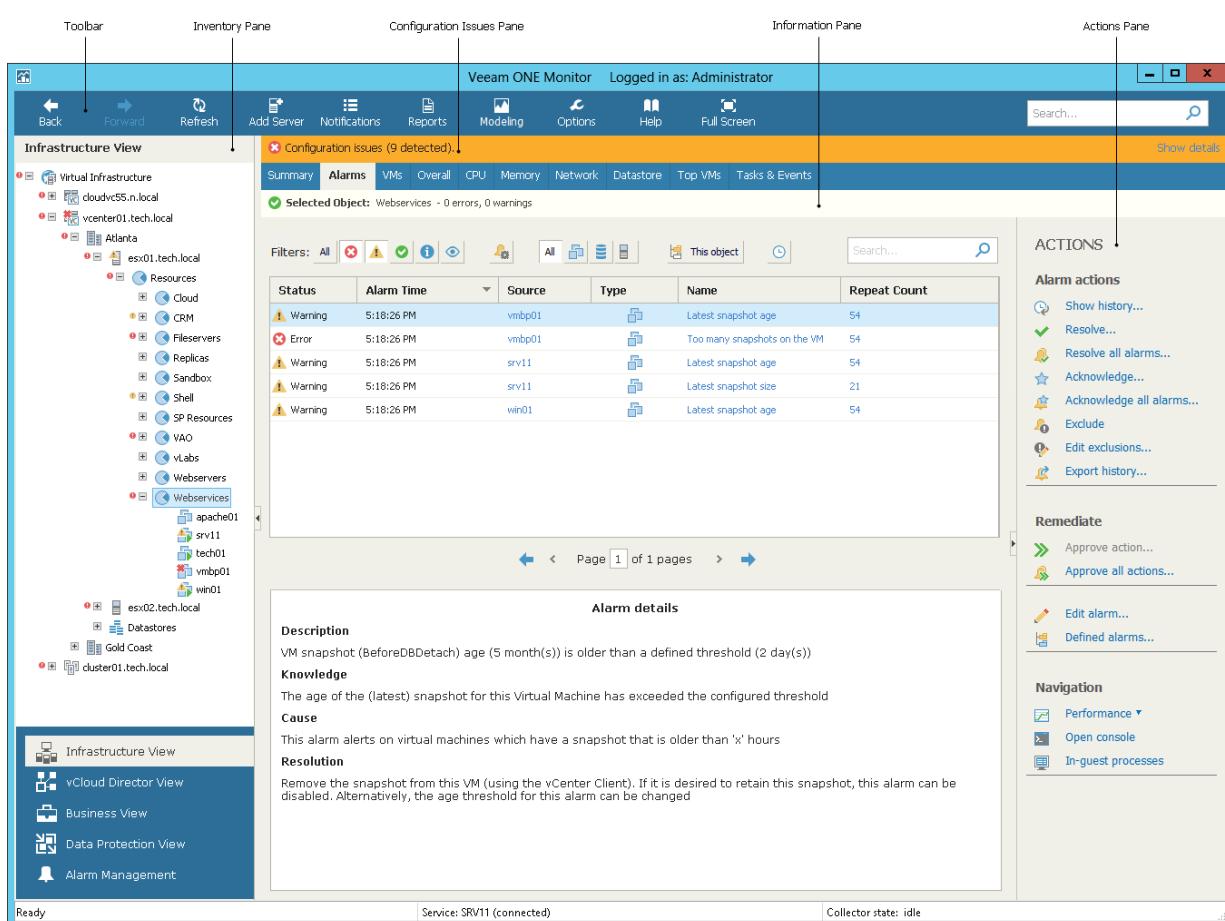
- To launch Veeam ONE Monitor under the account of a user that is currently logged to the machine, in the command shell call the `Monitor.exe` file that resides in the installation directory and pass the `/currentuser` parameter. For example:
`"C:\Program Files\Veeam\Veeam ONE\Veeam ONE Monitor Client\Monitor.exe"`
`/currentuser`
- To launch Veeam ONE Monitor with explicit user credentials, in the command shell call the `Monitor.exe` file that resides in the installation directory and pass the `/username` and `/password` parameters. For example:
`"C:\Program Files\Veeam\Veeam ONE\Veeam ONE Monitor Client\Monitor.exe"`
`/username tech\john.smith /password PaSSw0rd`

You can save this set of commands as a Windows shortcut and use it to quickly access Veeam ONE Monitor.

Veeam ONE Monitor User Interface

Veeam ONE Monitor user interface is designed to let you quickly locate the required commands, facilitate monitoring of your infrastructure and speed up the investigation and troubleshooting process. This section describes the basic elements and features of the Veeam ONE Monitor user interface:

- [Toolbar](#)
- [Inventory Pane](#)
- [Information Pane](#)
- [Actions Pane](#)
- [Configuration Issues Pane](#)
- [System Tray Icon](#)
- [Full Screen Mode](#)



Toolbar

Veeam ONE Monitor toolbar provides access to frequently used commands.

- **Back/Forward** – navigate to the previous/next visited view in the Veeam ONE Monitor console.
- **Refresh** – retrieve the latest collected data from the Veeam ONE Monitoring Server to show up-to-date information in the Veeam ONE Monitor console. To perform this command, you can also press [F5] on the keyboard.
- **Add Server** – connect a new virtual infrastructure server, vCloud Director, or Veeam Backup & Replication server. To perform this command, you can also press [CTRL+I] on the keyboard.
For more information on connecting servers, see section [Connecting Servers](#) of the Veeam ONE Deployment Guide.
- **Notifications** – open the Veeam ONE Monitor Configuration Wizard.
For more information on configuring notifications, see section [Configuring Notification Settings](#) of the Veeam ONE Deployment Guide.
- **Reports** – create a report for an infrastructure object selected in the inventory pane.
For more information on creating reports, see [Generating Reports](#).
- **Modeling** – forecast the number of alarms that will be triggered for an infrastructure object selected in the inventory pane.
For more information on alarm modeling, see section [Modeling Alarm Number](#) of the Veeam ONE Working with Alarms Guide.
- **Options** – view or change Veeam ONE Monitor client and server settings.
For more information on customizing settings, see [Configuring Veeam ONE Monitor](#).
- **Help** – open Veeam ONE Monitor help, view license information or change the license file, export log files, check the current version of Veeam ONE Monitor. To open help topics, you can also press [F1] on the keyboard.
- **Full Screen** – switch to the full screen mode. To perform this command, you can also press [F11] on the keyboard.
For more information on full screen mode, see [Full Screen Mode](#).
- **Upgrade** (present in Community Edition Mode or if the current license is outdated) – access the web page where you can download Veeam Availability Suite free trial that allows to use Veeam ONE with no functionality restrictions for a limited period of time.
For more information on free licenses, see section [Types of Licenses](#) of the Veeam ONE Deployment Guide.
- **Search** – search for a virtual infrastructure, Business View, vCloud Director, or Veeam Backup & Replication infrastructure component. The search results will depend on the selected view.



Inventory Pane

The inventory pane on the left shows a hierarchical list of infrastructure objects. The buttons at the bottom of the inventory pane allow you to switch between Veeam ONE Monitor views.

Each node in the hierarchy tree reflects the state of a corresponding infrastructure object. If there exist unresolved alarms for the object, Veeam ONE Monitor displays on the node an icon of an alarm with the highest severity.

Veeam ONE reflects the state of child objects on parent nodes to let you easily find problematic objects. For example, if an error alarm was triggered for a host, the error icon will be displayed on the host node. In addition, a red downward error will be shown on the parent cluster node and on the parent management server node to indicate that an error has occurred on the child host. If necessary, you can change Veeam ONE Monitor client settings to display icons next to affected objects only.

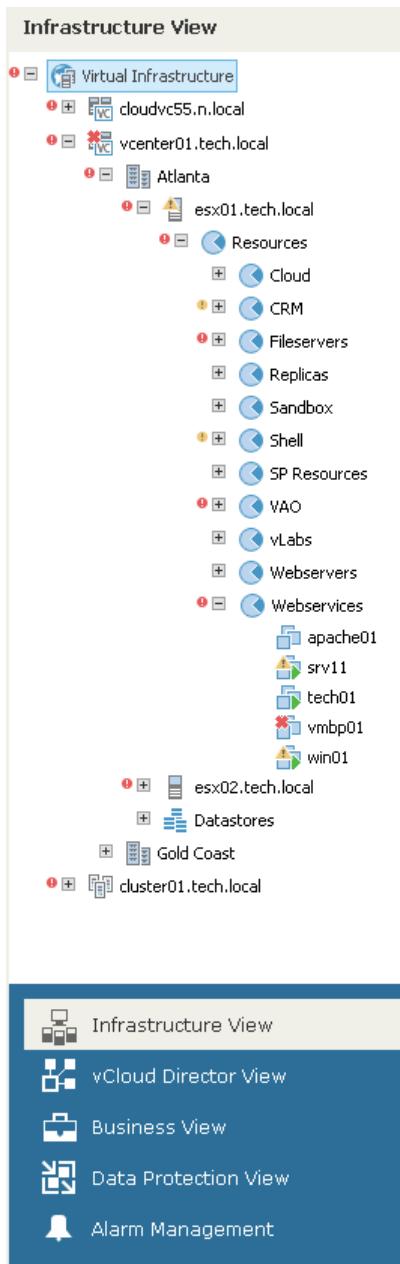
- To expand/collapse all tree nodes, right-click the root node in the inventory pane and choose **Expand all/Collapse all** from the shortcut menu.
- To show all objects with errors and warnings in the hierarchy, right-click the root node in the inventory pane and choose **Show all error objects** from the shortcut menu.
Veeam ONE Monitor will expand all nodes that have child objects with registered errors or warnings.
- To hide and show the inventory pane, use the collapse/expand arrow to the right of the inventory pane.

For more information on changing display settings, see [Other Settings](#).

Infrastructure View

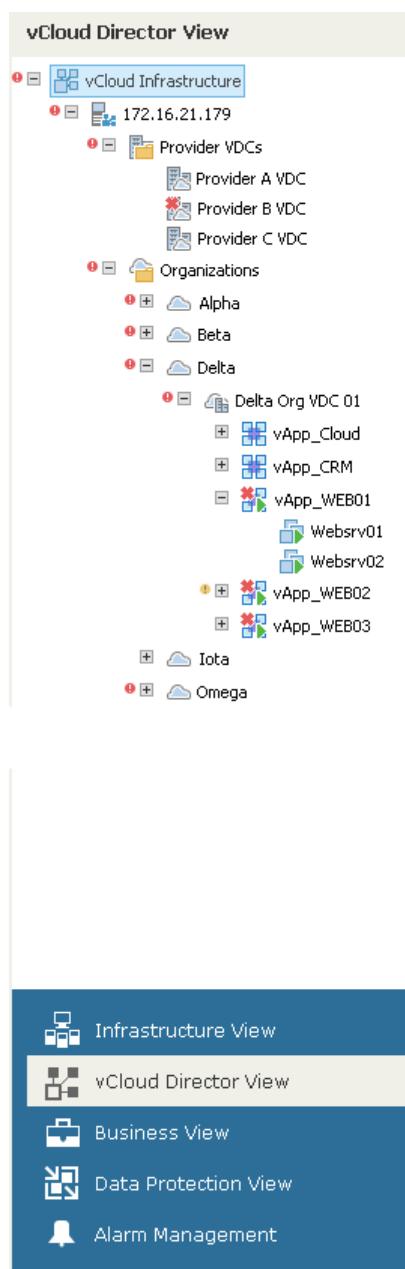
The **Infrastructure View** tree displays a hierarchical list of virtual infrastructure objects – vCenter Servers/SCVMM servers, clusters, hosts, folders, VMs, storage objects and so on. It shows the virtual infrastructure in inventory terms, similar to vCenter Server/SCVMM topology presentation.

If you connect a vCloud Director server to Veeam ONE, the Infrastructure View inventory tree will display vCenter Servers attached to vCloud Director and vCloud Director VMs. To hide vCloud Director VMs from the Infrastructure View inventory, enable the **Hide vCloud Director VMs from Virtual Infrastructure tree** option in Veeam ONE server settings. For more information on the vCloud Director display settings, see [Other Settings](#).



vCloud Director View

The **vCloud Director View** tree displays a hierarchical list of vCloud Director objects – provider VDCs, organizations, organization VDCs, vApps, and VMs.



Business View

The **Business View** tree displays a hierarchical list of categorization groups configured in Business View. It presents the infrastructure topology in business terms and allows you to monitor, alert and report on custom categorization units in your environment.

By default, Veeam ONE Monitor hides the *Uncategorized* group for all Business View categories in the inventory tree. To make it available in the Business View hierarchy, disable the **Hide uncategorized objects from the Business View tree** option in Veeam ONE Monitor server settings. For more information on changing Business View display settings, see [Hiding Ungrouped Objects](#).

The screenshot shows the Veeam ONE Monitor interface. The main window displays a hierarchical tree under 'Business View'. The tree includes:

- Business View
 - Virtual Machines
 - VMware
 - Datastore
 - Department
 - Last Backup Date
 - VMs with daily backup
 - apache01
 - apache03
 - vdi001
 - webservice03
 - websrv02
 - win01
 - VMs with no backups
 - SLA
 - VM Network
 - VMs with Snapshots
 - Hyper-V
 - Hosts
 - Datastores
 - Clusters
 - Computers

The bottom navigation bar has the following items:

 - Infrastructure View
 - vCloud Director View
 - Business View** (selected)
 - Data Protection View
 - Alarm Management

Data Protection View

The **Data Protection View** tree displays a hierarchical list of connected Veeam Backup Enterprise Manager servers, Veeam Backup & Replication servers, Veeam Agents managed by Veeam Backup & Replication servers, and components of the backup infrastructure – backup proxies, backup repositories, WAN Accelerators, tape servers, cloud repositories, and cloud gateways.

The screenshot shows the 'Data Protection View' window. At the top, there's a toolbar with icons for Refresh, Save, Undo, Redo, and Help. Below the toolbar is a navigation bar with tabs: Infrastructure View, vCloud Director View, Business View, Data Protection View (which is selected and highlighted in blue), and Alarm Management. The main area is a tree view of backup infrastructure components:

- Backup Infrastructure
 - pearl.tech.local
 - backup02.tech.local
 - 172.17.53.46
 - backup02.tech.local
 - Backup Repositories
 - Alpha Cloud Vol 01
 - Default Backup Repository
 - File Server Share
 - SOBR01
 - Backup Proxies
 - WAN Accelerators
 - Tape Servers

Alarm Management

The **Alarm Management** tree displays the list of available alarm types. Use the **Alarm Management** view to manage predefined alarms or create new alarms.

The screenshot shows the Veeam ONE Monitor interface. On the left, there is a tree view titled "Alarm Management". The tree includes categories like "All Alarms", "VMware", "Hyper-V", "Backup & Replication" (which further branches into Enterprise Manager, Backup Server, Repository, Proxy, WAN Accelerator, Tape Server, Cloud Repository, Cloud Gateway, and Intelligent Diagnostics), and "Internal". At the bottom of the screen, there is a navigation bar with several items: Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. The "Alarm Management" item is highlighted with a blue background.

- All Alarms
 - VMware
 - Hyper-V
 - Backup & Replication
 - Enterprise Manager
 - Backup Server
 - Repository
 - Proxy
 - WAN Accelerator
 - Tape Server
 - Cloud Repository
 - Cloud Gateway
 - Intelligent Diagnostics
 - Internal

Infrastructure View
vCloud Director View
Business View
Data Protection View
Alarm Management

Information Pane

The information pane is the main working area used for managing alarms, viewing performance data and accomplishing other operations for monitoring your virtual and data protection environment.

Tabs in the information pane allow you to switch between Veeam ONE Monitor dashboards. The set of available dashboards varies depending on the object selected in the inventory tree.

The screenshot shows the Veeam ONE Monitor interface with the 'Information' tab selected. At the top, there's a banner indicating 'Configuration issues (7 detected)'. Below the banner, the 'Alarms' tab is active, showing a list of five alarms for the selected object 'Webservices'. The alarms are:

Status	Alarm Time	Source	Type	Name	Repeat Count
Warning	6:50:37 PM	vmbp01	VM	Latest snapshot age	72
Warning	6:50:37 PM	srv11	VM	Latest snapshot age	72
Warning	6:50:37 PM	win01	VM	Latest snapshot age	72
Warning	6:50:37 PM	srv11	VM	Latest snapshot size	39
Error	6:50:37 PM	vmbp01	VM	Too many snapshots on the VM	72

Below the alarm list, there's a section titled 'Alarm details' containing the following information:

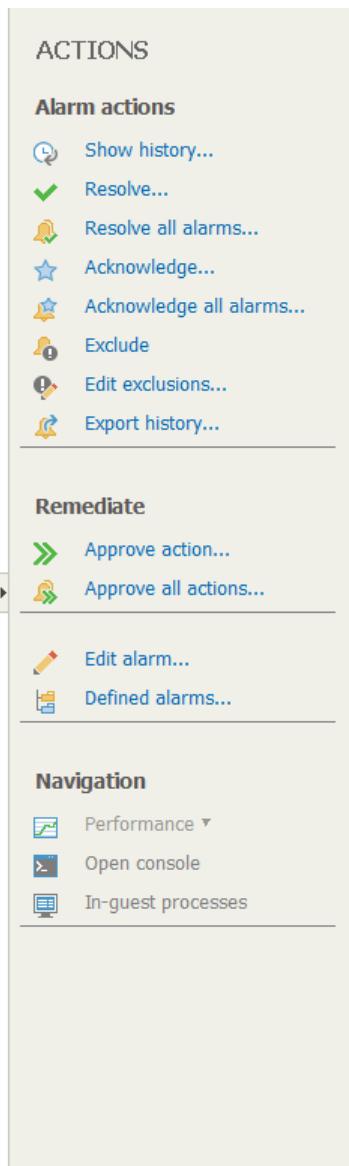
- Description**: VM snapshots number (5) has breached the configured threshold (5)
- Knowledge**: An excessive number of snapshots in a chain has been detected on the VM which may lead to decreased virtual machine and host performance
- Cause**: If you're using a backup tool make sure that snapshots are only present for the duration of the backup process. Snapshots are not backups. As the snapshot file is only a change log of the original virtual disk, do not rely upon it as a direct backup process
- Resolution**: Verify the number of snapshots detected on the VM and remove snapshots which are no longer required for this VM
- External**: Refer to [Best practices for virtual machine snapshots in the VMware environment](#) for more information

At the bottom of the pane, status indicators show 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

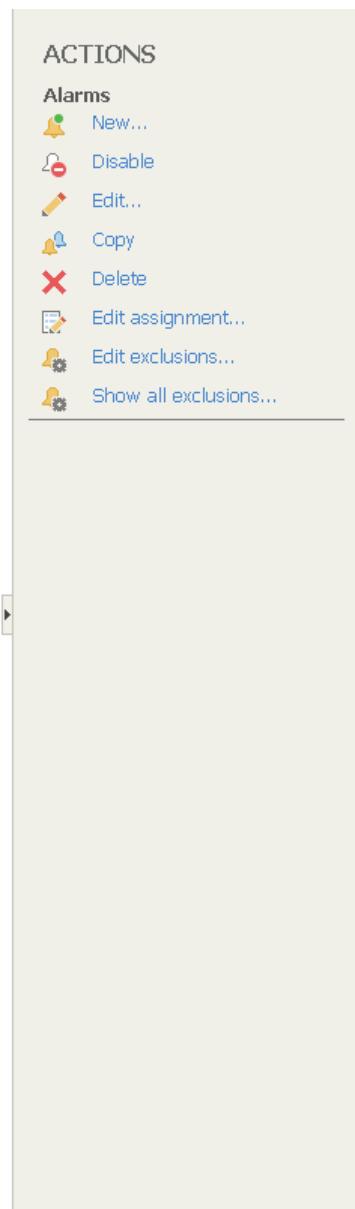
Actions Pane

The **Actions** pane on the right displays links to tasks and commands that can be initiated by the user. The pane becomes available when you open the **Alarms monitoring** tab or switch to the **Alarm Management** view. You can hide and show the pane using the collapse/expand arrows.

Options displayed on the pane depend on the object type selected in the information pane. For example, if you select a VM in the inventory pane and open the list of triggered alarms for this VM, all alarm actions, object actions, and navigation actions will be available in the **Actions** pane. If you select a storage object in the inventory pane, some navigation actions will become unavailable as they do not apply to storage objects. For more information on working with alarm actions, see [Veeam ONE Working with Alarms Guide](#).



In a similar manner, if you open the **Alarm Management** section and select the **All Alarms** node in the inventory pane, the **New** action will become unavailable, as you must select a particular object to create a new alarm.



Configuration Issues Pane

The **Configuration issues** pane displays information on alarms triggered as a result of internal Veeam ONE Monitor configuration issues (such as lost connection to a virtual server, data collection failure, license expiration and so on). To view details of internal alarms, click the **Show details** link at the top right corner of the pane. For more information on working with internal configuration alarms, see section [Working with Internal Alarms](#) of the Veeam ONE Working with Alarms Guide.

The screenshot shows a list of configuration issues in a pane. At the top left, there is a message: "Configuration issues (7 detected)". On the far right, there is a "Hide details" button. Below the message, there is a list of issues with expandable entries:

- [-] Topology collection failure - object [pearl.tech.local](#)
Veeam ONE Monitor server failed to collect infrastructure topology
- [+] Backup performance data collection failure - object [172.17.53.45](#)
- [+] Backup performance data collection failure - object [172.17.53.45](#)
- [+] Backup performance data collection failure - object [Default Backup Repository](#)
- [+] Backup performance data collection failure - object [172.17.53.45](#)
- [+] Backup performance data collection failure - object [VMware Backup Proxy](#)
- [+] Backup performance data collection failure - object [172.17.53.46](#)

On the right side of the pane, there are scroll bars.

System Tray Icon

To facilitate monitoring of your infrastructure, Veeam ONE Monitor adds its icon to the system tray as the status indicator.

- If the virtual or data protection infrastructure is functioning properly, the icon color will be green.
- If a warning or error is triggered, the color will turn yellow or red.
- As soon as the health status of your infrastructure returns to normal, the color changes back to green.

To learn about the number of warnings and errors that occurred, move the cursor over the icon.



Full Screen Mode

The full screen mode displays only the information pane for the selected object and allows you to hide unnecessary interface elements that may distract your attention. To switch to the full screen mode, do one of the following:

- Press [F11] on the keyboard.
- On the toolbar, click **Full Screen**.

In the full screen mode, the toolbar is not displayed at all, which allows you to concentrate on monitoring the virtual or backup environment state and have only the most crucial information displayed. You can collapse and expand the inventory pane and actions pane if necessary.

To exit the full screen mode:

- Press [F11] on the keyboard.
- In the top right corner, click **Exit Full Screen**.

Configuring Veeam ONE Monitor

Veeam ONE Monitor does not require complex configuration and is ready for use right after the installation. However, before you start using Veeam ONE Monitor, you might need to check and adjust its default configuration.

1. [Configure server connections](#).
2. [Configure Veeam ONE Monitor client settings](#).
3. [Configure Veeam ONE Monitor server settings](#).

NOTE:

To be able to configure Veeam ONE Monitor settings, a user must be a member of the *Veeam ONE Administrators* group on a machine where the Veeam ONE Server component is installed. For more information on Veeam ONE security groups, see section [Security Groups](#) of the Veeam ONE Deployment Guide.

Configuring Server Connections

To collect information about the managed virtual infrastructure and track the efficiency of data protection, you must configure connections to VMware vSphere, vCloud Director, Microsoft Hyper-V virtual management servers, and Veeam Backup & Replication servers in Veeam ONE Monitor. Configured connection settings are automatically propagated to all Veeam ONE components.

For more information on how to connect servers in Veeam ONE Monitor, see section [Connecting Servers](#) of the Veeam ONE Deployment Guide.

Veeam ONE Monitor Client Settings

Veeam ONE Monitor client settings include:

- [General settings](#)
- [Color settings](#)
- [Charts settings](#)
- [Tabs view settings](#)
- [Other settings](#)

General Settings

In client general settings, you can specify DNS name or IP address of a machine where the Veeam ONE Server component is installed.

To specify client general settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. On the toolbar, click **Options > Client Settings**.

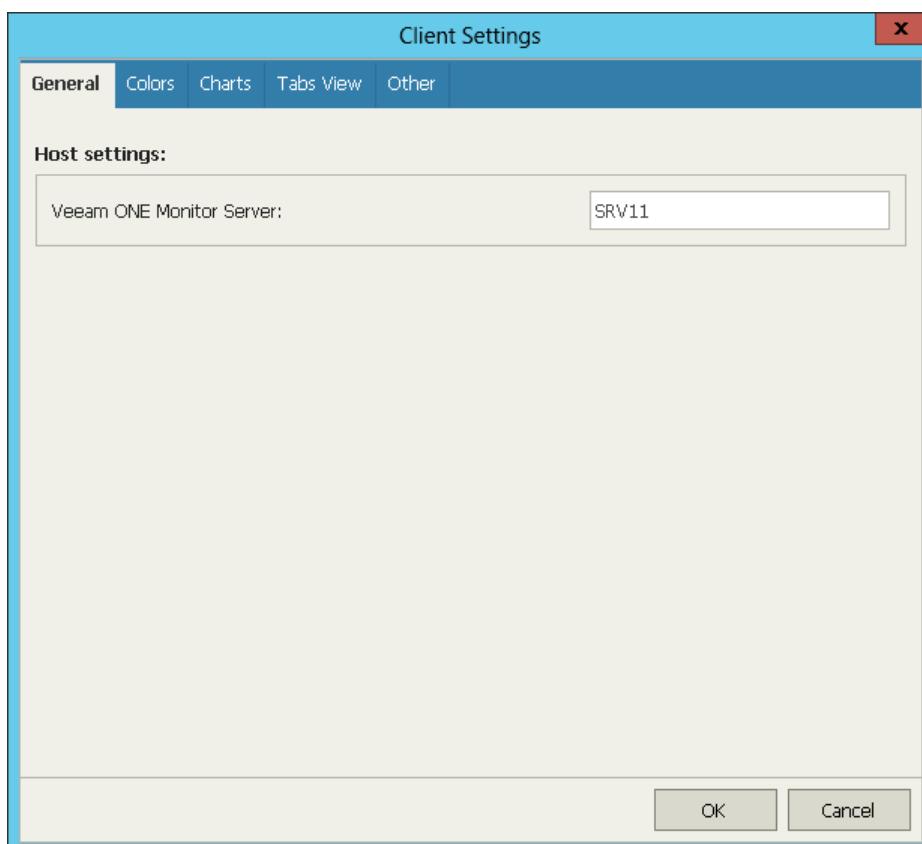
Alternatively, press [CTRL + O] on the keyboard.

3. In the **Client Settings** window, open the **General** tab.

4. In the **Host settings** section, specify an FQDN or IP address of a machine where the Veeam ONE Server component is installed.

- If Veeam ONE is installed using the advanced deployment scenario, or if you have an instance of Veeam ONE Monitor Client installed on a separate computer, the **Veeam ONE Monitor Server** field is not filled automatically. The first time you open Veeam ONE Monitor Client, you will be prompted to specify the name of the machine where the Veeam ONE Server component is installed.
- If Veeam ONE is installed using the typical deployment scenario, the **Veeam ONE Monitor Server** field is filled automatically with the name of the machine where Veeam ONE is installed.

For more information on deployment scenarios, see section [Deployment Scenarios](#) of the Veeam ONE Deployment Guide.



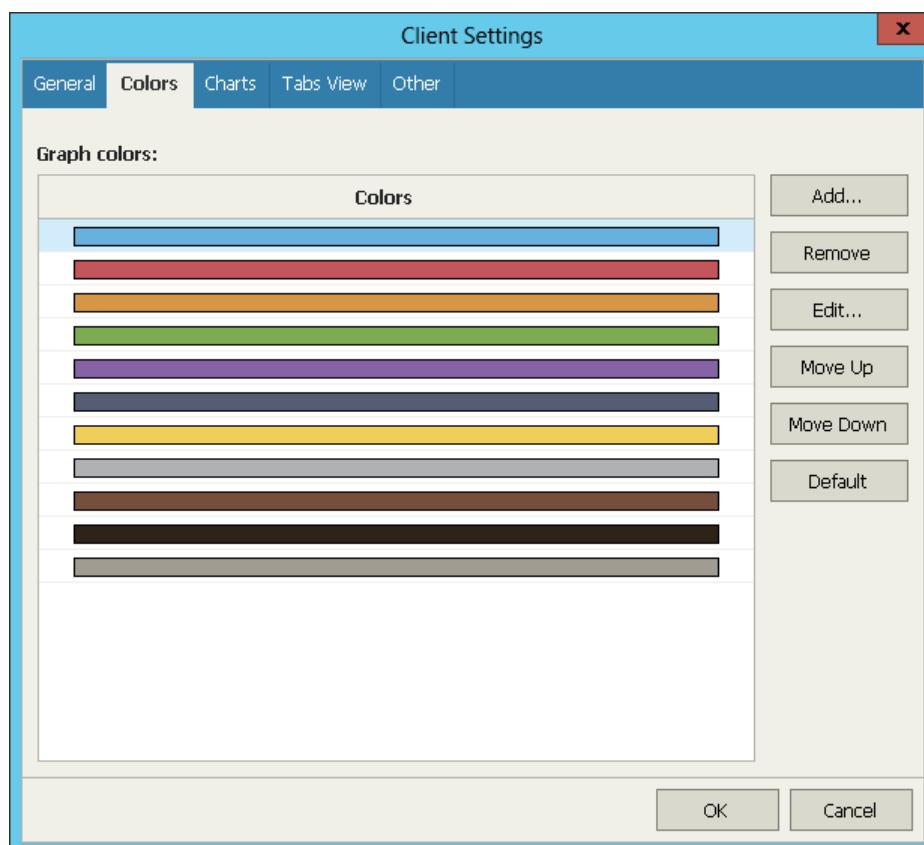
Color Settings

In color settings, you can create a custom color scheme that will be used to display graphs on performance charts.

To specify color settings:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Client Settings**.
Alternatively, press [CTRL + O] on the keyboard.
3. In the **Client Settings** window, open the **Colors** tab.
4. Create a custom color scheme that must be used to display graphs on performance charts.

You can add colors from the color palette, remove and edit existing colors, as well as sort them as required. Colors at the top are used first for graphs on performance charts.



Charts Settings

In charts settings, you can customize display preferences for graphs on performance charts.

To specify charts settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. On the toolbar, click **Options > Client Settings**.

Alternatively, press [CTRL + O] on the keyboard.

3. In the **Client Settings** window, open the **Charts** tab.

4. In the **Chart options** section, configure display preferences for graphs in performance charts:

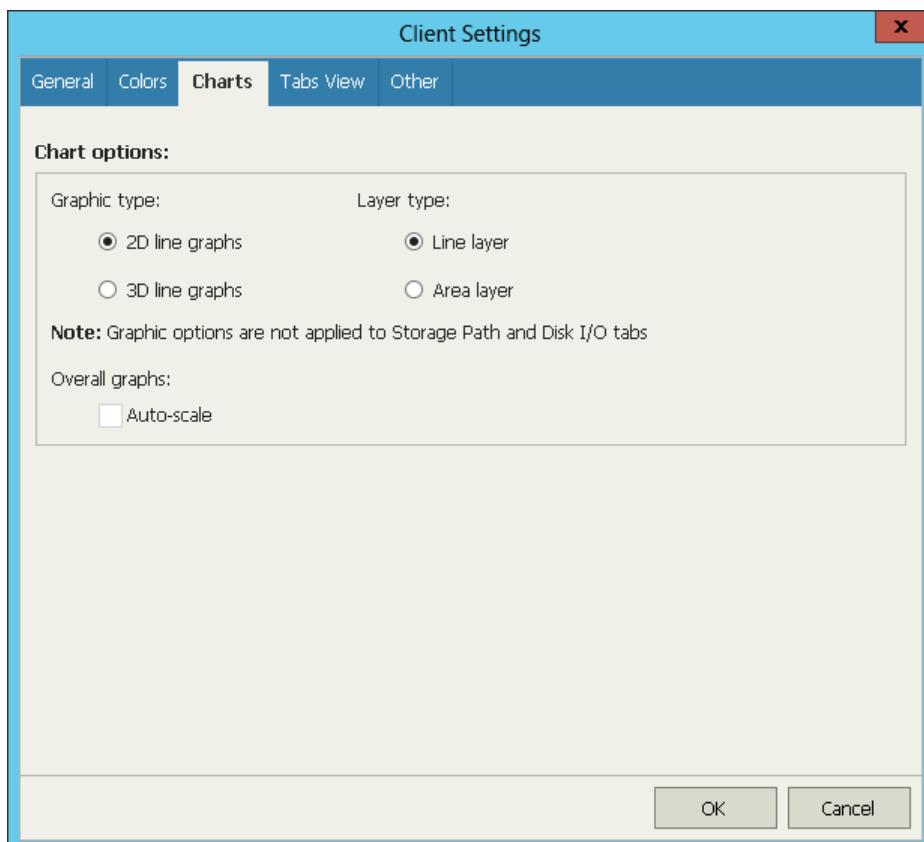
- In the **Graphic type** section, choose how line graphs must be presented in charts – as 2D or 3D lines.
- In the **Layer type** section, choose how graphs layer must be presented in charts – as line layer or area layer.

For samples of graphic type and layer type combinations, see [Graphic and Layer Type Samples](#).

5. In the **Overall** graphs section, specify whether top line thresholds must be present on the **Overall** tab.

If the **Auto-scale** check box is enabled, the Y-axis will scale automatically to match the range of the displayed data.

For samples of **Overall** tabs with the **Auto-scale** option enabled and disabled, see [Auto-Scale Samples](#).

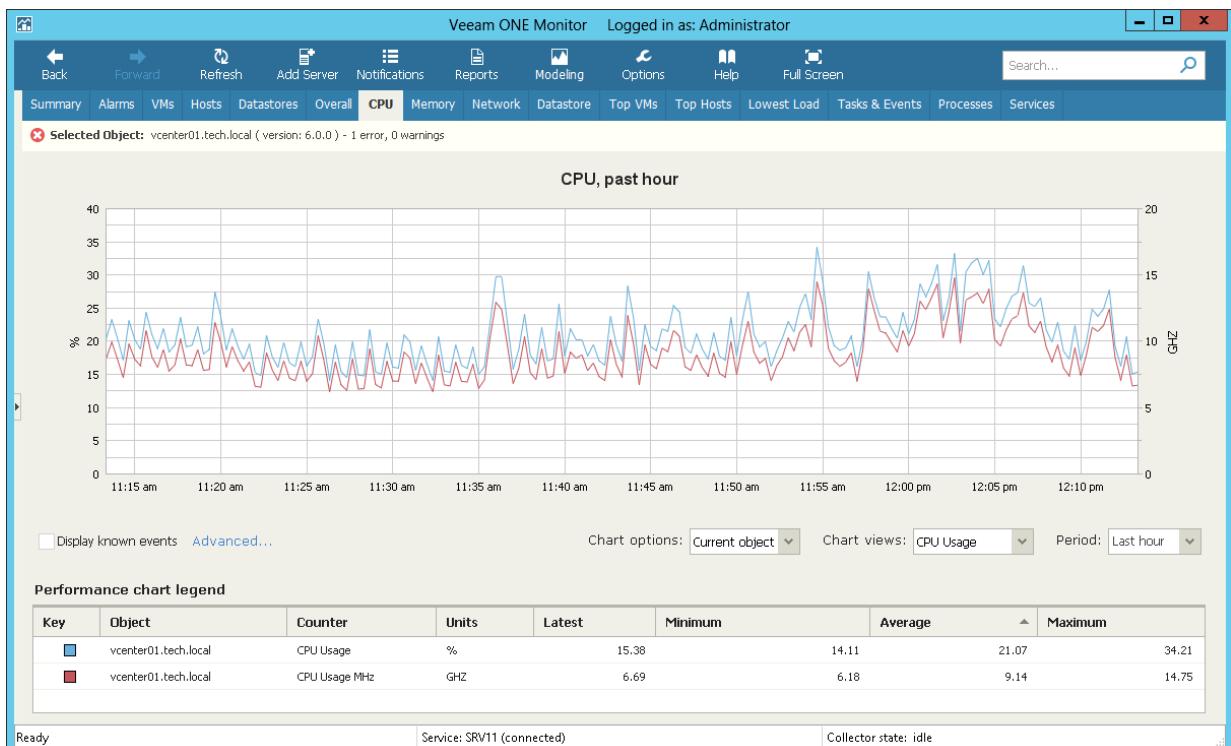


Graphic and Layer Type Samples

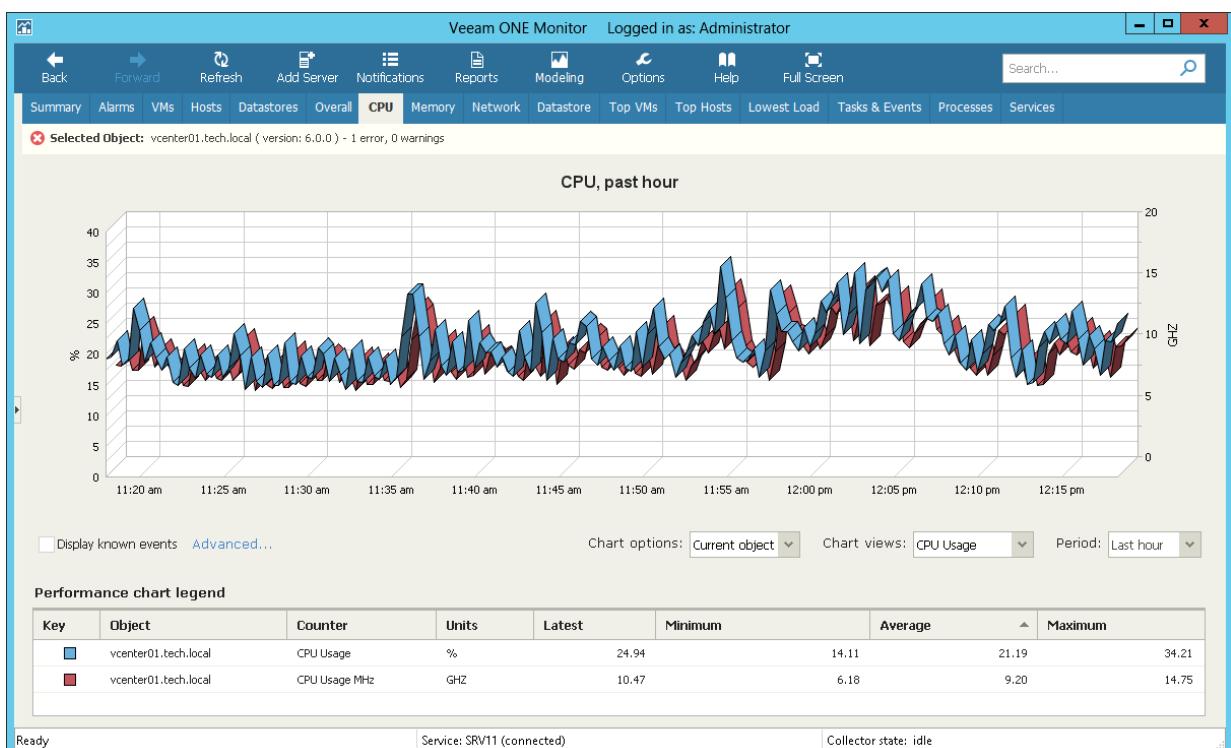
You can choose to show graphs in 2D or 3D, as plain lines or filled areas.

The following images illustrate how different combinations of line graphs and layer types will be reflected on performance charts:

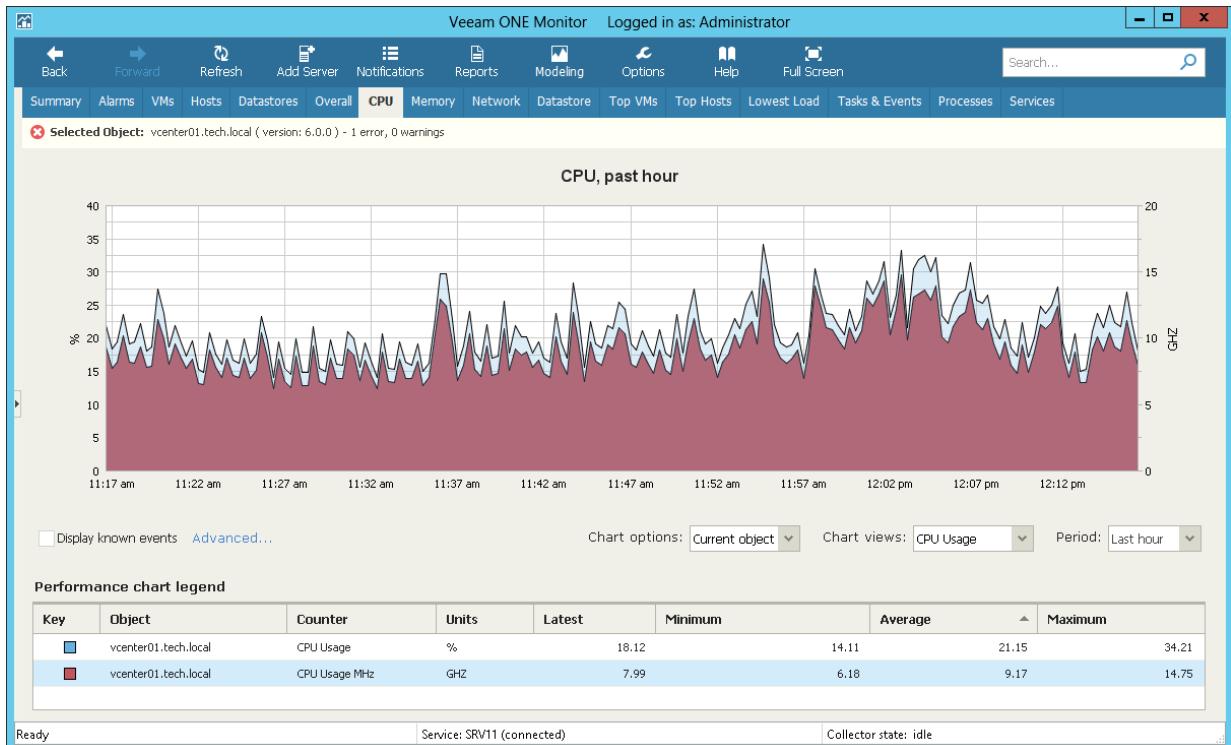
- 2D line graphs with line layer



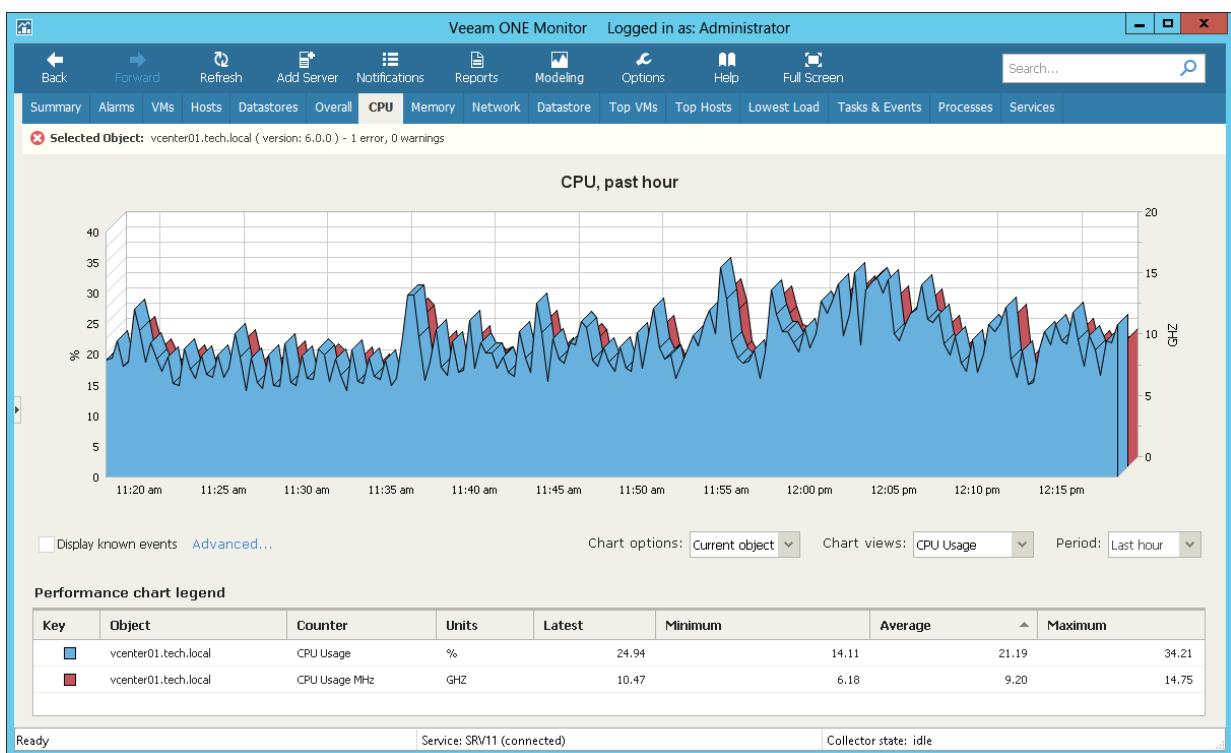
- 3D line graphs with line layer



- 2D line graphs with area layer



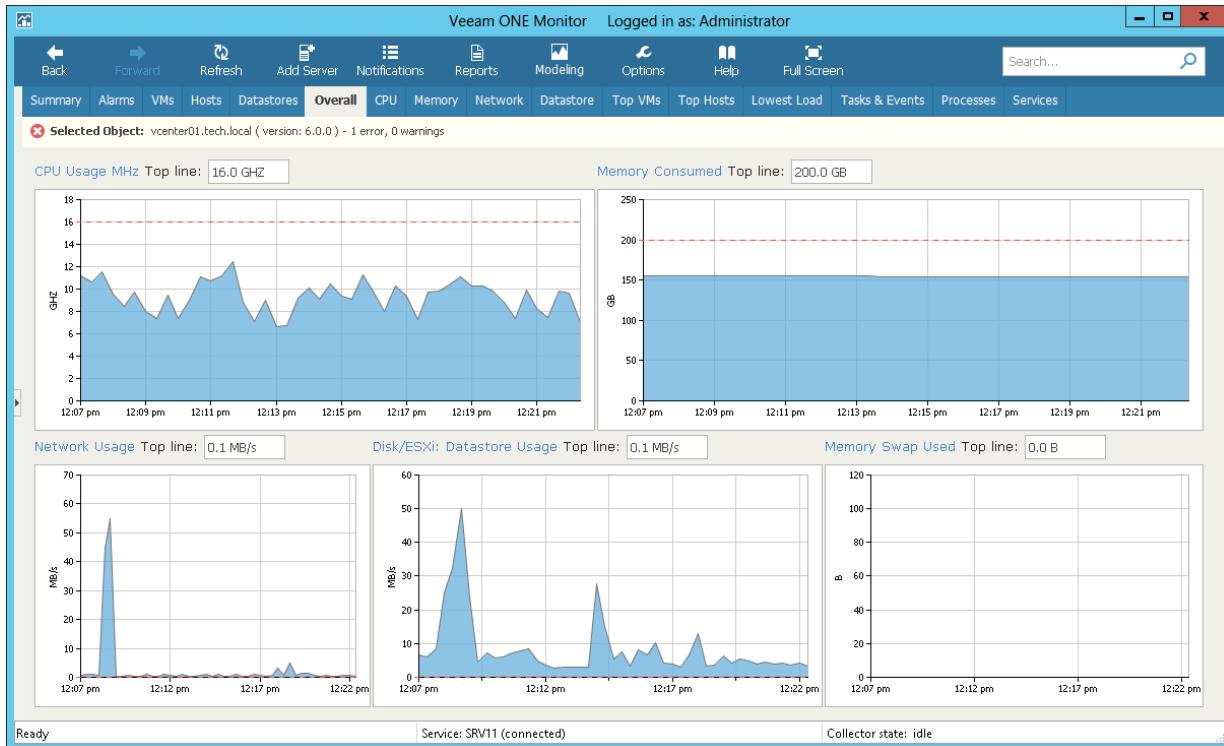
- 3D line graphs with area layer



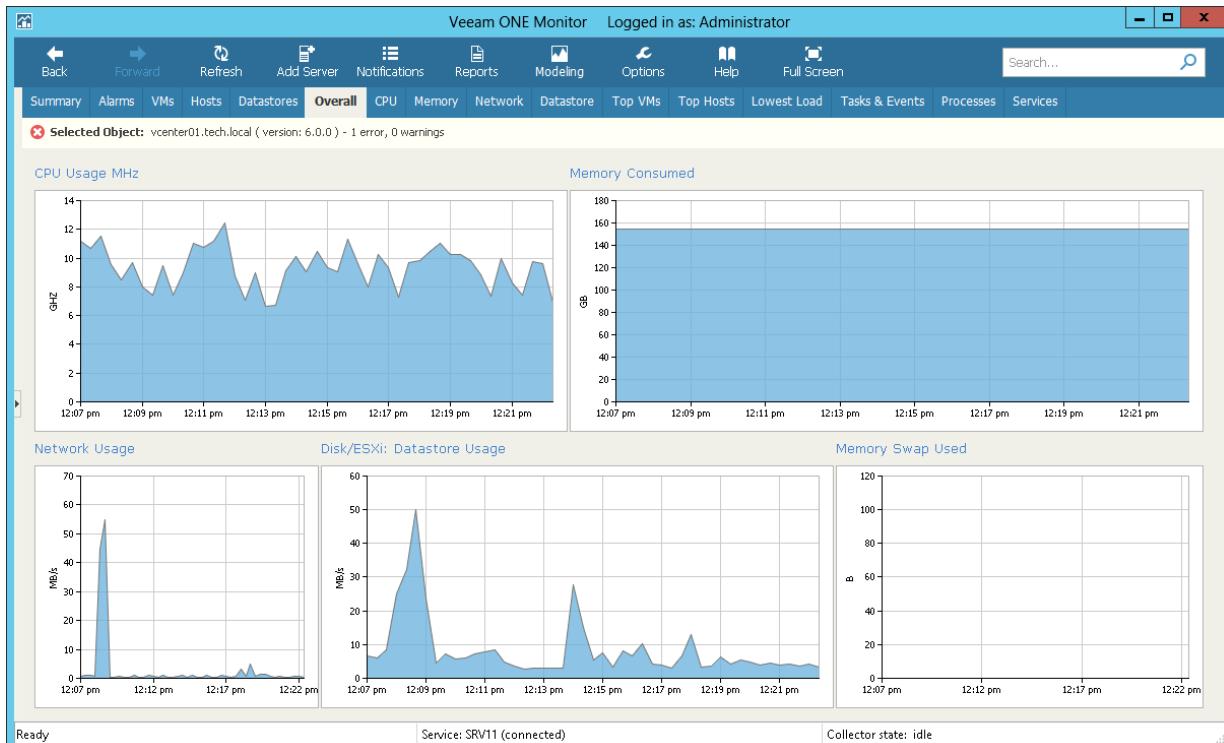
Auto-Scale Samples

The **Auto-scale** option allows you to enable auto-scaling if you want to remove top line thresholds from performance charts on the **Overall** tab. With auto-scale enabled, the Y-axis scales automatically, to match the range of the displayed data.

- Auto-scale disabled



- Auto-scale enabled



Tabs View Settings

In the tabs view settings, you can enable the automatic switching between the tabs in Veeam ONE Monitor.

Automatic switching is intended for screens and monitors in a network operations center (NOC). With this option enabled, Veeam ONE automatically switches between its tabs (dashboards) at a certain time interval, and displays dashboards similarly to a slideshow. An administrator can view the whole picture without interacting with Veeam ONE, and can be sure not to miss critical situations in case they occur.

If automatic switching is enabled, Veeam ONE starts switching tabs only if there is no user input from a keyboard, mouse, and so on. Once the user starts interacting with Veeam ONE Monitor, Veeam ONE Monitor stops switching tabs.

Automatic switching is disabled by default. You can enable it and create rules that Veeam ONE will use to switch tabs.

There are two types of rules for the automatic switching of tabs:

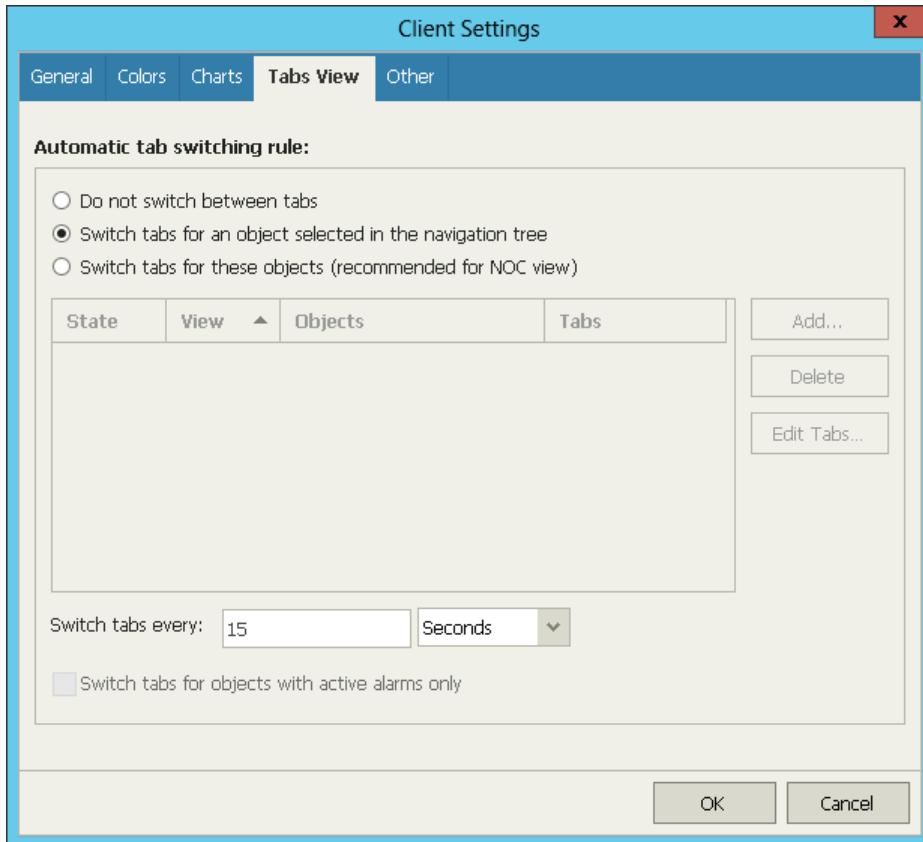
- You can choose to switch tabs for an object that is selected in the navigation tree. This rule will be useful if you want to monitor the state of one critical object.
- You can choose to switch specific tabs for a predefined scope of objects. This view will be useful if you want to monitor certain aspects of a critical infrastructure segment.

Switching Tabs for One Infrastructure Object

To enable automatic switching of tabs and create a rule that switches tabs for one infrastructure object:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click the necessary view – Infrastructure View, Business View, vCloud Director View, or Data Protection View.
3. In the inventory pane, select the necessary infrastructure object.
4. On the toolbar, click **Options > Client Settings**.
Alternatively, press [CTRL + O] on the keyboard.
5. In the **Client Settings** window, navigate to the **Tabs View** tab.
6. In the **Automatic tab switching rule** section, select **Switch tabs for an object selected in the navigation tree**.
7. In the **Switch tabs every <time interval>** section, specify a time interval at which tabs must be switched.
You can specify an interval in seconds, minutes, or hours.

8. Click OK.



Switching Tabs for Multiple Infrastructure Objects

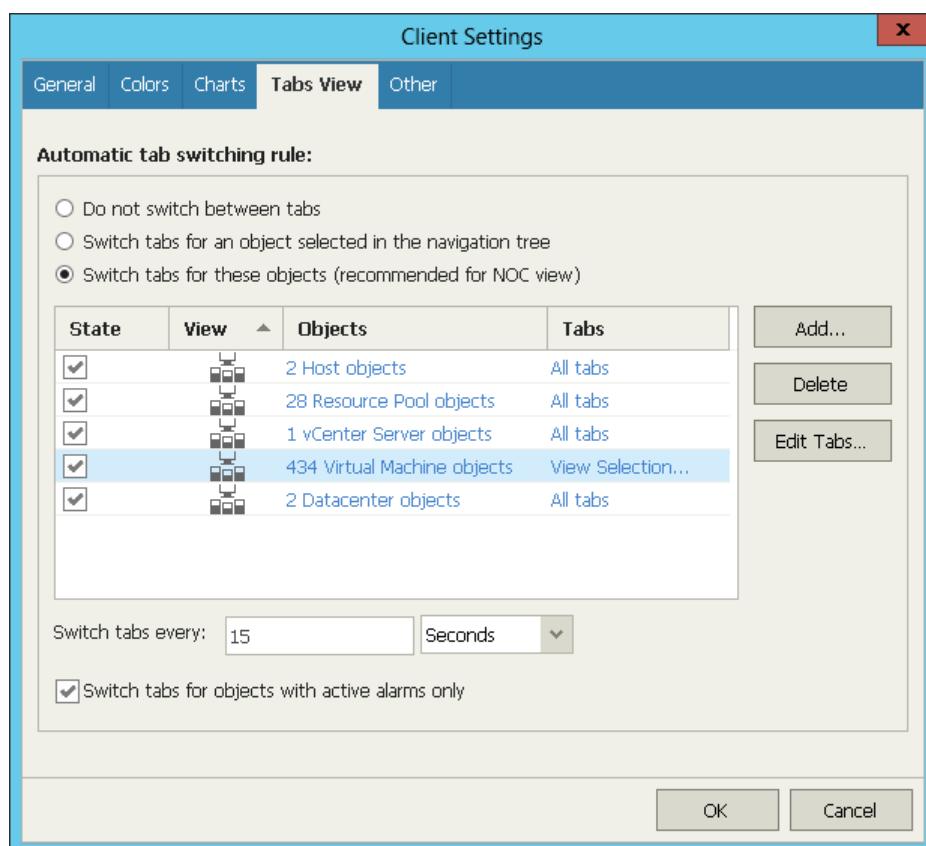
To enable automatic switching of tabs and create a rule that switches tabs for specific objects:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Client Settings**.
Alternatively, press [CTRL + O] on the keyboard.
3. In the **Client Settings** window, navigate to the **Tabs View** tab.
4. In the **Automatic tab switching rule** section, select **Switch tabs for these objects (recommended for NOC view)**.
5. Choose objects to include in the scope, and specify tabs that must be displayed.
 - a. Click **Add** and choose the type of infrastructure objects to add – Infrastructure View, Business View, vCloud Director View, or Data Protection View.
 - b. In the **Select scope** window, select check boxes next to objects you want to add to the scope and click **OK**.

To select an object together with its child objects, click it with the left mouse button. To select an object without its child objects, click it with the right mouse button.

If you select several objects of different types, Veeam ONE will create a new rule for each object type. For example, if you select a resource pool with VMs, Veeam ONE will add a rule for the resource pool, and a rule for VMs inside it.

- c. Select the added object in the list and click **Edit Tabs**.
 Alternatively, you can click the **All tabs** link next to the added object.
- d. In the **Select tabs** window, select check boxes next to tabs that must be displayed for an object and click **OK**.
- e. Make sure that the **State** check box is selected for the newly added object. If the check box is cleared, the object will not be added to the scope of automatic tab switching.
- f. Repeat steps **a-e** for all objects that you want to add to the scope.
6. In the **Switch tabs every <time interval>** section, specify a time interval at which tabs must be switched.
 You can specify an interval in seconds, minutes, or hours.
7. Select the **Switch tabs for objects with active alarms only** check box if Veeam ONE must switch tabs for infrastructure objects that have unresolved alarms – that is, only for objects that have potential problems and that may need your attention.
8. Click **OK**.



Other Settings

To specify miscellaneous client settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. On the toolbar, click **Options > Client Settings**.

Alternatively, press [CTRL + O] on the keyboard.

3. In the **Client Settings** window, navigate to the **Other** tab.

4. In the **Miscellaneous** section, specify the following settings:

- From the **Logging level** list, choose the level of detail for logging (*Off, Low or High*).
- Select the **Minimize to tray** check box if you want to hide Veeam ONE Monitor to a system tray icon when the Veeam ONE Monitor window is minimized.
- Clear the **Show child object status on a parent node in the Infrastructure tree** check box if every object in the inventory tree must reflect its own state only.

If this check box is cleared, the state of child objects with errors and warnings will not be reflected on parent nodes. If this check box is selected, Veeam ONE will show downward arrows on parent nodes to reflect the problematic state of child objects. For more information on displaying the infrastructure inventory tree, see [Inventory Pane](#).

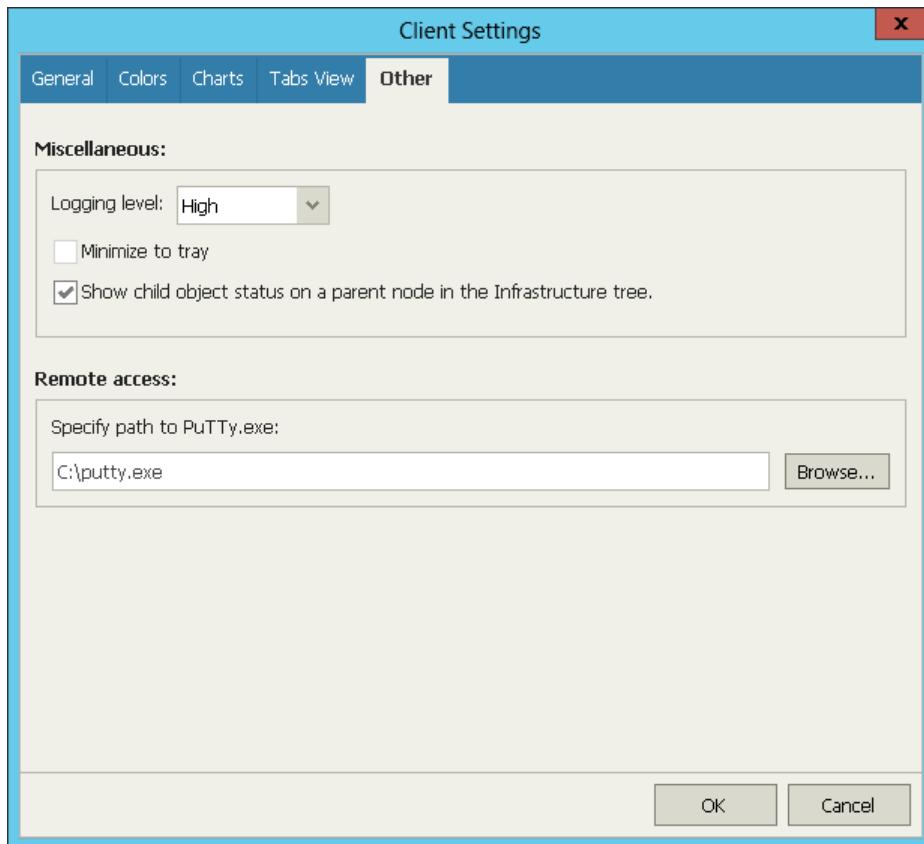
5. In the **Remote access** section, specify the path to the `PuTTy.exe` file.

Veeam ONE requires PuTTY to provide easy access to consoles of Linux VMs.

For more information on PuTTY, see [PuTTY Documentation Page](#).

For more information on accessing VM console for VMware vSphere, see [VMware Remote Console \(VMRC\)](#).

For more information on accessing VM console for Microsoft Hyper-V, see [Microsoft Hyper-V VM Console](#).



Veeam ONE Monitor Server Settings

Veeam ONE Monitor server settings include:

- [SMTP Settings](#)
- [Notification Policy](#)
- [SNMP](#)
- [Credentials](#)
- [Monitored Datastores](#)
- [Monitored Objects](#)
- [Business View](#)
- [Other Settings](#)

SMTP Settings

In SMTP settings, you can configure email settings that will be used for sending alarm notifications, dashboards and reports by email.

To specify SMTP server settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. On the toolbar, click **Options > Server Settings**.

Alternatively, press [CTRL + S] on the keyboard.

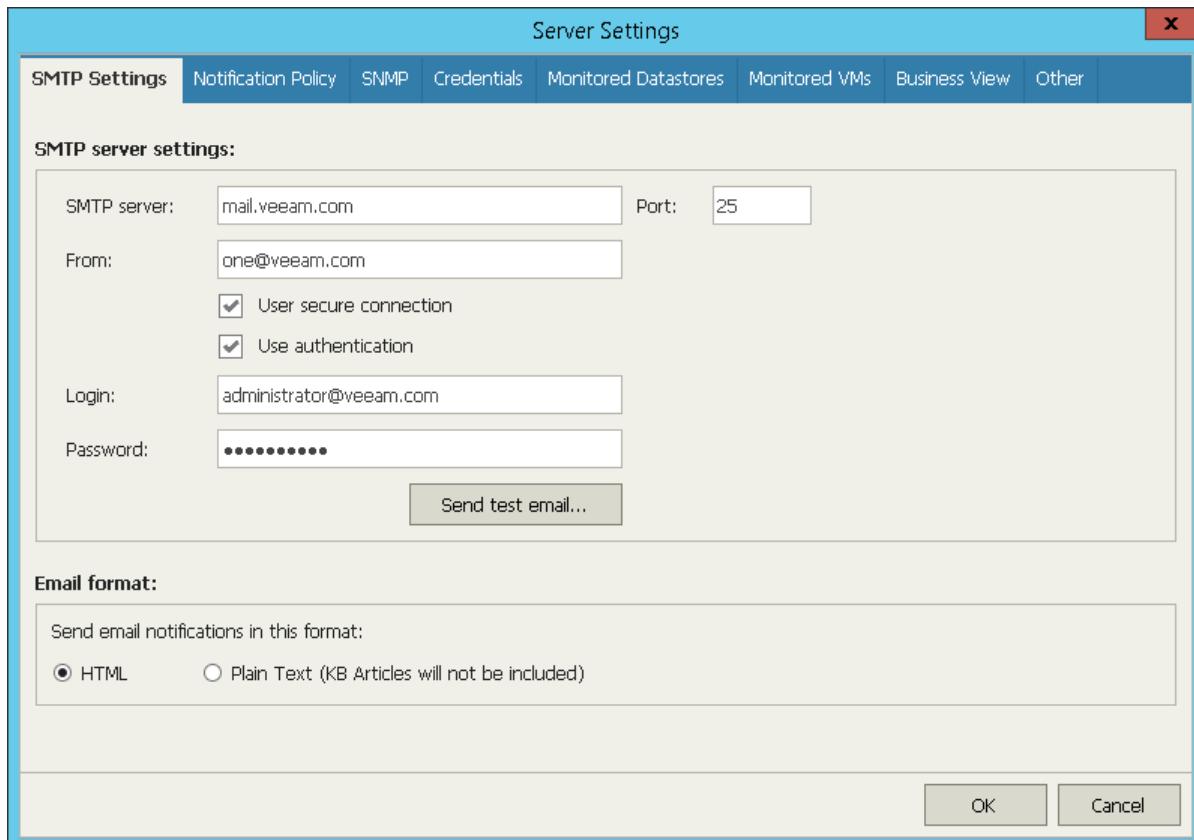
3. In the **Server Settings** window, open the **SMTP Settings** tab.

4. In the **SMTP server settings** section, configure settings of the SMTP server that Veeam ONE will use to send alarm notifications, dashboards, and reports by email.

For more information on configuring SMTP server settings, see section [Configuring Notification Settings](#) of the Veeam ONE Deployment Guide.

5. In the **Email format** section, choose the format of email messages notifying about Veeam ONE alarms.

For more information on configuring format of alarm email notifications, see section [Email Notifications](#) of the Veeam ONE Working with Alarms Guide.



Notification Policy

In notification policy settings, you can configure the default email notification group, set the necessary notification policies, and specify other notification settings.

To specify notification policy settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. On the toolbar, click **Options > Server Settings**.

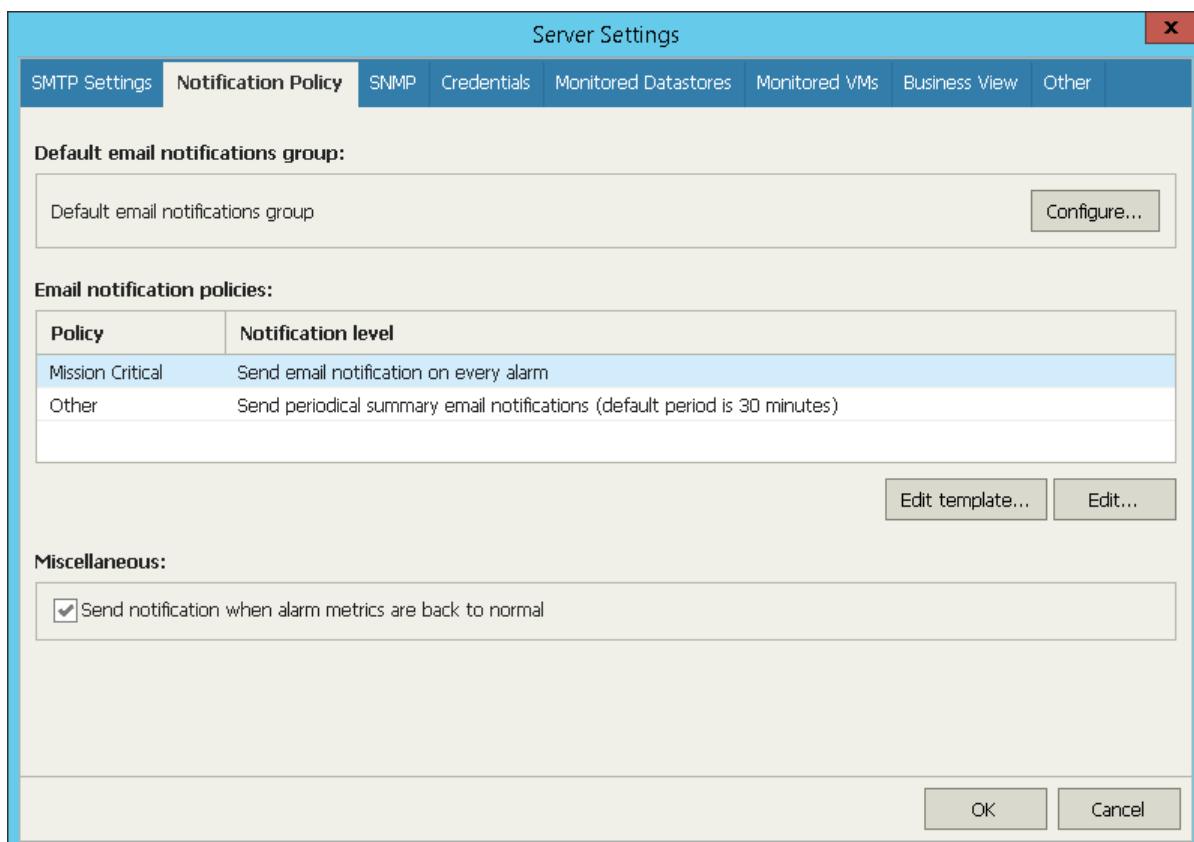
Alternatively, press [CTRL + S] on the keyboard.

3. In the **Server Settings** window, open the **Notification Policy** tab.

4. Configure email notifications:

- a. In the **Default email notification group** section, configure a list of recipients who must receive email notifications about Veeam ONE alarms.
- b. In the **Email notification policies** section, specify how often email notifications about Veeam ONE alarms must be sent.
- c. In the **Miscellaneous** section, choose whether you want to send email notifications when conditions that triggered alarms return to normal.

For more information on configuring alarm notification options, see section [Email Notifications](#) of the Veeam ONE Working with Alarms Guide.



SNMP

In SNMP settings, you can specify trap notification settings for sending notifications about alarms.

To specify SNMP settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

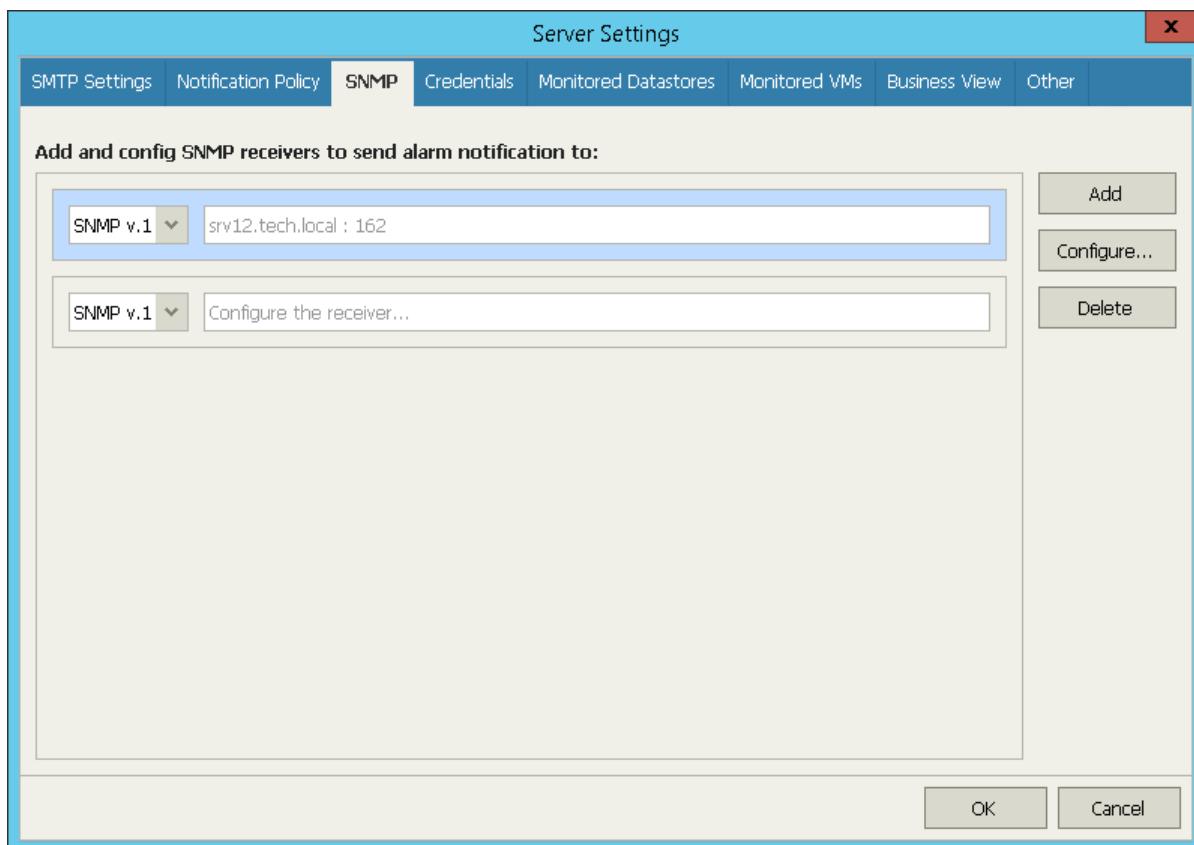
2. On the toolbar, click **Options > Server Settings**.

Alternatively, press [CTRL + S] on the keyboard.

3. In the **Server Settings** window, open the **SNMP** tab.

4. Configure SNMP settings for sending trap notifications about alarms.

For more information on configuring SNMP notification options, see section [SNMP Traps](#) of the Veeam ONE Working with Alarms Guide.



Credentials

In credentials management settings, you can set an account that will be used to collect data from the guest OS of Windows and Linux-based VMs. If you do not specify credentials in **Server Settings**, Veeam ONE will use the account under which you added a virtual infrastructure server. For more information on how to connect servers in Veeam ONE Monitor, see section [Connecting Servers](#) of the Veeam ONE Deployment Guide.

To access **Credentials** settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

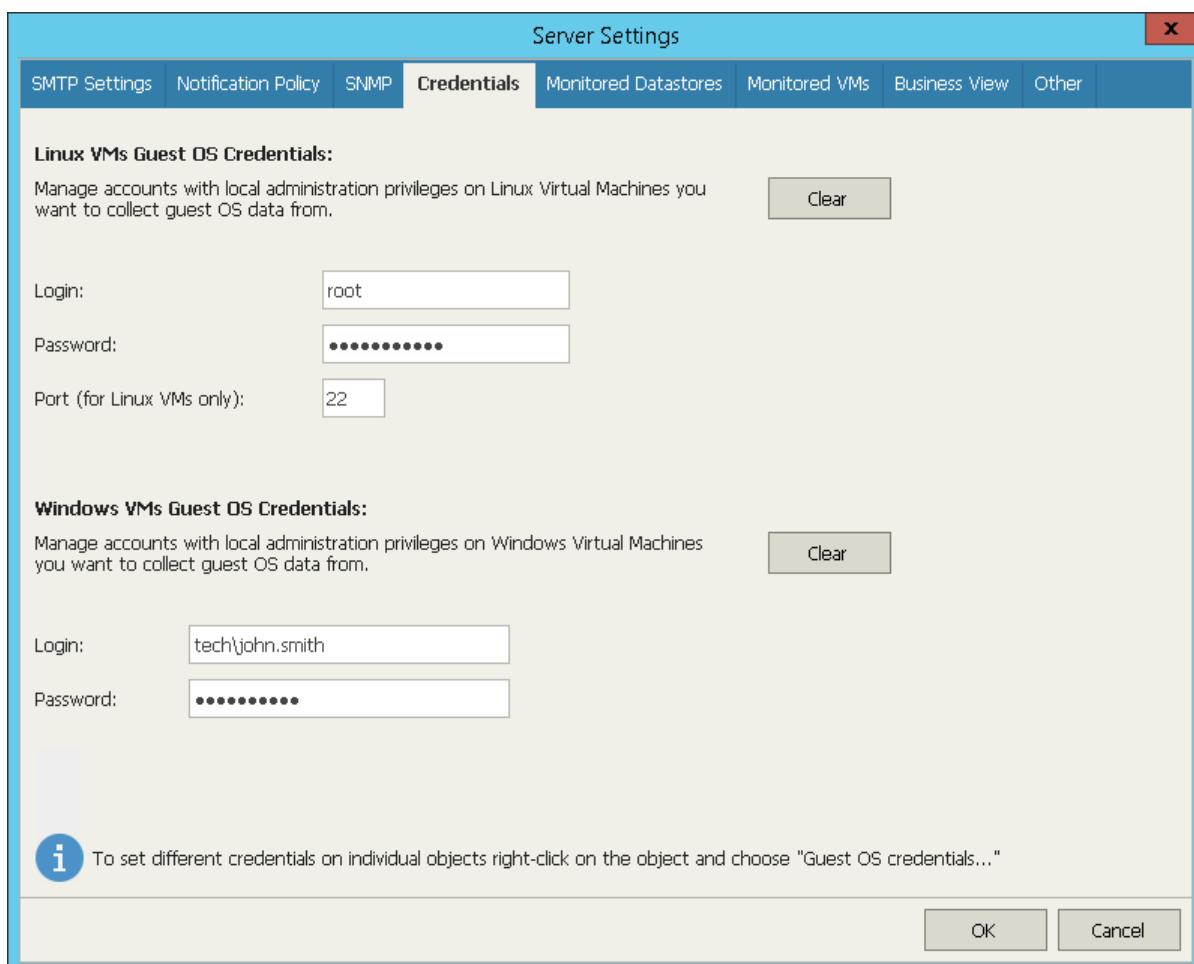
2. On the toolbar, click **Options > Server Settings**.

Alternatively, press [CTRL + S] on the keyboard.

3. In the **Server Settings** window, open the **Credentials** tab.

4. Specify guest OS credentials:

- a. In the **Linux Guest OS Credentials** section, specify the login and password of an account that will be used to collect data from the guest OS of Linux-based VMs.
- b. In the **Windows Guest OS Credentials** section, specify the login and password of an account that will be used to collect data from the guest OS of Windows-based VMs.



TIP:

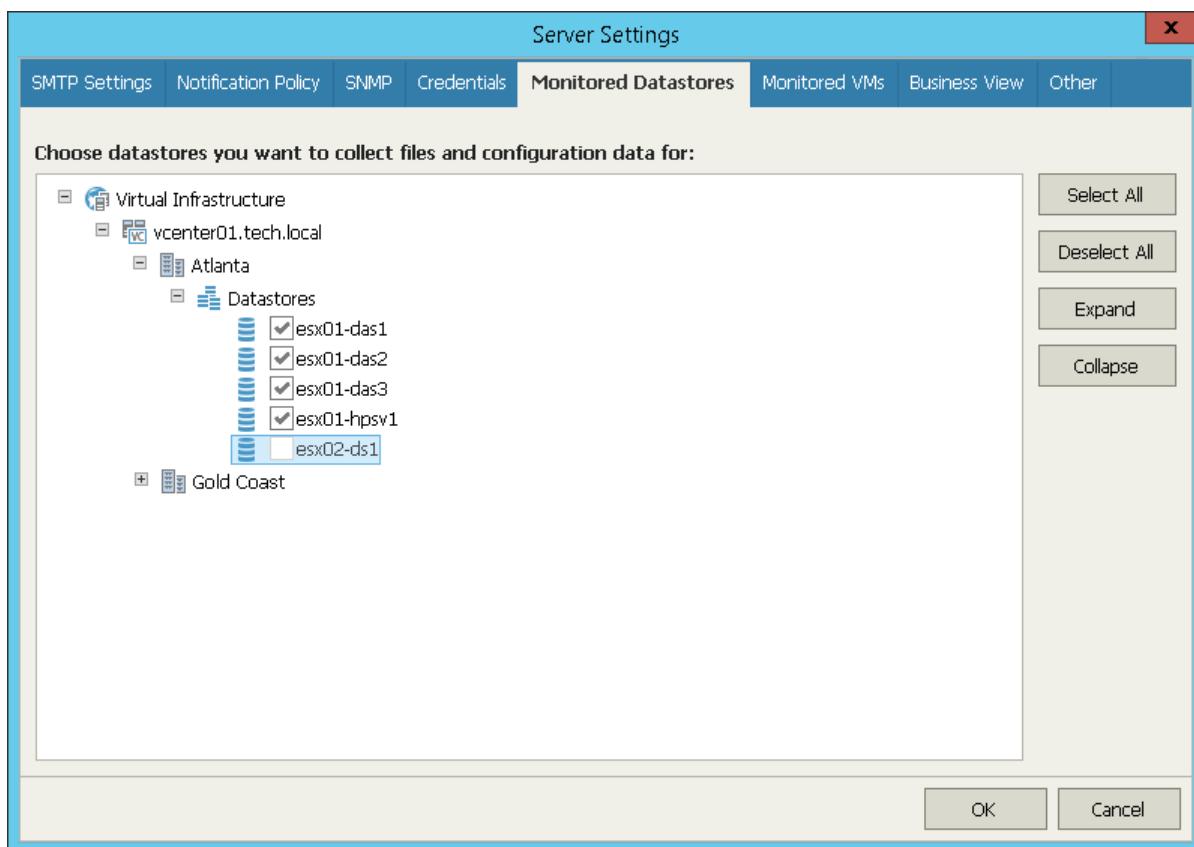
You can set guest OS credentials on individual VMs. To do this, right-click a VM and choose **Guest OS Credentials** from the shortcut menu.

Monitored Datastores

You can manage the list of datastores that must be included in the reporting scope:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Monitored Datastores** tab.
4. Expand the virtual infrastructure tree and select check boxes next to datastores that you want to include in reporting.

For more information on choosing datastores to report on, see section [Choosing Datastores to Report On](#) of the Veeam ONE Deployment Guide.



Monitored VMs

In the **Monitored VMs** section, you can manage the list of VMs and VM containers (hosts, clusters, datastores and so on) that must be included in the monitoring and reporting scope.

To choose what VMs and VM containers must be included in the monitoring and reporting scope:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Monitored VMs** tab.
4. Create rules that will be used to include VMs and VM containers to and exclude VMs and VM containers from monitoring and reporting.

For more information on choosing objects to monitor and report on, see section [Choosing VMs and VM Containers to Monitor and Report On](#) of the Veeam ONE Deployment Guide.

The screenshot shows the 'Server Settings' window with the 'Monitored VMs' tab selected. The window is divided into two main sections: 'VM Monitoring Inclusion Rules' and 'VM Monitoring Exclusion Rules'.
VM Monitoring Inclusion Rules:
A table lists one rule:

Enabled	Name	Scope	Description
<input checked="" type="checkbox"/>	Default rule	esx02.tech.local;	This rule includes all VMs in the in...

VM Monitoring Exclusion Rules:
A table lists one rule:

Enabled	Name	Scope	Description
<input checked="" type="checkbox"/>	Automatic exclusion rule	workstation2309; Virtual_Lab...	This rule excludes unlicensed VMs...

At the bottom, it shows:

Selected VMs: 99
vSphere: 99 Hyper-V: 0

OK Cancel

Business View

On the **Business View** tab, you can define the following settings:

- **Categorization model** – choose whether you want to import an existing categorization model or create your own categories and groups.
- **Ungrouped objects** – hide ungrouped objects from the Business View inventory tree.
- **Exclusions** – define objects that must be excluded from categorization.

For more information on Business View categorization, see [Business View](#).

Selecting Categorization Model

To select a categorization model:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. In the **Categorization model** section, select one of the following options:
 - **From vCenter Server and System Center Virtual Machine Manager** – select this option if you have vCenter Server tags or System Center Virtual Machine Manager properties assigned to virtual infrastructure objects, and you want to use these tags and properties to categorize objects in Veeam ONE Monitor.
 - **From CSV file** – select this option if you want to synchronize categorization data between Business View and a 3rd party application using a CSV file.
For more information on configuring data synchronization, see [Importing Categorization Data Automatically](#).
 - **Do not import** – select this option if you want to create a custom categorization model in Business View.
For more information on creating Business View categories, see [Creating Business View Categories and Groups](#).
 - **Import from CSV now** – now select this option if you want to map categorization data from a 3rd party application to Business View groups using a CSV file.
For more information on manual import from, see [Importing Categorization Data Manually](#).

NOTE:

You cannot enable synchronization with vCenter Server and System Center Virtual Machine Manager tags and properties and a CSV file at the same time. When you switch between these options or disable import, Veeam ONE Monitor deletes all previously imported categories.

Hiding Ungrouped Objects

To hide ungrouped objects from the Business View inventory tree:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. In the **Ungrouped objects** section, select **Hide ungrouped objects from the Business View tree**.
If you select **Hide ungrouped objects from the Business View tree** check box, Veeam ONE Monitor will hide the *Uncategorized* group and all objects within this group from the Business View inventory tree.

For more information on displaying the Business View inventory tree, see [Business View](#).

Defining Exclusions

To exclude objects from Business View categorization:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. In the **Exclusions** section, click the **Edit** link next to the type of object that you want to exclude.
5. [For virtual infrastructure objects] Choose platform for which you want to define exclusions (*VMware*, *Hyper-V*).
6. In the **Edit exclude rules** window, specify exclusion conditions:
 - From the **Property** drop-down list, select an object property.
The list contains all object properties that Veeam ONE collects from virtual and backup infrastructure servers.
 - From the **Operator** drop-down list, select a conditional operator.
The list contains the following operators: *Equals*, *Does not equal*, *Starts with*, *Contains*, *Does not contain*.
 - In the **Value** field, specify a value that will be checked in the condition.

The condition will be evaluated against discovered objects. To add another condition, click **Add Condition**.

By default, conditions are linked by the **AND** operator. That is, an object is excluded when all specified conditions are met. You can change this behavior by linking conditions with the **OR** operator. In this case, Veeam ONE will exclude an object from categorization when a condition for any of the linked rules is met.

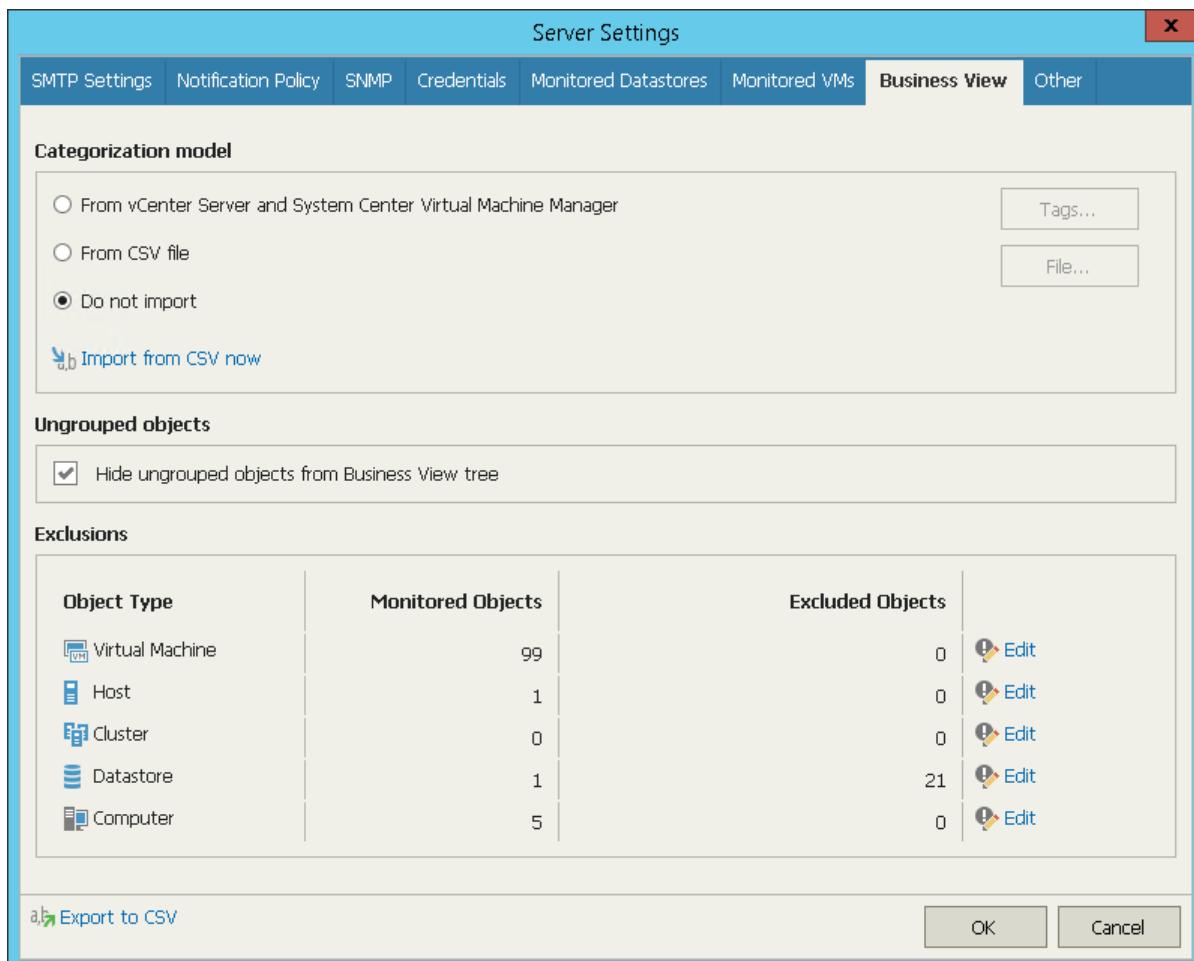
For example, you can exclude VMs based on their power state, datacenter name, and guest OS. If you want to exclude all powered on VMs that reside in datacenter Atlanta or run Linux as their guest OS, you must link these conditions. The second and the third conditions will be linked to each other with the OR operator. The first condition will be linked to them with the AND operator.

To link conditions:

- Select check boxes next to the necessary conditions and click **Link**.
- In the **Rule condition** window, select a link operator and click **OK**.

Linking supports 3 levels of nesting.

6. Click **Save**.



Other Settings

To specify miscellaneous server settings:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.

Alternatively, you can press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Other Settings** tab.
4. In the **vCloud Director** section, choose whether vCloud Director VMs must be shown in the Infrastructure View inventory tree:
 - If you clear the **Hide vCloud Director VMs from Virtual Infrastructure tree** check box, vCloud Director VMs will be shown both in the vCloud Director View and in the Infrastructure View inventory trees.

If you select the check box, vCloud Director VMs will be shown in the vCloud Director View inventory tree only.
 - If you clear the **Hide expired vCloud Director vApps from vCloud Infrastructure tree** check box, expired vCloud Director vApps will be shown both in the vCloud Director View and in the Infrastructure View inventory trees.

If you select the check box, expired vCloud Director vApps will be shown in the vCloud Director View inventory tree only.
5. In the **Notifications** section, you can disable and enable notification messages about support contract expiration:
 - If you clear the **Disable support contract expiration notifications** check box, Veeam ONE will display notification messages in the UI and notification emails.
 - If you fill the **Disable support contract expiration notifications** check box, Veeam ONE will not display notification messages in the UI and notification emails.

Note that this option does not disable internal alarms notifying about support expiration. It only controls whether notification messages must be displayed in the UI and notification emails. For more information on working with internal alarms, see section [Working with Internal Alarms](#) of the Veeam ONE Working with Alarms Guide.
6. In the **Support utility** section, click **Launch**, to run the Veeam ONE Settings Utility.

The utility allows you to change configuration settings of the Veeam ONE software components. For more information on working with Veeam ONE Settings Utility, see [Appendix. Veeam ONE Settings Utility](#).

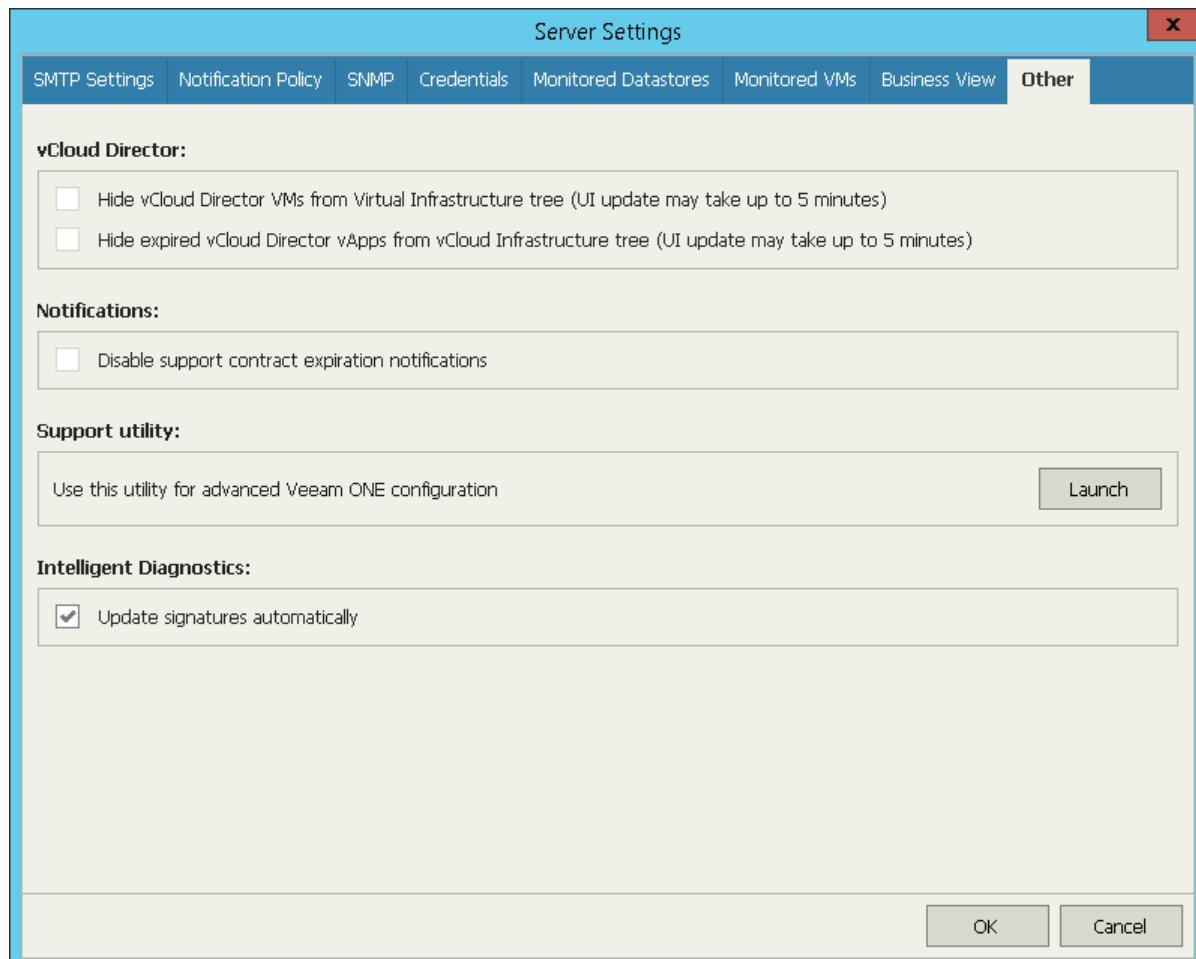
IMPORTANT!

The Veeam ONE Settings utility must be used only under the guidance of Veeam Support. It is strongly recommended that you obtain detailed instructions from the Veeam Support team before changing any configuration settings in your Veeam ONE deployment.

7. In the **Intelligent Diagnostics** section, you can disable and enable automatic update of Veeam Intelligent Diagnostics signatures:

- If you clear the **Update signatures automatically** check box, Veeam ONE will not connect to the Veeam Support web server and update signatures.
- If you fill the **Update signatures automatically** check box, Veeam ONE will connect to the Veeam Support web server and update signatures once a day.

For more information on working with signatures, see [Managing Signatures](#).



Data Protection Monitoring

Veeam ONE Monitor offers advanced functionality for monitoring Veeam Backup & Replication infrastructure and data protection operations in the managed virtual environment.

With Veeam ONE Monitor, you can:

- 1. Analyze Veeam Backup & Replication logs to find potential issues.**

Configure Veeam ONE to perform automatic diagnostics of backup infrastructure to facilitate troubleshooting and avoid data protection problems.

Veeam Intelligent Diagnostics feature allows you to receive alarms with recommendations and knowledge base articles on configuration of backup infrastructure and jobs.

- 2. Monitor the overall state of the backup infrastructure.**

Check the **Summary** dashboards to reveal hotspots in the Veeam Backup & Replication infrastructure.

Quickly review the latest status of backup, replication and SureBackup jobs, examine configuration and performance of your backup infrastructure components, detect the most loaded proxies, repositories, WAN accelerators, tape servers, cloud gateways and cloud repositories, and check whether your jobs complete within the backup window.

Summary dashboards help you quickly reveal issues that can lead to job failure, and cause loss of valuable data.

- 3. View triggered alarms.**

Go to the **Alarms** dashboard to see details on issues and problems in your backup infrastructure.

Data protection alarms allow you to instantaneously react to potentially dangerous situations with ongoing data protection and take immediate actions to eliminate the risk of data loss.

- 4. Check the latest job status.**

Track the status of your backup, replication, SureBackup, backup copy, SQL database transaction log backup, Oracle database backup jobs, backup to tape, file to tape, VM copy and file copy jobs.

Get up-to-date information on the efficiency of data protection in your virtual environment and address problems with jobs as soon as they appear.

- 5. Work with performance charts.**

Drill down to performance charts to diagnose performance problems with backup infrastructure components and identify bottlenecks.

Track CPU, memory, disk and network performance for backup servers, proxies, repositories and WAN accelerators to make sure the backup data flow is efficient, and all resources engaged in the backup process are optimally used.

- 6. View the list of events.**

View the full list of events that triggered Veeam Backup & Replication alarms, and events notifying about connection problems with Veeam Backup & Replication servers or Veeam Backup Enterprise Manager.

Prerequisites

Before you start monitoring the Veeam Backup & Replication infrastructure, make sure you have configured connections to Veeam Backup & Replication servers from which Veeam ONE will collect data. For more information on configuring server connections, see section [Connecting Veeam Backup & Replication Servers](#) of the Veeam ONE Deployment Guide.

Veeam Intelligent Diagnostics

Veeam Intelligent Diagnostics is a feature that allows to automatically detect known issues in configuration and performance of backup infrastructure. It enables Veeam ONE Monitor to parse logs from Veeam Backup & Replication servers and trigger alarms with recommendations based on the results of log analysis. This allows you to eliminate configuration issues without the necessity to address Veeam Support.

Veeam Intelligent Diagnostics process involves the following components:

- **Signatures** – problem definitions that are based on common issues investigated by Veeam Support.
Signatures are stored in Veeam ONE database and displayed as Intelligent Diagnostics alarms in the **Alarm Management** view.
Signatures can be updated manually or automatically. For more information on updating and importing signatures, see [Managing Signatures](#).
- **Veeam ONE agent** – a component that enables communication with Veeam Backup & Replication servers, performs collection of logs, and sends remediation commands.

Veeam ONE agent can work in the following modes:

- **Server**

In this mode, Veeam ONE agent is responsible for analyzing log data and signature updates.

Veeam ONE agent server is included into Veeam ONE installation package and deployed on the machine running Veeam ONE Monitor server during product installation.

- **Client**

In this mode, Veeam ONE agent is responsible for collecting logs and executing remediation actions on Veeam Backup & Replication servers.

Veeam ONE agent client is deployed on Veeam Backup & Replication servers when you connect these servers to Veeam ONE. You can also deploy client agents from Veeam ONE Monitor client. For more information on managing client Veeam ONE agents, see [Managing Veeam ONE Agents](#).

NOTE:

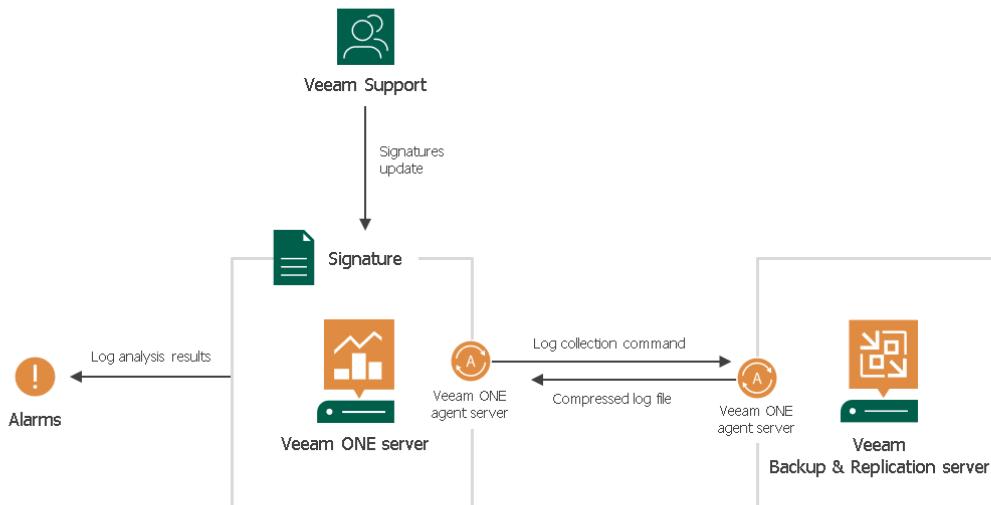
Veeam Intelligent Diagnostics is available for Veeam Backup & Replication version 9.5 Update 3 or later.

How Veeam Intelligent Diagnostics Works

Veeam Intelligent Diagnostics works in the following way:

1. When Veeam Intelligent Diagnostics session starts, Veeam ONE Monitor sends a command to Veeam ONE agent client to collect logs from Veeam Backup & Replication.
2. Veeam ONE agent client creates a compressed log file and sends it to Veeam ONE agent server.
3. Veeam ONE agent server parses Veeam Backup & Replication logs for known exceptions and error messages by comparing logs with signatures.

- If any known issues found, Veeam ONE Monitor triggers an alarm with recommendations and knowledge base articles from Veeam Support.



How to Configure Veeam Intelligent Diagnostics

To configure Veeam Intelligent Diagnostics, perform the following steps:

- Install Veeam ONE agents on Veeam Backup & Replication servers connected to Veeam ONE and configure agent settings.
For details, see [Managing Veeam ONE Agents](#).
- Obtain an up-to-date version of signatures from Veeam Support.
For details, see [Managing Signatures](#).
- Configure log analysis schedule or start log analysis session manually.
For details, see [Performing Log Analysis](#).

Managing Veeam ONE Agents

In Veeam ONE Monitor you can install, remove, repair and configure Veeam ONE agents.

Installing Veeam ONE Agents

By default, Veeam ONE Monitor installs Veeam ONE agent when you connect Veeam Backup & Replication or Veeam Backup Enterprise Manager servers in Veeam ONE Monitor. If you skipped Veeam ONE agent installation, you can install it later.

To install Veeam ONE agent on Veeam Backup & Replication:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the main node.
4. Open the **Veeam ONE Agent** tab.
5. From the list of connected Veeam Backup & Replication servers, select servers on which you want to install Veeam ONE agent and do either of the following:
 - o Right-click the selected server and choose **Install** from the shortcut menu.
 - o In the **Actions** pane, click **Install**.

Press and hold the [CTRL] or [SHIFT] key to select multiple servers.

Configuring Veeam ONE Agent Settings

You can configure settings of Veeam ONE agents installed on Veeam Backup & Replication servers:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the main node.
4. Open the **Veeam ONE Agent** tab.
5. From the list of connected Veeam Backup & Replication servers, select servers for which you want to configure Veeam ONE agent settings and do either of the following:
 - o Right-click the selection and choose **Settings** from the shortcut menu.
 - o In the **Actions** pane, click **Settings**.

Press and hold the [CTRL] or [SHIFT] key to select multiple agents.

6. In the **Veeam ONE Agent Settings** window, specify the required settings:

- **Remediation actions** – keep this check box selected if you want to allow Veeam ONE agent perform remediation actions on alarms.

For more information on alarm remediation actions, see section [Alarm Remediation Actions](#) of the Veeam ONE Working with Alarms Guide.

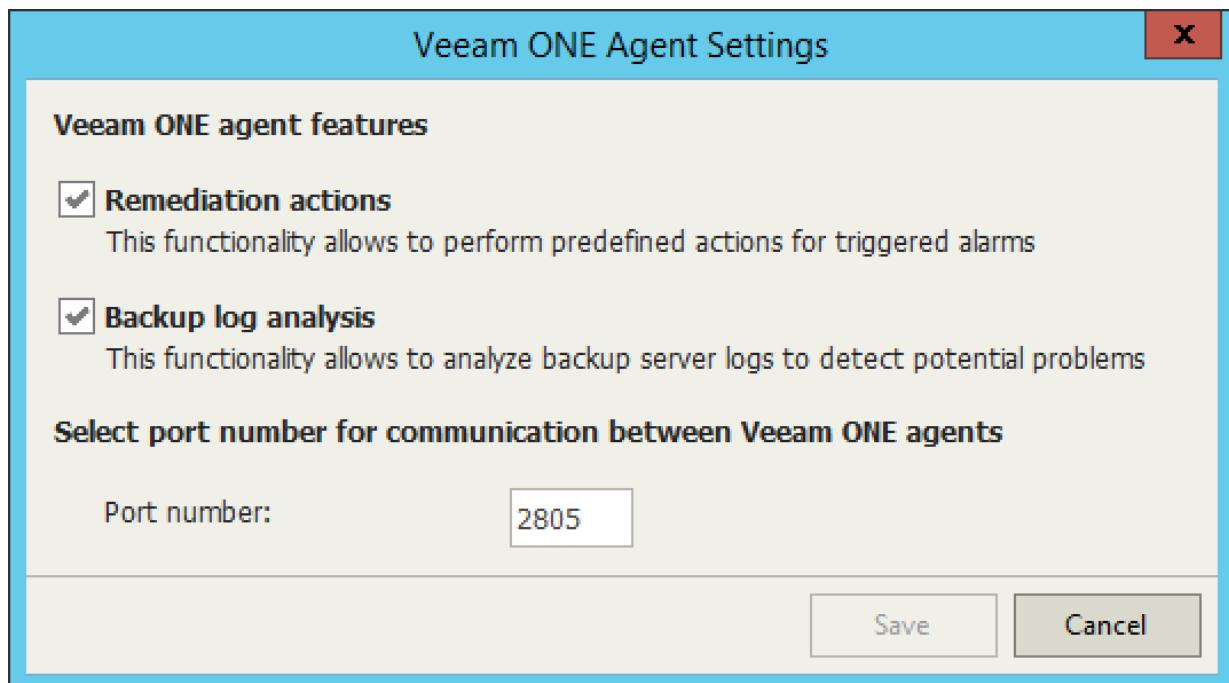
- **Log Analysis** – keep this check box selected if you want to allow Veeam ONE agent perform analysis of Veeam Backup & Replication logs.

For more information on log analysis, see [Performing Log Analysis](#).

- In the **Port number** field, specify the number of the port that Veeam ONE Monitor will use to communicate with Veeam ONE agent installed on Veeam Backup & Replication server.

If you change the port number, Veeam ONE will automatically repair Veeam ONE agent to re-establish connection. For details, see [Repairing Veeam ONE Agents](#).

7. Click **Save**.



Repairing Veeam ONE Agents

If the connection to Veeam ONE agent is lost, you might try to perform a repair. When you repair Veeam ONE agent, Veeam ONE Monitor re-installs the agent on Veeam Backup & Replication server and re-establishes connection.

To repair Veeam ONE agent:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the main node.
4. Open the **Veeam ONE Agent** tab.

- From the list of connected Veeam Backup & Replication servers, select servers on which you want to repair Veeam ONE agent and do either of the following:

- Right-click the selected server and choose **Repair** from the shortcut menu.
- In the **Actions** pane, click **Repair**.

Press and hold the [CTRL] or [SHIFT] key to select multiple servers.

Removing Veeam ONE Agents

If you no longer want to analyze logs and perform remediation actions for Veeam Backup & Replication, you can uninstall Veeam ONE agents:

- Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

- At the bottom of the inventory pane, click **Data Protection View**.
 - In the inventory pane, select the main node.
 - Open the **Veeam ONE Agent** tab.
 - From the list of connected Veeam Backup & Replication servers, select servers from which you want to uninstall Veeam ONE agent and do either of the following:
- Right-click the selected server and choose **Remove** from the shortcut menu.
 - In the **Actions** pane, click **Remove**.

Press and hold the [CTRL] or [SHIFT] key to select multiple servers.

Managing Signatures

If automatic signature update is enabled, and Veeam ONE Monitor server is connected to the Internet, it will connect to the Veeam Support web server and update signatures automatically on a daily basis.

For more information on enabling automatic signature update, see [Other Settings](#).

Alternatively, you can manually check for an available update of signatures or import signatures from file provided by Veeam Support.

Updating Signatures

To update diagnostic signatures:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the main node.
4. Open the **Veeam ONE Agent** tab.
5. At the top of the page, click **Update Signatures**.

Veeam ONE Monitor will connect to Veeam Support server over the Internet, check if an update is available, and download the latest version of signatures.

Importing Signatures

If Veeam ONE Monitor server has no Internet connection, you can manually import the file with the latest version of signatures:

1. Obtain the `.package` file from Veeam Support or download the file from [Veeam website](#).
2. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
3. At the bottom of the inventory pane, click **Data Protection View**.
4. In the inventory pane, select the main node.
5. Open the **Veeam ONE Agent** tab.
6. At the top of the page, click **Import Signatures**.
7. Specify a path to the `.package` file with signatures obtained from Veeam Support or downloaded from Veeam website and click **Open**.

Performing Log Analysis

Veeam ONE Monitor allows you to perform log analysis according to the defined schedule or manually:

- When a scheduled log analysis session starts, Veeam ONE Monitor analyzes Veeam Backup & Replication logs for the last 48 hours or since the last successful log analysis session (whichever is later).
By default, Veeam ONE agent is set to perform log analysis daily at 7:00 AM. To change the default log analysis schedule, see [Scheduling Automated Log Analysis](#).
- When you start a log analysis session manually, Veeam ONE Monitor analyzes Veeam Backup & Replication logs for the last 24 hours or since the last successful log analysis session (whichever is later).
For more information on starting log analysis manually, see [Starting Log Analysis Manually](#).

Scheduling Automated Log Analysis

To set up daily schedule for automated log analysis:

- Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
- At the bottom of the inventory pane, click **Data Protection View**.
- In the inventory pane, select the main node.
- Open the **Veeam ONE Agent** tab.
- From the list of Veeam Backup & Replication servers with installed Veeam ONE agent, select servers for which you want to configure log analysis schedule and do either of the following:
 - Right-click the selection and choose **Log analysis schedule** from the shortcut menu.
 - In the Actions pane, click **Schedule**.

Press and hold the [CTRL] or [SHIFT] key to select multiple agents.

- In the **Log Analysis Schedule** window, specify the time at which log analysis must start daily.
To disable a scheduled start, select **Manually**.
- Click **Save**.

Starting Log Analysis Manually

- Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
- At the bottom of the inventory pane, click **Data Protection View**.
- In the inventory pane, select the main node.
- Open the **Veeam ONE Agent** tab.
- From the list of Veeam Backup & Replication servers with installed Veeam ONE agent, select servers for which you want to perform log analysis and do either of the following:
 - Right-click the selection and choose **Start** from the shortcut menu.

- In the Actions pane, click **Start**.

Press and hold the [CRTL] or [SHIFT] key to select multiple agents.

6. To check the log analysis session history, click a link in the **Log Analysis Session State** column.

Stopping Log Analysis

You can stop a session, for example, if log analysis is about to take long, and you do not want to produce workload on the production environment during business hours.

To stop log analysis:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. At the bottom of the inventory pane, click **Data Protection View**.

3. In the inventory pane, select the main node.

4. Open the **Veeam ONE Agent** tab.

5. From the list of Veeam Backup & Replication servers with installed Veeam ONE agent, select servers for which you want to stop log analysis session and do either of the following:

- Right-click the selection and choose **Stop** from the shortcut menu.

- In the Actions pane, click **Stop**.

Press and hold the [CRTL] or [SHIFT] key to select multiple agents.

Veeam Backup & Replication Summary Dashboards

Data protection summary dashboards serve as the 'launch point' for monitoring the backup infrastructure and data protection operations in the virtual environment. The dashboards reflect the latest state of backup, replication and SureBackup jobs, and help you analyze the performance and configuration of backup infrastructure components.

Veeam ONE Monitor offers the following types of summary dashboards for Veeam Backup & Replication infrastructure components:

- [Backup Infrastructure Summary](#)
- [Backup Repositories Overview](#)
- [Backup Repository Summary](#)
- [Proxy Servers Overview](#)
- [Proxy Server Summary](#)
- [WAN Accelerators Overview](#)
- [WAN Accelerator Summary](#)
- [Tape Servers Overview](#)
- [Tape Server Summary](#)
- [Cloud Repositories Overview](#)
- [Cloud Repository Summary](#)
- [Cloud Gateways Overview](#)
- [Cloud Gateway Pool Summary](#)
- [Cloud Gateway Summary](#)

To view summary details for a specific backup infrastructure object or segment:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary infrastructure level.
4. Open the **Summary** tab.

NOTE:

For proxy servers, repositories, WAN accelerators and tape servers, there are two summary dashboards:

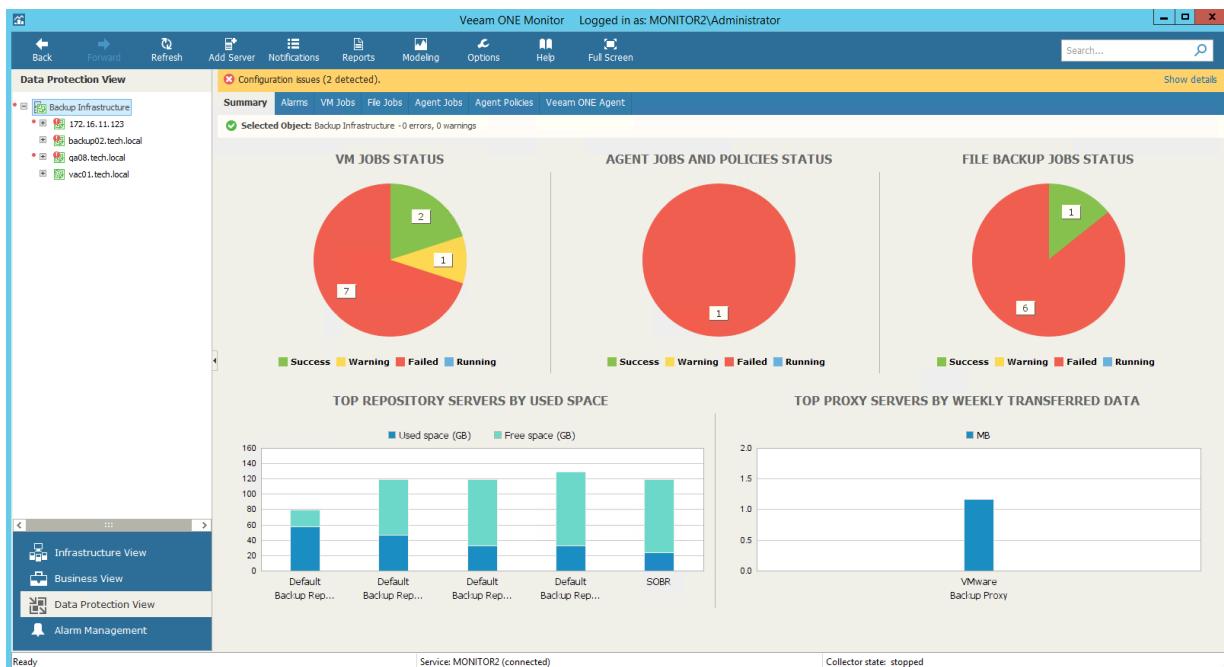
- **Summary** dashboards aggregate performance details for the previous week.
- **Monthly Summary** dashboards aggregate performance details for the previous month.

Backup Infrastructure Summary

The backup infrastructure summary dashboard shows the latest state of data protection operations in the virtual environment and indicates the most intensively used resources in the backup infrastructure.

The dashboard is available for the following nodes:

- Backup Infrastructure
- Veeam Backup Enterprise Manager
- Veeam Backup & Replication server



VM Jobs Status, Agent Jobs and Policies Status, File Backup Jobs Status

The charts reflect the latest status of VM protection jobs, agent protection jobs and policies, and file protection jobs for the selected level of the backup infrastructure hierarchy.

Every chart segment shows how many jobs ended with a specific status – failed jobs (red), jobs that ended with warnings (yellow), successfully performed jobs (green), and jobs that are currently running (blue). Click the necessary chart segment or a legend label to drill down to the list of jobs that ended up with the corresponding status.

For more information on Veeam Backup & Replication VM job details, see [VM Jobs](#).

For more information on Veeam Backup & Replication file job details, see [File Jobs](#).

For more information on Veeam Backup Agent for Windows and Veeam Backup Agent for Linux jobs managed by Veeam Backup & Replication servers, see [Agent Jobs](#).

For more information on Veeam Backup Agent for Windows and Veeam Backup Agent for Linux policies managed by Veeam Backup & Replication servers, see [Agent Policies](#).

Top Repository Servers by Used Space

The chart shows 5 backup repositories with the greatest amount of used storage space.

For every repository in the chart, you can track the amount of used storage space against the amount of available space. If free space on the repository is running low, you might need to free up storage space, revise your backup retention policy or even move your backups from the repository and point backup jobs to a new location.

Top Proxy Servers by Weekly Transferred Data

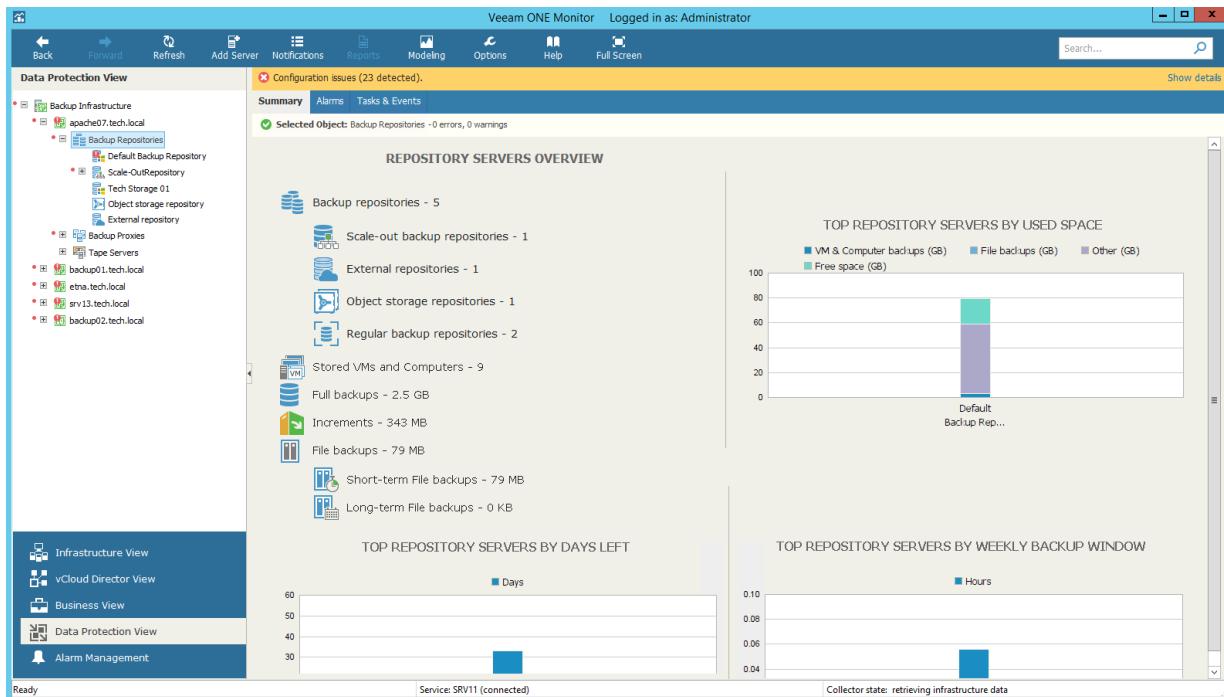
The chart shows 5 backup proxies that processed the greatest amount of data over the past 7 days.

To draw the chart, Veeam ONE analyzes how many VM disk processing tasks and how many file shares were successfully performed by every proxy; failed tasks are not taken into account.

The chart helps you detect the most heavily loaded VM and file proxies and optimize the performance of your backup infrastructure. If specific proxies are overloaded with processing tasks, and the jobs often need to wait for proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

Backup Repositories Overview

The summary dashboard for the **Repositories** node provides a configuration overview and performance analysis for backup repositories managed by a backup server.



Repository Servers Overview

The section provides the following details:

- Number of repositories managed by the backup server
- Number of scale-out backup repositories
- Number of external repositories
- Number of object storage repositories
- Number of regular backup repositories
- Number of VMs and computers whose data is stored in backups on repositories
- Cumulative amount of storage space occupied by full VM and computer backups
- Cumulative amount of storage space occupied by incremental VM and computer backups
- Number of short-term and long-term file backups

Top Repository Servers by Used Space

The chart shows 5 backup repositories with the greatest amount of used storage space.

For every repository in the chart, you can see the amount of storage space used by VM, agent and file backups against the amount of available space. If free space on the repository is running low, you might need to free up storage space on the repository or revise your backup retention policy.

Top Repository Servers by Days Left

The chart shows 5 backup repositories that can run low on storage space sooner than others.

To draw the chart, Veeam ONE analyzes historical data and checks how fast free space on repositories has been decreasing in the past. Veeam ONE uses historical statistics to forecast how soon the repository will run out of space.

Top Repository Servers by Weekly Backup Window

The chart allows you to detect the most 'busy' repositories over the past 7 days.

For every repository, the chart shows the cumulative amount of time that the repository was busy with backup, backup copy and file backup job tasks.

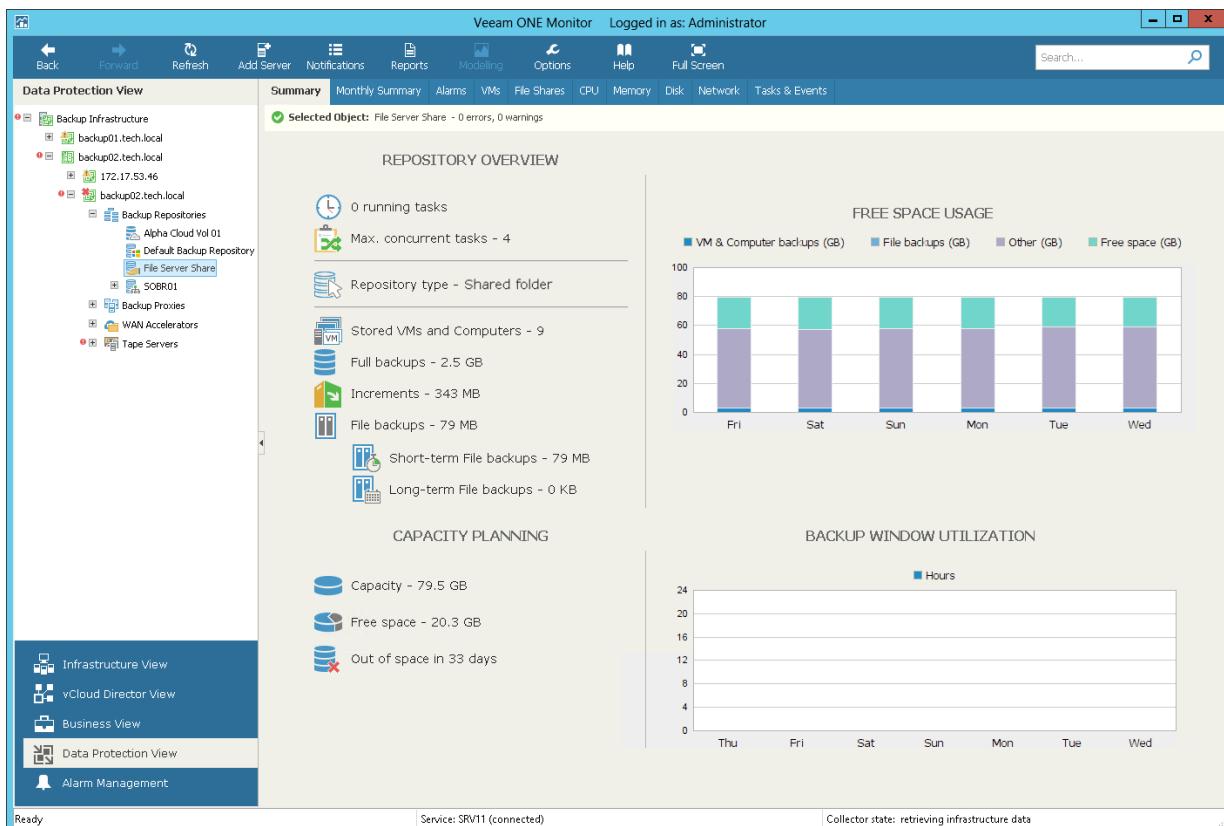
Backup Repository Summary

Veeam ONE Monitor offers the following types of summary dashboards for backup repositories:

- [Regular backup repository summary](#)
- [Scale-out backup repository summary](#)
- [Object storage repository summary](#)
- [External repository summary](#)

Regular Backup Repository Summary

The regular repository summary dashboard provides overview details, capacity planning information and performance analysis for a chosen backup repository for the last week or month.



Repository Overview

The section provides the following details:

- Number of tasks that are currently running on the repository
- Maximum number of concurrent tasks allowed for the repository
- Repository type
- Number of VMs and computers whose data is stored in backups on the repository
- Cumulative amount of storage space occupied by full VM and computer backups

- Cumulative amount of storage space occupied by incremental VM and computer backups
- Cumulative amount of storage space occupied by short-term and long-term file backups

Capacity Planning

The section provides the following details:

- Storage capacity of the repository
- Amount of free space on the repository
- Number of days before the repository runs out of free space

To forecast the value, Veeam ONE uses a trend that is calculated based on historical statistics – it analyzes how fast the amount of free space on the repository was decreasing in the past and uses historical statistics to forecast how soon the repository will run out of space.

Free Space Usage

The chart shows the amount of used storage space against the amount of available space on the repository.

If free space on the repository is running low, you might need to free up storage space on the repository, revise your backup retention policy, or consider pointing jobs to a scale-out backup repository.

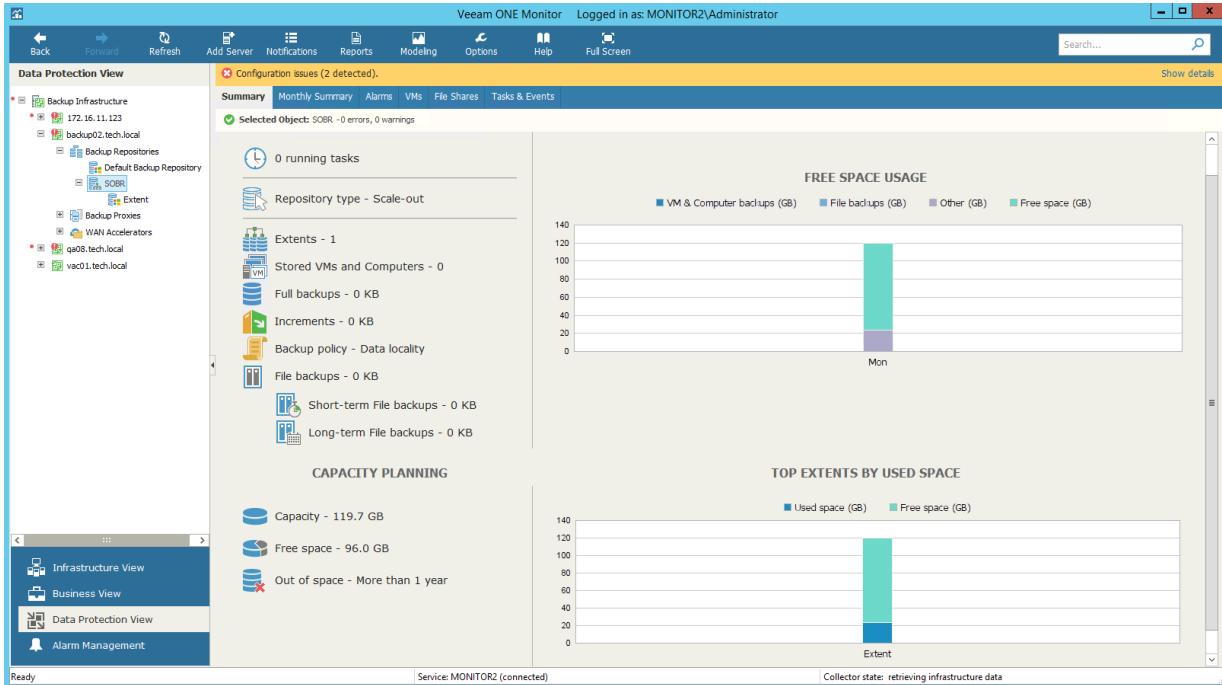
Backup Window Utilization

The chart shows the cumulative amount of time that the repository was busy with backup job tasks and backup copy job tasks during the past week or month.

The chart can help you reveal possible resource bottlenecks on the repository side. If the backup window on the chart is abnormally large, this may evidence that the required I/O operations cannot complete fast enough, and your target is presenting a bottleneck for the whole backup data processing conveyor. To identify performance bottlenecks, you can switch to repository [Veeam Backup & Replication Performance Charts](#).

Scale-Out Backup Repository Summary

The scale-out repository summary dashboard provides overview details, capacity planning information and performance analysis for a chosen scale-out backup repository for the last week or month.



Repository Overview

The section provides the following details:

- Number of tasks that are currently running on the repository
- Repository type (Scale-out backup repository)
- Number of extents and object storage repositories that make up the scale-out backup repository
- Number of VMs and computers whose data is stored in backups on the repository
- Cumulative amount of storage space occupied by full VM and computer backups
- Cumulative amount of storage space occupied by incremental VM and computer backups
- Cumulative amount of storage space occupied by short-term and long-term file backups
- Backup placement policy (as configured in the scale-out repository settings)

Capacity Planning

The section provides the following details:

- Storage capacity of the repository
- Amount of free storage space on the repository
- Number of days before the repository runs out of free space.

To forecast the value, Veeam ONE uses a trend that is calculated based on historical statistics – it analyzes how fast the amount of free space on the repository was decreasing in the past and uses historical statistics to forecast how soon the repository will run out of space.

Free Space Usage

The chart shows the amount of used storage space against the amount of available space on the repository.

If free space on the repository is running low, you might need to free up storage space on the repository, revise your backup retention policy, or consider pointing jobs to another repository.

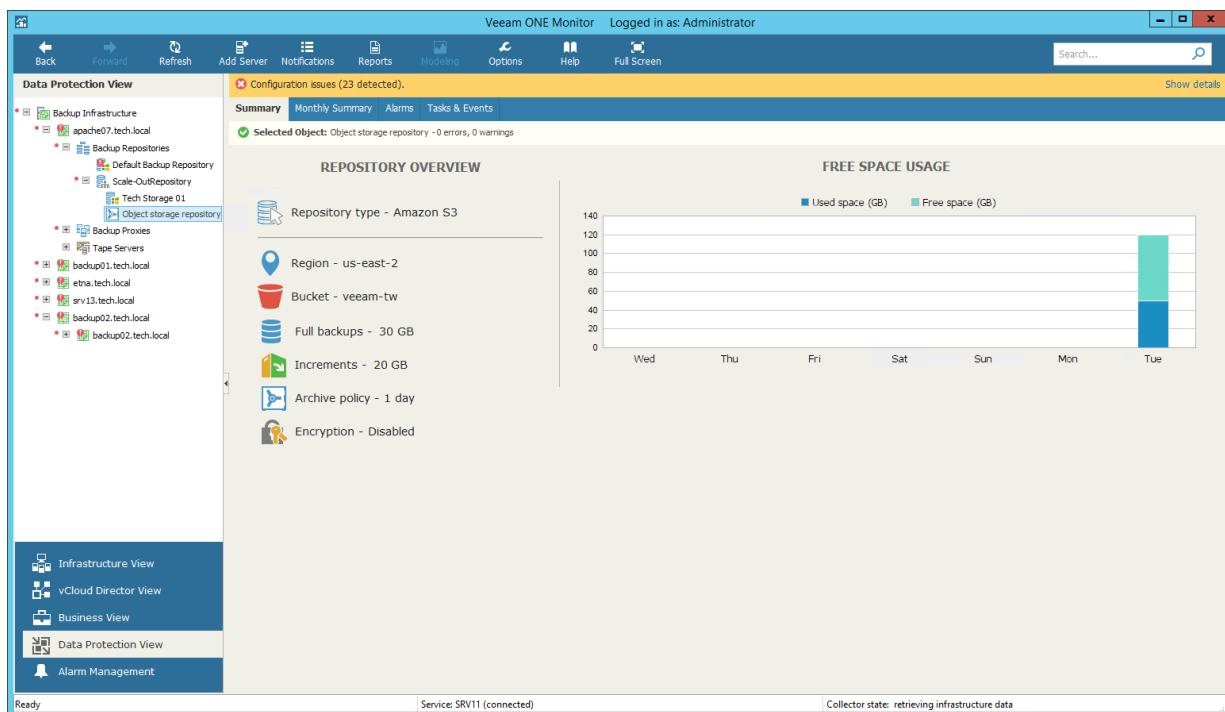
Top Extents by Used Space

The chart shows extents with the greatest amount of used storage space.

For every extent in the chart, you can see the amount of used storage space against the amount of available space.

Object Storage Repository Summary

The object storage repository summary dashboard provides overview details and performance analysis for a chosen object storage repository added as a Capacity Tier for the last week or month.



Repository Overview

The section provides the following details:

- Repository type
- Region at which the repository is located
- Name of bucket or container
- Cumulative amount of storage space occupied by full VM and computer backups

- Cumulative amount of storage space occupied by incremental VM and computer backups
- Backup files archive policy (as configured in the capacity tier settings)
- Encryption settings (as configured in the capacity tier settings)

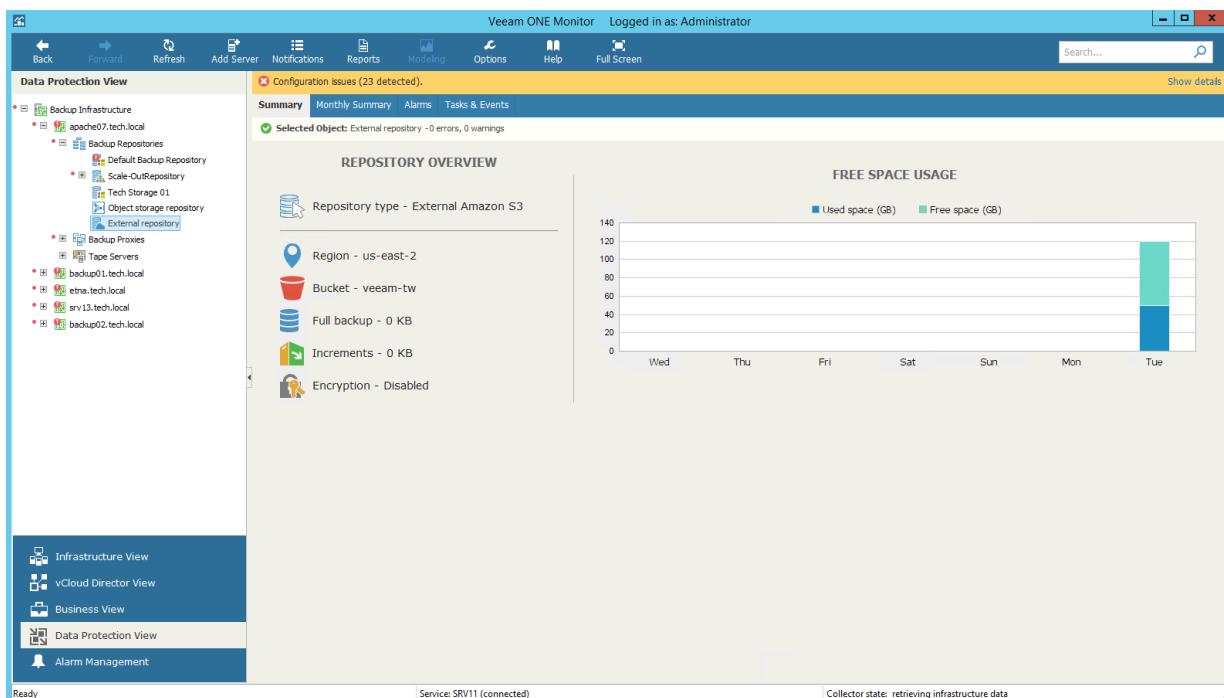
Free Space Usage

The chart shows the amount of used storage space against the amount of available space on the repository.

If free space on the repository is running low, you might need to free up storage space on the repository, revise your backup retention policy, or consider pointing jobs to another repository.

External Repository Summary

The external repository summary dashboard provides overview details and performance analysis for a chosen external repository for the last week or month.



Repository Overview

The section provides the following details:

- Repository type (External repository)
- Region at which the repository is located
- Name of bucket
- Number of VMs and computers whose data is stored in backups the repository
- Cumulative amount of storage space occupied by full VM and computer backups
- Cumulative amount of storage space occupied by incremental VM and computer backups
- Encryption settings (as configured in the external repository settings)

Free Space Usage

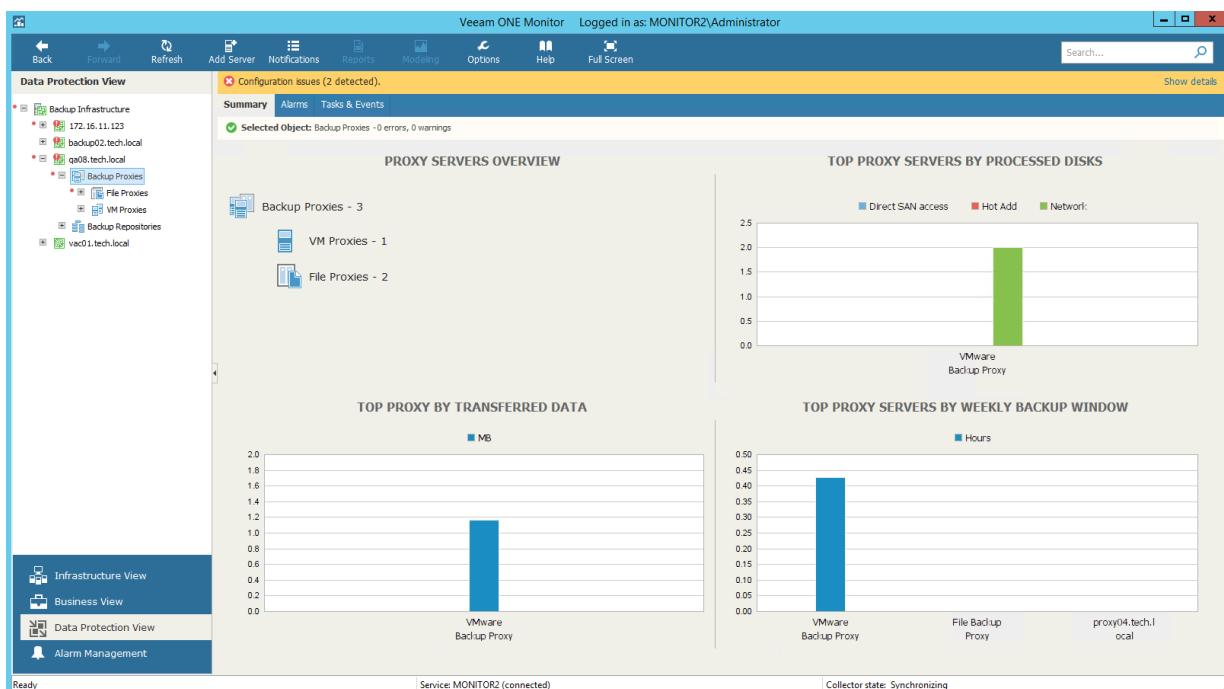
The chart shows the amount of used storage space against the amount of available space on the repository.

If free space on the repository is running low, you might need to free up storage space on the repository, revise your backup retention policy, or consider pointing jobs to another repository.

Proxy Servers Overview

The summary dashboard for the **Proxies** node provides a configuration overview and performance analysis for VM proxies and file proxies managed by a backup server.

This dashboard can help you detect configuration inefficiencies in your data protection infrastructure. If the same proxy server appears to process a great number of disks, transfer the greatest amount of backup data and use the largest backup window, you might need to re-balance the processing load across your backup proxies. The charts may also help you reveal 'lazy' proxies that you might decide to decommission.



Proxy Servers Overview

The section shows the breakdown of backup proxies by the proxy type (*VM Proxies*, *File Proxies*).

Top Proxy Servers by Processed Disks

The chart shows 5 VM proxies that processed the greatest number of VMs over the past 7 days.

To draw the chart, Veeam ONE analyzes how many VM processing tasks were successfully performed by every proxy; failed tasks are not taken into account.

The chart helps you detect the most heavily loaded backup proxies and optimize the performance of your backup infrastructure. If specific proxies are overloaded with VM processing tasks, and the tasks often need to wait for proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

You can use the **Chart views** list to view the number of VMs processed by VMware and Hyper-V backup proxies.

Top Proxy by Transferred Data

The chart shows 5 backup proxies that transferred the greatest amount of backup data to the target destination (backup repository or replica datastore/volume) over the past 7 days.

For every backup proxy, the chart shows the total amount of data that the proxy transferred over the network after the source-side deduplication and compression. The chart can help you detect backup proxies that transfer the greatest amount of backup data and estimate the load that backup and replication jobs impose on the network.

Top Proxy Servers by Weekly Backup Window

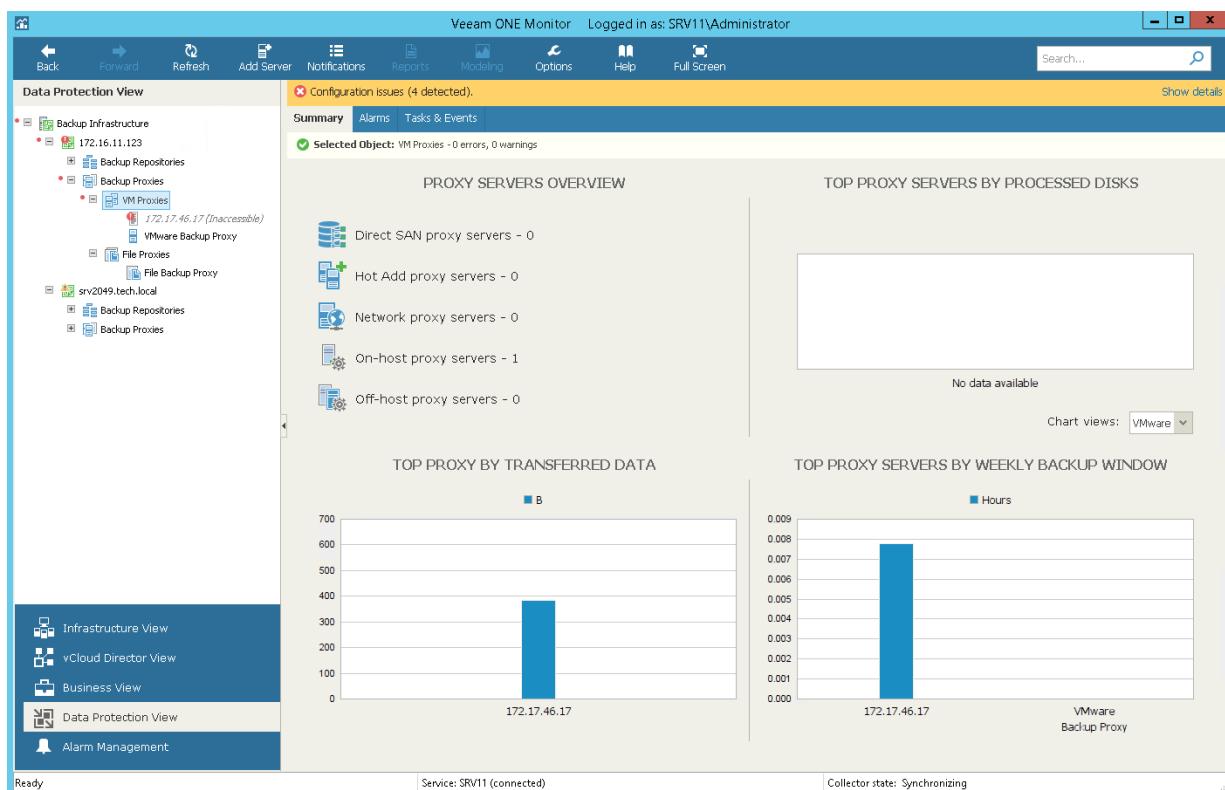
The chart allows you to detect the most 'busy' proxy servers over the past 7 days.

For every proxy, the chart shows the cumulative amount of time that the proxy was retrieving, processing and transferring VM and file share data.

The chart can help you reveal possible resource bottlenecks. If the backup window on the chart is abnormally large, this can evidence of low source data retrieval speed, high proxy CPU load or insufficient network throughput.

VM Proxy Servers Overview

The summary dashboard for the **VM Proxies** node provides a configuration overview and performance analysis for VM proxies and file proxies managed by a backup server.



Proxy Servers Overview

The section shows the breakdown of backup proxies by the transport or backup mode:

- [VMware vSphere] You can see how many VMware backup proxies retrieve VM data from source datastores using the Direct SAN Access, Hot Add or Network transport mode.

If a backup proxy uses different modes to retrieve VM data from various source datastores, Veeam ONE will detect its primary transport mode quantitatively, based on the number of processed VM disks. For example, if a backup proxy processed 10 VM disks using the Hot Add mode and 20 VM disks using the Network mode, the proxy would be reported as a 'Network proxy server'.

- [Microsoft Hyper-V] You can see how many Hyper-V proxies retrieve and process VM data in the on-host and off-host backup modes.

Top Proxy Servers by Processed Disks

The chart shows 5 backup proxies that processed the greatest number of VMs over the past 7 days.

To draw the chart, Veeam ONE analyzes how many VM processing tasks were successfully performed by every proxy; failed tasks are not taken into account.

The chart helps you detect the most heavily loaded backup proxies and optimize the performance of your backup infrastructure. If specific proxies are overloaded with VM processing tasks, and the tasks often need to wait for proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

You can use the **Chart views** list to view the number of VMs processed by VMware and Hyper-V backup proxies.

Top Proxy by Transferred Data

The chart shows 5 backup proxies that transferred the greatest amount of backup data to the target destination (backup repository or replica datastore/volume) over the past 7 days.

For every backup proxy, the chart shows the total amount of data that the proxy transferred over the network after the source-side deduplication and compression. The chart can help you detect backup proxies that transfer the greatest amount of backup data and estimate the load that backup and replication jobs impose on the network.

Top Proxy Servers by Weekly Backup Window

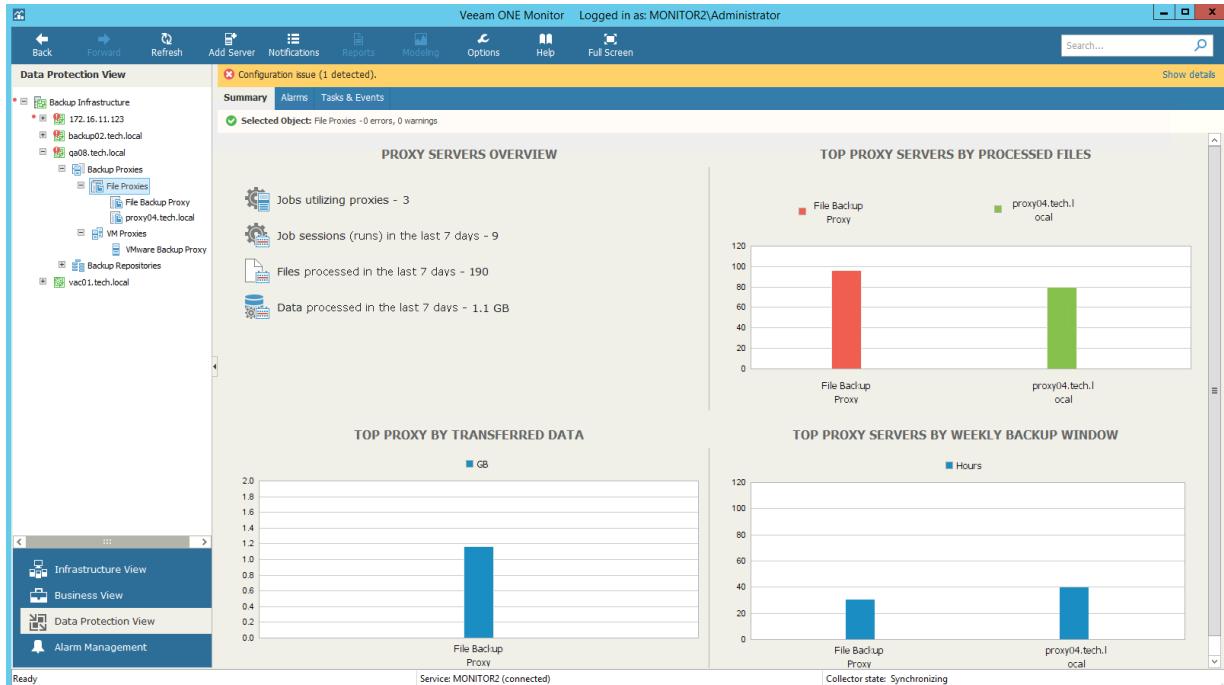
The chart allows you to detect the most 'busy' proxy servers over the past 7 days.

For every proxy, the chart shows the cumulative amount of time that the proxy was retrieving, processing and transferring VM data.

The chart can help you reveal possible resource bottlenecks. If the backup window on the chart is abnormally large, this can evidence of low source data retrieval speed, high proxy CPU load or insufficient network throughput.

File Proxy Servers Overview

The summary dashboard for the **File Proxies** node provides a configuration overview and performance analysis for file proxies managed by a backup server.



Proxy Servers Overview

The section provides the following details:

- Number of file backup jobs configured to use file proxies
- Number of job sessions that the proxies have processed during the last 7 days
- Number of files that the proxies have processed during the last 7 days
- Total amount of data that the proxy has processed during the last 7 days

Top Proxy Servers by Processed Files

The chart shows 5 file proxies that processed the greatest number of files over the last 7 days.

To draw the chart, Veeam ONE analyzes how many files were successfully processed by every proxy.

The chart helps you detect the most heavily loaded file proxies and optimize the performance of your backup infrastructure. If specific proxies are overloaded with file processing tasks, and the tasks often need to wait for proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

Top Proxy by Transferred Data

The chart shows 5 file proxies that transferred the greatest amount of backup data to the target destination (backup repository) over the last 7 days.

For every backup proxy, the chart shows the total amount of data that the proxy transferred over the network after the source-side deduplication and compression. The chart can help you detect backup proxies that transfer the greatest amount of backup data and estimate the load that file backup jobs impose on the network.

Top Proxy Servers by Weekly Backup Window

The chart allows you to detect the most 'busy' proxy servers over the last 7 days.

For every proxy, the chart shows the cumulative amount of time that the proxy was retrieving, processing and transferring file share data.

The chart can help you reveal possible resource bottlenecks. If the backup window on the chart is abnormally large, this can evidence of low source data retrieval speed, high proxy CPU load or insufficient network throughput.

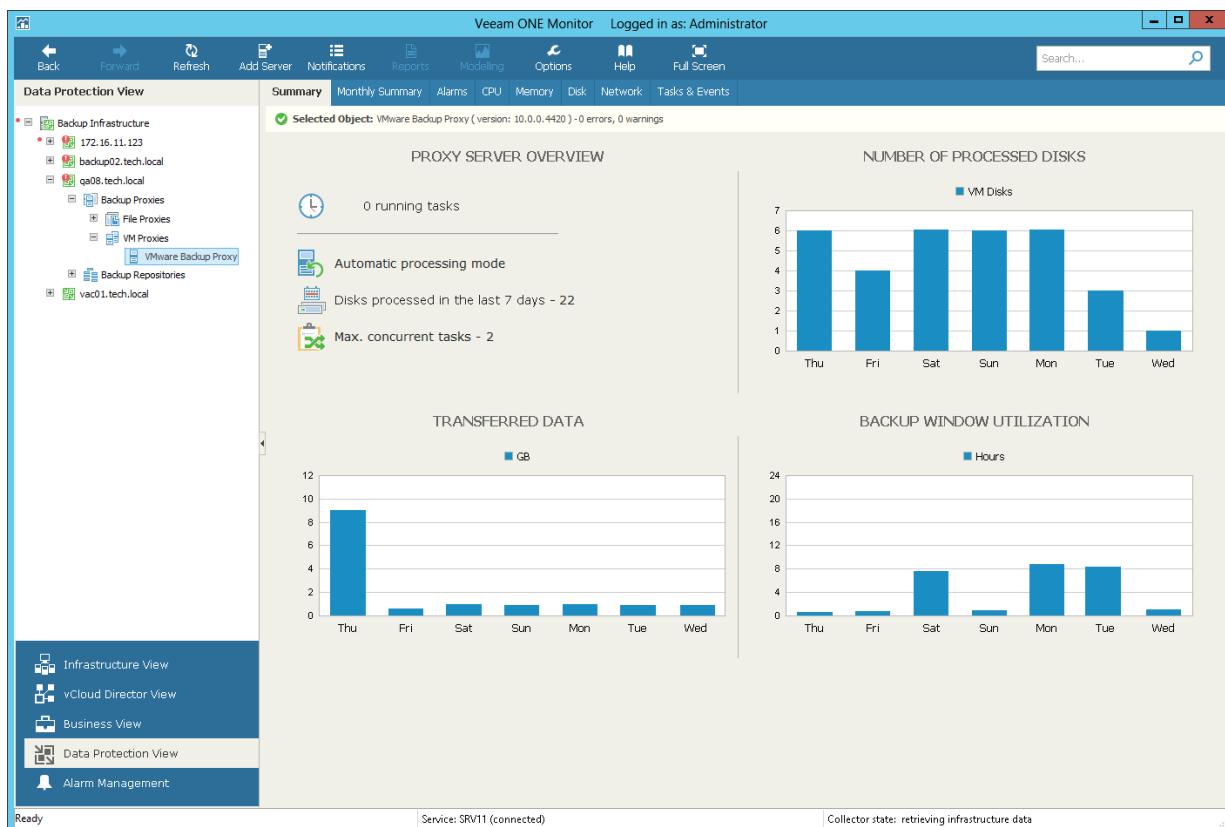
Proxy Server Summary

Veeam ONE Monitor offers the following types of summary dashboards for backup proxies:

- [VM proxy summary](#)
- [File proxy summary](#)

VM Proxy Summary

The VM proxy summary dashboard provides overview details and performance analysis for a chosen VM backup proxy for the last week or month.



Proxy Server Overview

The section provides the following details:

- Number of tasks that the proxy is currently processing
- Mode that the proxy uses to process VM disks (Direct SAN Access, Hot Add or Network for VMware backup proxies; on-host or off-host for Hyper-V proxies)
- Number of VM disks that the proxy has processed during the last 7 days
- Number of concurrent VM disk processing tasks that can be assigned to the proxy (as configured in proxy settings)

Number of Processed Disks

The chart shows how many VM disks the proxy processed over the last 7 days.

To draw the chart, Veeam ONE Monitor analyzes how many disk processing tasks were successfully performed by the proxy; failed tasks are not taken into account.

The chart helps you to analyze workload on the proxy and optimize the performance of your backup infrastructure. If the proxy is overloaded with processing tasks, and the tasks often need to wait for the proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

Transferred Data

The chart shows the amount of backup data that the proxy transferred to the target destination (backup repository or replica, datastore/volume) over the last 7 days.

The chart shows the total amount of data that the proxy transferred over the network after the source-side deduplication and compression. The chart can help you measure the amount of backup traffic coming from the proxy.

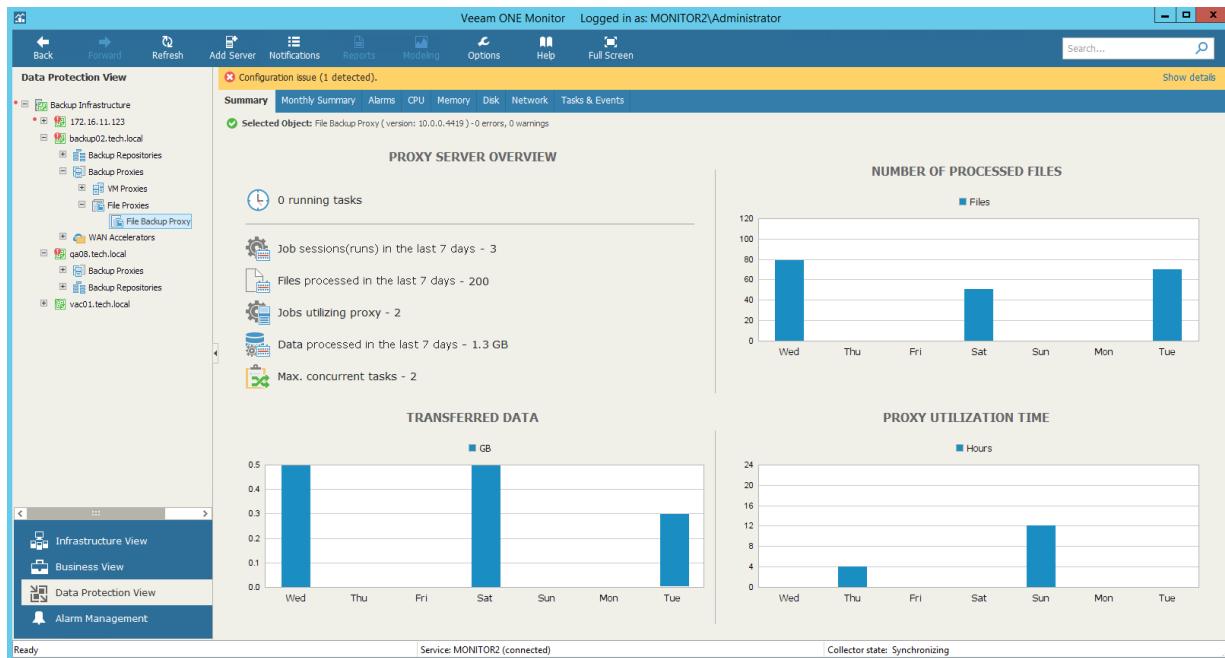
Backup Window Utilization

The chart allows you to estimate how 'busy' the proxy was during the last 7 days. The chart shows the cumulative amount of time that the proxy was retrieving, processing and transferring VM data.

The chart can help you reveal possible resource bottlenecks. If the backup window on the chart is abnormally large, this can evidence of low source data retrieval speed, high proxy CPU load or insufficient network throughput. To identify performance bottlenecks, you can switch to proxy [Veeam Backup & Replication Performance Charts](#).

File Proxy Summary

The file proxy summary dashboard provides overview details and performance analysis for a chosen file backup proxy for the last week or month.



Proxy Server Overview

The section provides the following details:

- Number of tasks that the proxy is currently processing
- Number of job sessions that the proxy has processed during the last 7 days
- Number of files that the proxy has processed during the last 7 days
- Number of file backup jobs configured to use the proxy
- Total amount of data that the proxy has processed during the last 7 days
- Number of concurrent file processing tasks that can be assigned to the proxy (as configured in proxy settings)

Number of Processed Files

The chart shows how many files the proxy processed over the last 7 days.

To draw the chart, Veeam ONE Monitor analyzes how many files were successfully processed by the proxy.

The chart helps you to analyze workload on the proxy and optimize the performance of your backup infrastructure. If the proxy is overloaded with processing tasks, and the tasks often need to wait for the proxy resources, you might need to deploy additional proxies or balance the processing load by assigning jobs to other proxies.

Transferred Data

The chart shows the amount of backup data that the file proxy transferred to the target destination (backup repository) over the last 7 days.

The chart shows the total amount of data that the proxy transferred over the network after the source-side deduplication and compression. The chart can help you measure the amount of backup traffic coming from the proxy.

Proxy Utilization Time

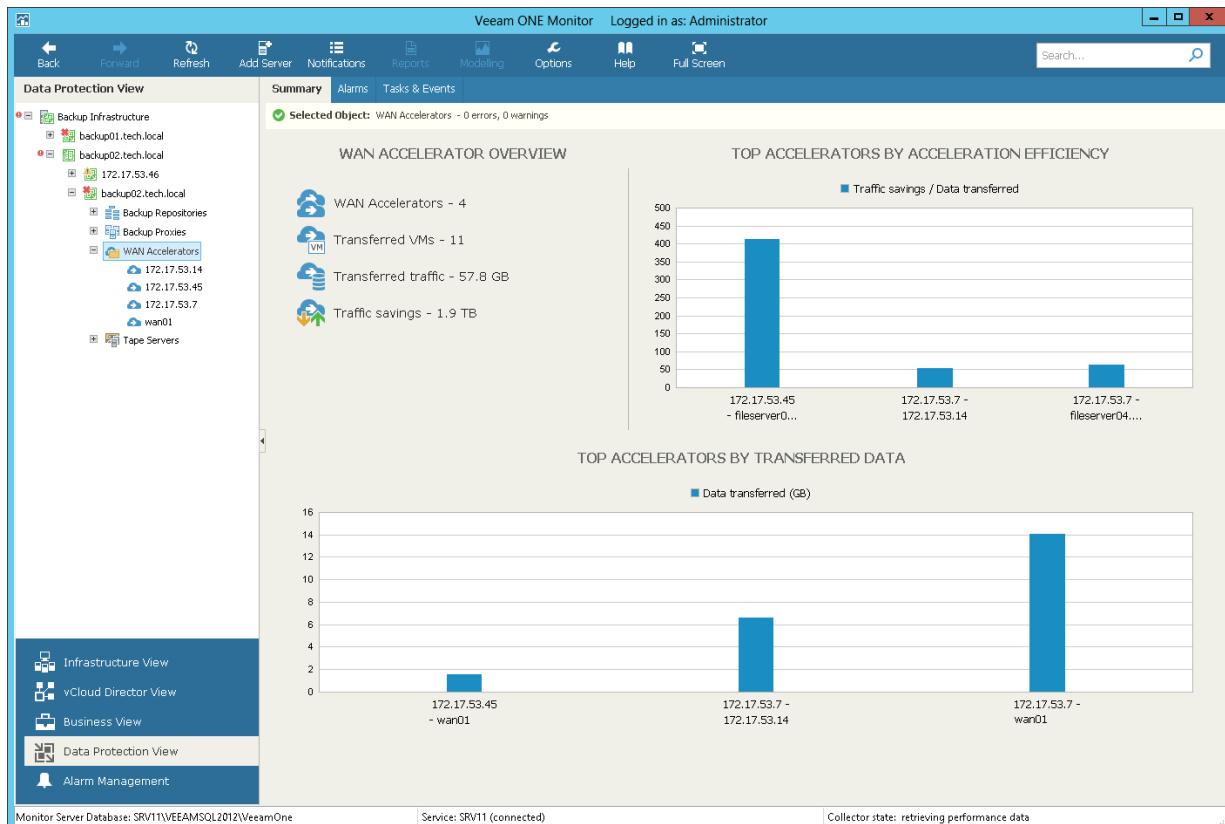
The chart allows you to estimate how 'busy' the proxy was during the last 7 days. The chart shows the cumulative amount of time that the proxy was retrieving, processing and transferring file share data.

The chart can help you reveal possible resource bottlenecks. If the utilization time on the chart is abnormally large, this can evidence of low source data retrieval speed, high proxy CPU load or insufficient network throughput. To identify performance bottlenecks, you can switch to proxy [Veeam Backup & Replication Performance Charts](#).

WAN Accelerators Overview

The summary dashboard for the **WAN Accelerators** node provides a configuration overview and performance analysis for WAN accelerators managed by a backup server.

Charts in this dashboard can help you estimate the efficiency of VM data transfer over WAN links. Comparing the amount of transferred and saved traffic, you can measure how the amount of VM traffic was reduced by means of Veeam WAN acceleration.



WAN Accelerator Overview

The section provides the following details:

- Number of WAN accelerators managed by the backup server
- Number of VMs and computers stored in restore points transferred by WAN accelerators during backup copy job and replication job sessions
- Cumulative amount of network traffic transferred by WAN accelerators to the target destination (secondary repositories or replica datastore/volume)
- Cumulative amount of saved traffic – that is, the difference between the amount of VM or computer data that was read from the source location (source repository or datastore/volume) and the amount of data that was actually transferred to the target destination (secondary repository or replica datastore/volume)

Top Accelerators by Acceleration Efficiency

The chart shows 5 pairs of WAN accelerators that saved the greatest amount of traffic over the past 7 days.

To draw the chart, Veeam ONE analyzes the difference between the amount of VM or computer data read from the source location (source repository or datastore/volume) and the amount of data that was actually transferred to the target destination (secondary repository or replica datastore/volume) over the past 7 days.

Top Accelerators by Transferred Data

The chart shows 5 pairs of WAN accelerators that transferred the greatest amount of VM and computer data over the past 7 days.

Every graph in the chart shows the total amount of VM and computer data that was sent from the source-side accelerator to the target-side accelerator over the network.

WAN Accelerator Summary

The WAN accelerator summary dashboard presents overview details and performance analysis for the chosen WAN accelerator.

The screenshot shows the Veeam ONE Monitor interface with the 'Data Protection View' selected. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen, along with a search bar. The main content area has tabs for Summary, Alarms, CPU, Memory, Disk, Network, and Tasks & Events, with 'Summary' selected. A message at the top states 'Selected Object: 172.17.53.7 (version: 9.0.0.1491) - 0 errors, 0 warnings'. The left sidebar lists 'Data Protection View' (Backup Infrastructure, WAN Accelerators), 'Infrastructure View', 'vCloud Director View', 'Business View', 'Data Protection View' (selected), and 'Alarm Management'. The right side features three main sections: 'WAN ACCELERATOR OVERVIEW' with metrics for Transferred VMs (8), Transferred traffic (53.3 GB), and Traffic savings (1.3 TB); 'ACCELERATOR EFFICIENCY' with a table showing Tenant/Accelerator, Average Daily Savings (GB), and Savings Ratio; and 'TRANSFERRED DATA BY DAY' with a stacked bar chart showing Data transferred (GB) and Data savings (GB) for specific dates. The bottom status bar indicates 'Monitor Server Database: SRV11\VEEAMSQL2012\veeamOne', 'Service: SRV11 (connected)', and 'Collector state: retrieving events data'.

WAN Accelerator Overview

The section provides the following details:

- Number of VMs and computers stored in restore points transferred or received by the WAN accelerator during backup copy job or replication job sessions.
If the same server acts as a target- and source-side accelerator at the same time, the dashboard will show aggregate values for transferred and received restore points.
- Amount of network traffic transferred from the accelerator to target.
- Amount of saved traffic – the difference between the amount of VM and computer data that was read from the source location (source repository or datastore/volume) and the amount of data that was actually transferred to the target destination (secondary repository or replica datastore/volume).

Accelerator Efficiency

The chart shows WAN accelerators that saved the greatest amount of traffic over the past period.

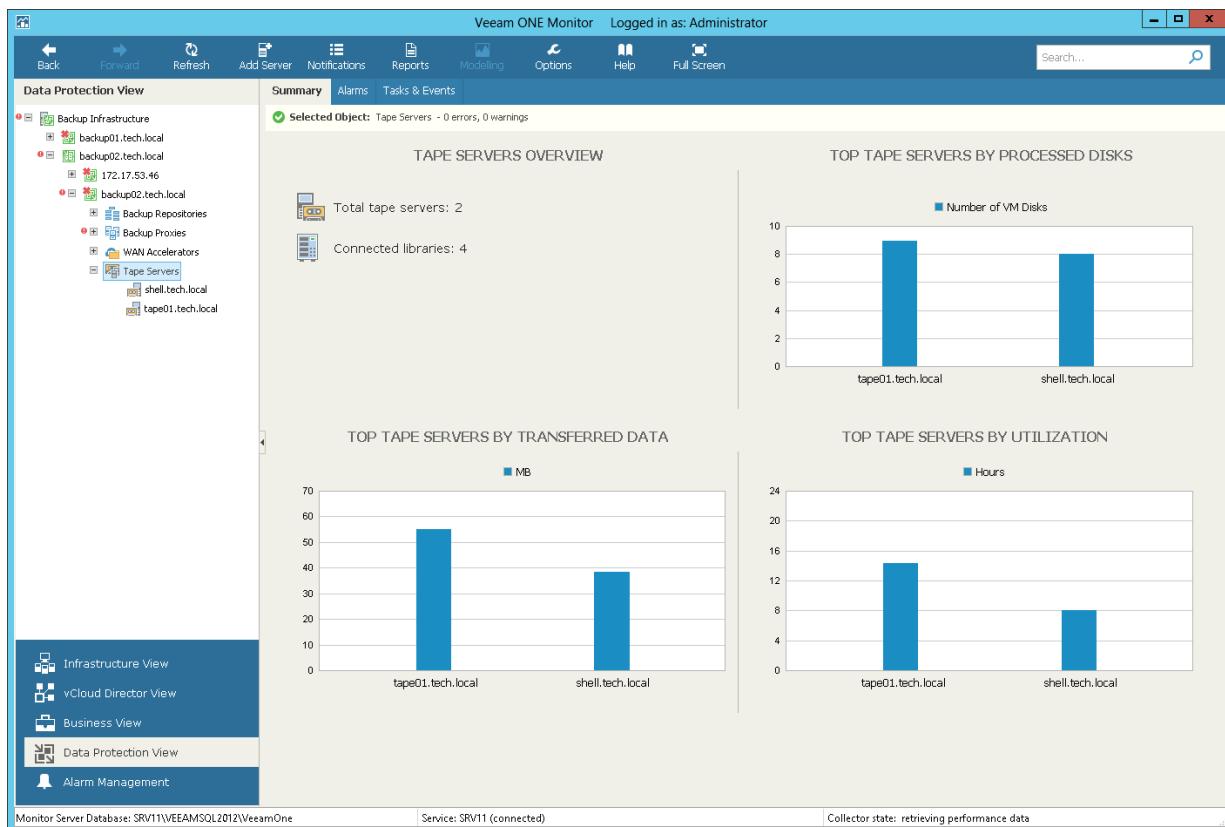
The chart lists tenant or accelerator IP, the average amount of traffic the accelerator saves daily in GB, and the ratio between the amount of VM and computer data read from the source location and the amount of data that was transferred to the destination.

Transferred Data by Day

The chart shows the amount of VM and computer data that was read from the source location (source repository or datastore/volume) and the amount of data that was actually transferred to the target destination (secondary repository or replica datastore/volume) over the past period.

Tape Servers Overview

The summary dashboard for the **Tape Servers** node presents a configuration overview and performance analysis for tape servers managed by a backup server.



Tape Servers Overview

The section shows the number of tape servers managed by a Veeam Backup & Replication server, and tape libraries connected to these servers.

Top Tape Servers by Processed Disks

The chart shows 5 tape servers that processed and archived to tape the greatest number of VM disks over the past 7 days. To draw the chart, Veeam ONE calculates the total number of VM disks in all backup restore points archived to tape.

Top Tape Servers by Transferred Data

The chart shows 5 tape servers that transferred the greatest amount of data to tape devices over the past 7 days.

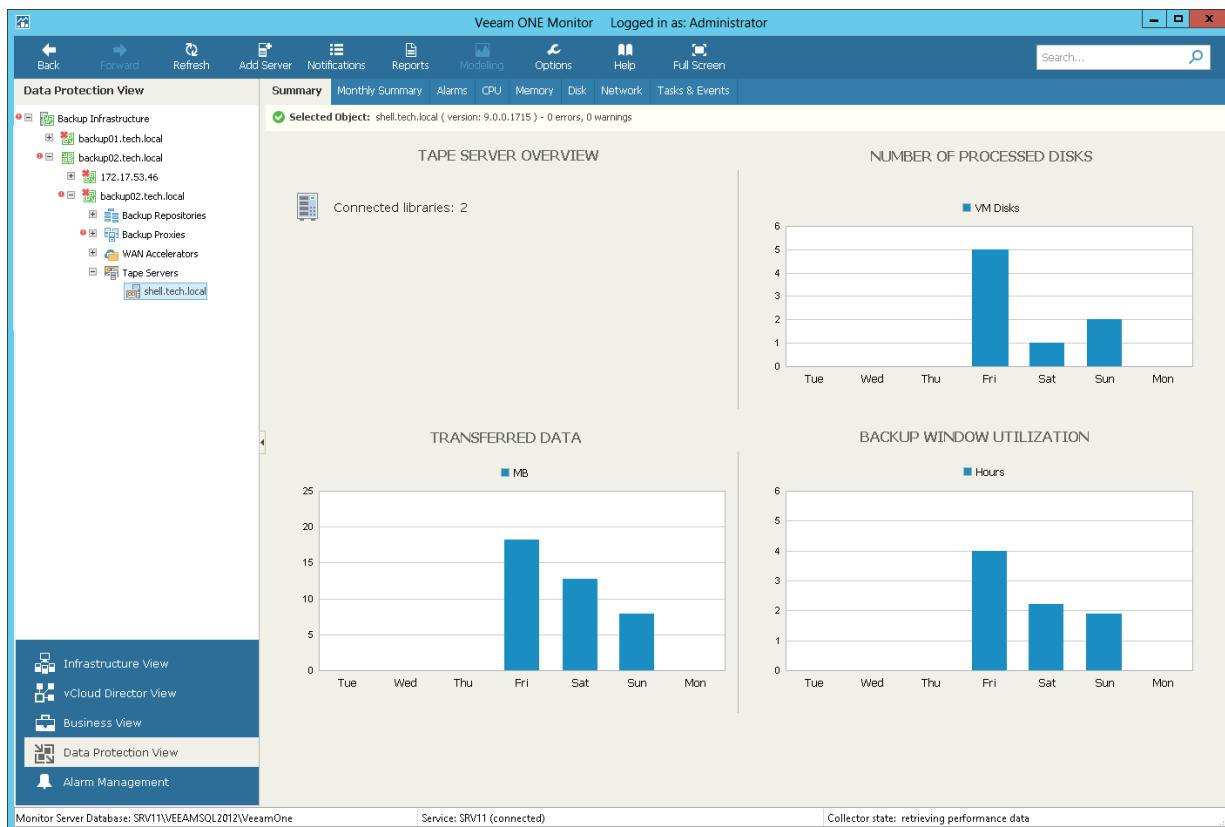
Top Tape Servers Utilization

The chart allows you to detect the most 'busy' tape servers over the past 7 days. For every tape server, the chart shows the cumulative amount of time that the server was retrieving, processing and transferring data.

The chart can help you reveal possible resource bottlenecks. If the graph on the chart is abnormally large, this can evidence of low data retrieval speed, high CPU load or insufficient network throughput.

Tape Server Summary

The tape server summary dashboard provides overview information and performance analysis for the chosen tape server.



Tape Server Overview

The section outlines the number of tape libraries connected to the tape server.

Number of Processed Disks

The chart shows how many VM disks the tape server processed and archived to tape over the past 7 days. To draw the chart, Veeam ONE calculates the total number of VM disks in all backup restore points archived to tape.

Transferred Data

The chart shows the amount of data that the tape server transferred to tape devices over the past 7 days. The chart can help you measure the amount of traffic coming from the tape server.

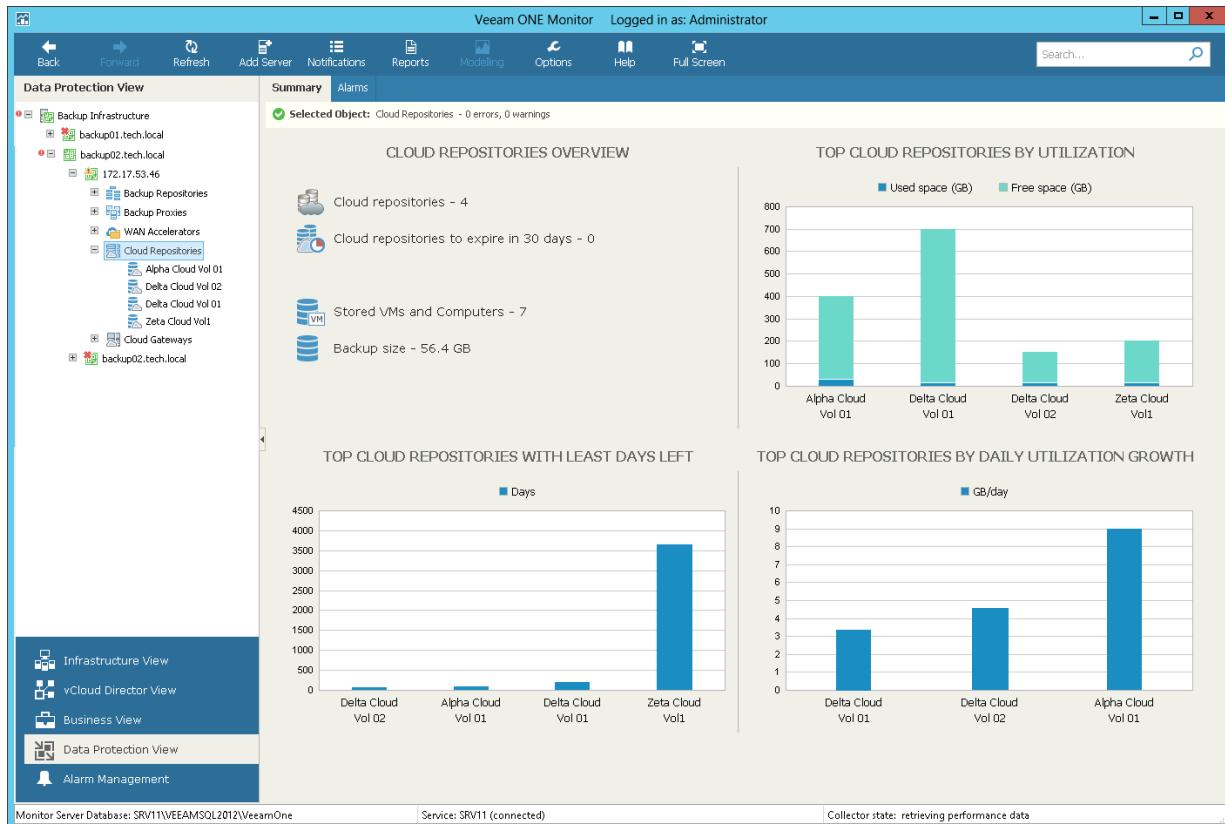
Backup Window Utilization

The chart allows you to estimate how 'busy' the tape server was during the past 7 days. The chart shows the cumulative amount of time that the tape server was retrieving, processing and transferring data.

The chart can help you reveal possible resource bottlenecks. If the backup window on the chart is abnormally large, this can evidence of low source data retrieval speed, high CPU load or insufficient network throughput.

Cloud Repositories Overview

The summary dashboard for the **Cloud Repositories** node presents a configuration overview and storage utilization analysis for cloud repositories (repositories allocated for users by Veeam Cloud Connect Service Providers).



Cloud Repositories Overview

The section provides the following details:

- Number of cloud repositories created for Veeam Cloud Connect users
- Number of cloud repository leases that will expire within 30 days
- Number of VMs and computers whose data is stored in backups on cloud repositories
- Cumulative amount of storage space occupied by VM and computer backups on all managed cloud repositories

Top Cloud Repositories by Utilization

The chart shows 5 cloud repositories with the greatest amount of used storage space.

For every repository in the chart, you can see the amount of used storage space against the amount of available space. If free space on the repository is running low, you might need to increase the repository quota.

Top Cloud Repositories with Least Days Left

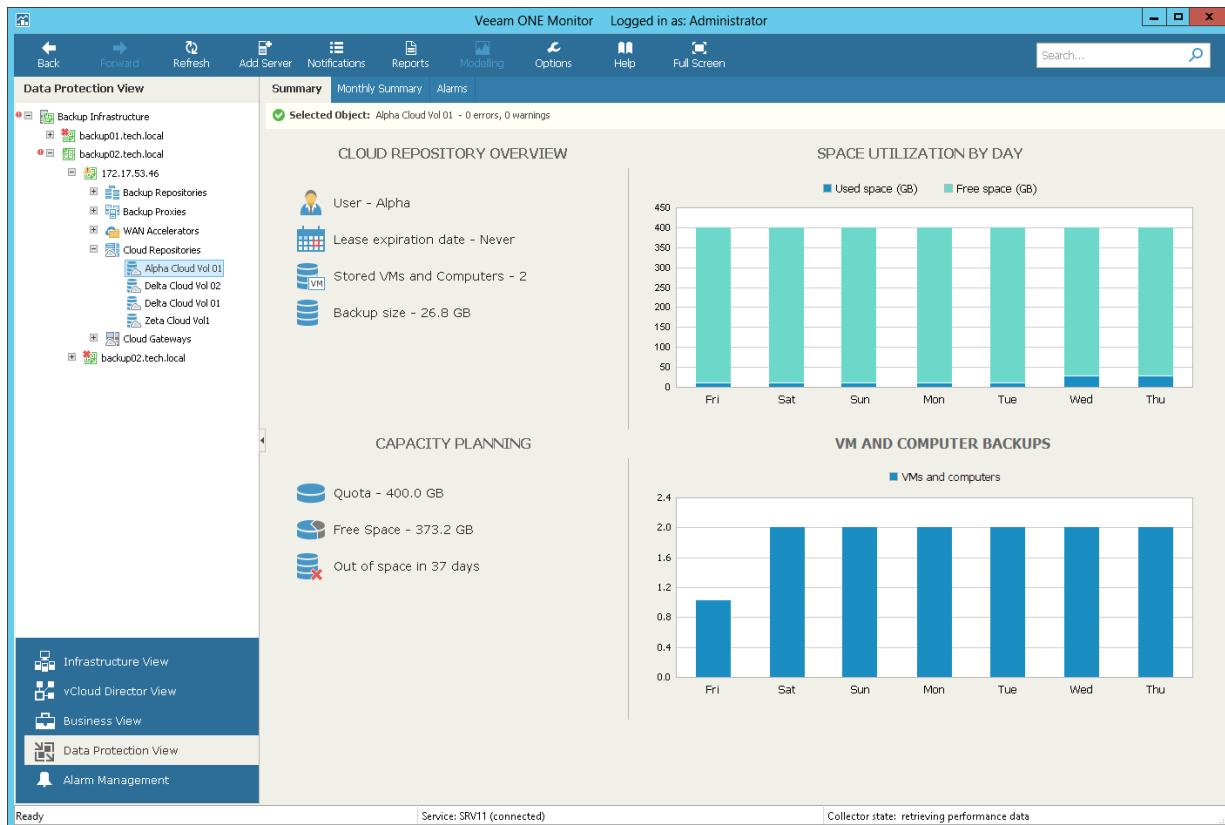
The chart shows 5 cloud repositories that can run low on storage space sooner than others. To draw the chart, Veeam ONE analyzes historical data and checks how fast free space on repositories has been decreasing in the past. Veeam ONE uses historical statistics to forecast how soon the repository will run out of space.

Top Cloud Repositories by Daily Utilization Growth

The chart allows you to detect how fast the amount of used space on repositories increased over the past 7 days. For every repository, the chart shows the daily disk space growth usage rate (the average increase in GB per day).

Cloud Repository Summary

The cloud repository summary dashboard provides overview details and space utilization analysis for the chosen cloud repository (repository allocated for a user by a Veeam Cloud Connect Service Provider).



Cloud Repository Overview

The section provides the following details:

- Name of the user that owns the cloud repository
- Date when the repository lease is set to expire
- Number of VMs and computers whose data is stored in backups stored on the cloud repository
- Cumulative amount of storage space occupied by VM and computer backups on the cloud repository

Capacity Planning

The section outlines the following details:

- User quota, that is the amount of space allocated to a user
- Amount of free storage space on the cloud repository
- Number of days before the cloud repository runs out of free space

To forecast the value, Veeam ONE uses a trend that is calculated based on historical statistics – it analyzes how fast the amount of free space on the repository was decreasing in the past and uses historical statistics to forecast how soon the repository will run out of space.

Space Utilization by Day

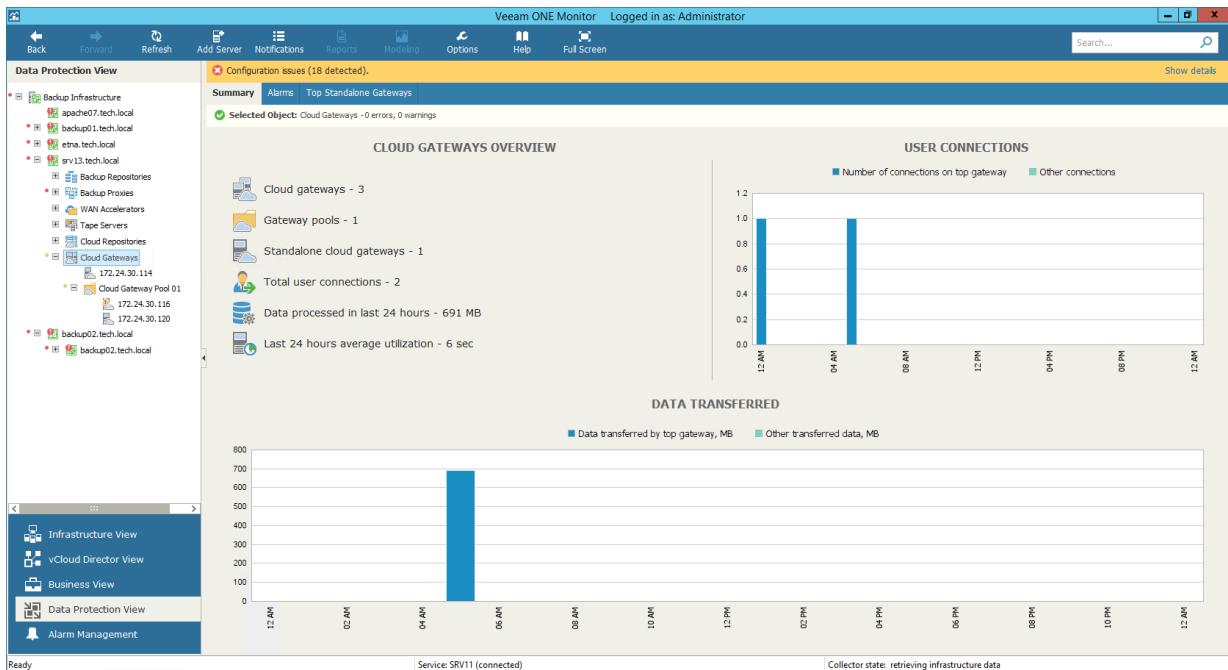
The chart shows the amount of used storage space against the amount of available space on the cloud repository. If free space on the repository is running low, you might need to increase the repository quota.

VM and Computer Backups

The chart shows the number of VMs and computers whose backups were written to the repository during the past period.

Cloud Gateways Overview

The summary dashboard for the **Cloud Gateways** node presents a configuration overview and performance analysis for cloud gateways managed by a backup server.



Cloud Gateways Overview

The section provides the following details:

- Number of cloud gateways managed by the backup server
- Number of gateway pools configured on the backup server
- Number of standalone cloud gateways configured on the backup server
- Number of connections to the gateways over the past 24 hours
- Amount of backup data that was transferred through all cloud gateways
- Average amount of time during which the gateways were utilized over the past 24 hours

User Connections

The chart shows the most loaded cloud gateways in terms of user connections. The chart shows the number of connections to the most utilized gateways, as well as connections to other gateways.

To draw the chart, Veeam ONE calculates how many connections were established to each cloud gateway over the past 24 hours.

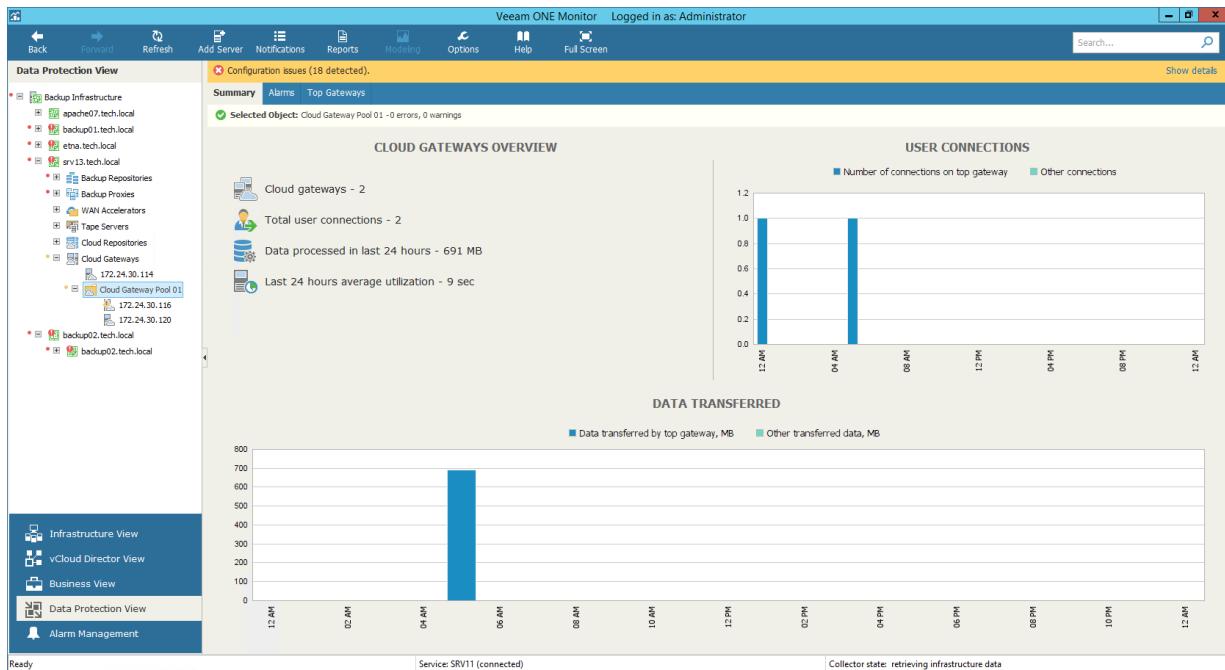
Data Transferred

The chart shows the amount of data transferred by the most utilized gateways, as well as data transferred by other gateways.

The chart can help you detect cloud gateways that transfer the greatest amount of backup data and estimate the load on gateways.

Cloud Gateway Pool Summary

The cloud gateway pool summary dashboard provides overview information and performance analysis for the chosen gateway pool over the past day, week or month.



Cloud Gateways Overview

The section outlines the following details:

- Number of cloud gateways in a pool
- Number of users that connected to the gateways in the pool over the past day, week or month
- Amount of backup data that the cloud gateways in a pool processed over the last 24 hours, 7 days or month
- Amount of time that the cloud gateways in the pool were retrieving, processing and transferring data

User Connections

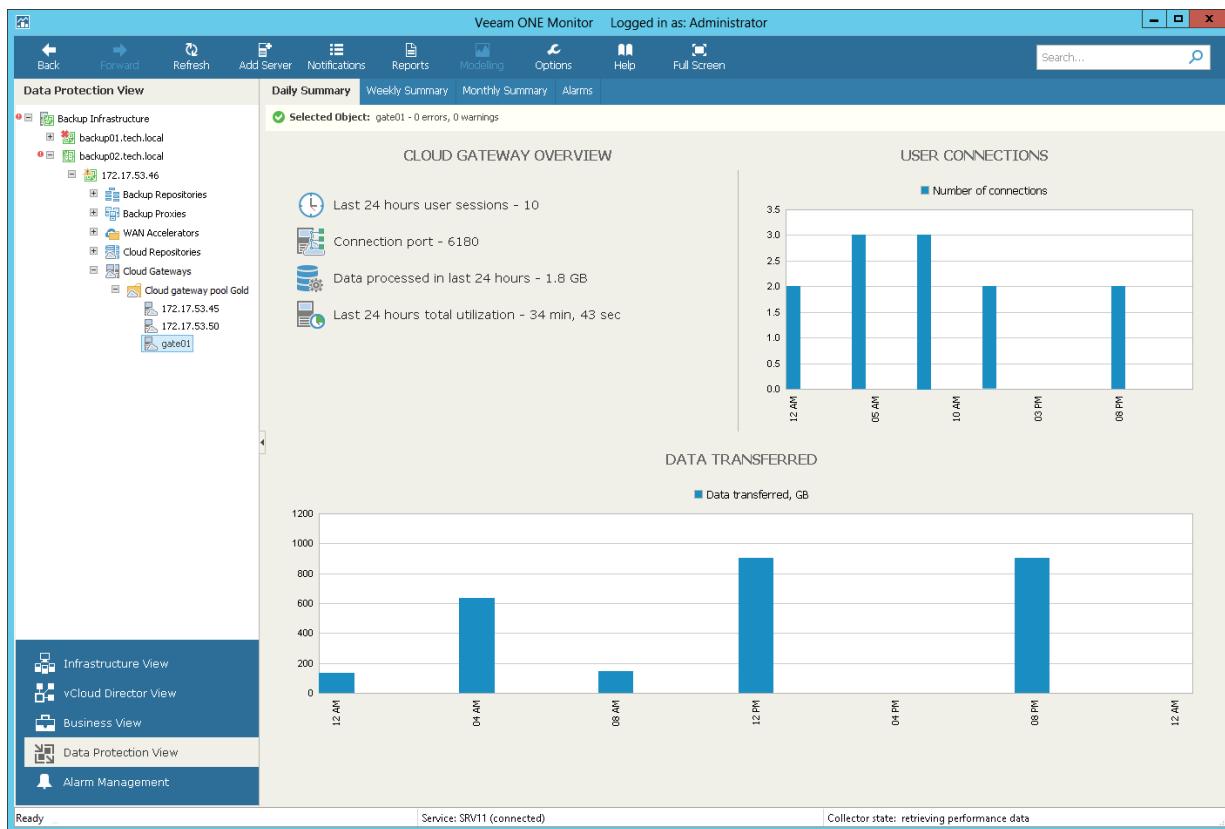
The chart shows how many times the connection to the top cloud gateway and other gateways in a pool was established to transfer backup traffic over the past period.

Data Transferred

The chart shows the amount of backup data that the to the top cloud gateway and other gateways in a pool transferred to the cloud repository over the past period. The chart can help you measure the total amount of backup traffic coming through the cloud gateways in a pool.

Cloud Gateway Summary

The cloud gateway summary dashboard provides overview information and performance analysis for the chosen gateway over the past day, week or month.



Cloud Gateway Overview

The section outlines the following details:

- Number of users that connected to the gateway over the past day, week or month
- Port configured for external connections on the cloud gateway
- Amount of backup data that the cloud gateway processed over the last 24 hours, 7 days or month
- Amount of time that the cloud gateway was retrieving, processing and transferring data

User Connections/Sessions

The chart shows how many times the connection to the cloud gateway was established to transfer backup traffic over the past period.

Data Transferred/Processed Data

The chart shows the amount of backup data that the cloud gateway transferred to the cloud repository over the past period. The chart can help you measure the total amount of backup traffic coming through the cloud gateway.

[Weekly/Monthly Summary] Utilization

The chart allows you to estimate how 'busy' the cloud gateway was during the past period. The chart shows the cumulative amount of time that the cloud gateway was retrieving, processing and transferring backup data.

The chart can help you reveal possible resource bottlenecks. If the utilization graph on the chart is abnormally large, this can evidence of high CPU load or insufficient throughput.

Veeam Backup & Replication Alarms

Veeam ONE includes a set of alarms monitor the efficiency of Veeam Backup & Replication data protection in the virtual environment.

Predefined data protection alarms are configured to warn you about events or issues that can cause loss of data or prevent Veeam Backup & Replication infrastructure from functioning properly:

- Connectivity issues and inability of backup infrastructure components to communicate with each other
- State of Veeam Backup & Replication software installed on backup infrastructure components
- Failing jobs or jobs finished with warnings
- Configuration issues, such as fast decreasing space on backup repositories or cloud repositories
- Long-running jobs that exceed the backup window
- Product license and prepaid support contract

To view the list of data protection alarms:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **Alarms** tab.

On the **Alarms** dashboard, you can view triggered alarms, track alarm history, resolve and acknowledge alarms and perform other actions. For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

The screenshot shows the Veeam ONE Monitor interface with the 'Alarms' tab selected. The left sidebar has 'Data Protection View' expanded, showing 'Backup Infrastructure' with nodes 'backup01.tech.local' and 'backup02.tech.local'. Below them are IP addresses: '172.17.53.46' and 'backup02.tech.local'. The main pane displays a table of triggered alarms:

Status	Alarm Time	Source	Type	Name	Repeat Count
Warning	5:56:37 AM	backup02.tech.local		Backup job disable	2
Error	9/28/2019 1:03:25 AM	backup02.tech.local		SureBackup job state	2
Warning	9/27/2019 5:49:19 PM	backup02.tech.local		Backup Copy job state	2
Warning	9/26/2019 10:46:16 PM	backup02.tech.local		Backup job state	1
Warning	9/26/2019 11:16:07 AM	172.17.53.46		Veeam Backup Broker service state	2
Warning	9/26/2019 11:16:07 AM	backup02.tech.local		Veeam Backup Broker service state	2
Error	9/26/2019 10:52:01 AM	shell.tech.local		Tape server connection state	1

Below the table, the 'Alarm details' section provides event information:

Description
Fired by event: VeeamBpBackupSessionWarningEvent.
Event description: Job "Webserver Backup" finished with warning. Backup location [C:\Backup] is getting low on free disk space (6.8 GB free of 79.7 GB).
Initiated by: Veeam ONE Monitor (SRV11)

Cause
One or more VMs failed to backup successfully

Resolution
Veeam Backup & Replication allows viewing real-time statistics on a performed job and generating reports with statistics on a job or a specific task. To review performance statistics of a job, open Veeam Backup & Replication console and navigate to Backup & Replication view and select the Jobs node. Right-click the job in the working area and select Statistics. Also use backup log files to submit a support ticket. It is recommended that you send the whole content of the logs folders to ensure that overall and comprehensive information is provided to the support team.

The right sidebar contains sections for **ACTIONS**, **Remediate**, and **Navigation**.

VM Jobs

Veeam ONE Monitor allows you to track backup, replication, SureBackup, backup copy, backup to tape, SQL database transaction log backup, Oracle database backup, file to tape, VM copy and file copy jobs configured to protect the virtual environment with Veeam Backup & Replication.

You can track real-time job statistics at different levels of your backup infrastructure:

- Jobs on a specific backup server
- Jobs on all backup servers controlled by Veeam Backup Enterprise Manager
- All jobs across the entire backup infrastructure

Viewing Job Details

To view the list of jobs at the necessary backup infrastructure level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **VM Jobs** tab.
5. To find the necessary job, you can use filters at the top of the job list:
 - To show or hide jobs that ended with a specific status, use the status buttons at the top of the list (*Show failed jobs*, *Show jobs with warnings*, *Show successful jobs*, *Show running jobs* or *Show jobs with no status*).
 - To show or hide jobs of a specific type, use the job type buttons at the top of the list (*Show all jobs*, *Show backup jobs*, *Show replication jobs*, *Show SureBackup jobs*, *Show backup copy jobs*, *Show backup to tape jobs*, *Show file and VM copy jobs* and *Show SQL database transaction log backup jobs*, *Show Oracle database backup jobs*).
 - To show or hide jobs that protect VMs residing on a specific hypervisor, use the hypervisor type buttons at the top of the list (*Show VMware jobs*, *Show Hyper-V jobs*, *Show Nutanix jobs*).
 - To set the time interval when jobs ran for the last time, use the **Filter jobs by time period** button. Release the button to discard the time period filter.
 - To find jobs by name, use the search field at the top right corner.

The list of jobs shows all backup, replication, SureBackup, backup copy, backup to tape, SQL database transaction log backup, Oracle database backup and VM copy jobs for the backup infrastructure level that you selected in the inventory pane.

Status	Name	Server Name	Type	Last Run	Duration	Avg. Duration (Last Month)	Transferred Data (GB)
Failed	Backup Job 3	172.16.11.123	Backup	No info	No info	No info	No info
Failed	Backup Job test for 144789	172.16.11.123	Backup	1/8/2020 4:57:39 AM	28 s	28 s	0.00
Failed	Backup Job test for 144789_1	172.16.11.123	Backup	1/8/2020 5:19:38 AM	20 s	21 s	0.00
Failed	Hyper-V backup job	172.16.11.123	Backup	1/12/2020 10:31:23 PM	16 s	24 s	0.00
Failed	Hyper-V replica	172.16.11.123	Replication	1/12/2020 10:30:43 PM	7 s	10 s	0.00
Success	QA02 Weekly Backup	qa08.tech.local	Backup	1/11/2020 10:48:48 PM	3 min 10 s	5 min 45 s	No info
Success	VMware backup job	172.16.11.123	Backup	No info	No info	No info	No info
Warning	VMware replica	172.16.11.123	Replication	No info	No info	No info	No info

For every job, the following details are available:

- Status** – the latest status of the job session (*Success, Warning, Failed, Running, or jobs with no status*)
- Name** – job name
- Server Name** – name of a backup server on which the job is configured. Click the server name link to drill down to the list of alarms for a chosen backup server.
- Type** – job type (*Backup, Replication, SureBackup, Backup Copy, Backup to Tape, File Copy, File to Tape, VM Copy, SQL database transaction log or Oracle database backup jobs*)
- Last Run** – date and time when the job was performed for the last time
- Duration** – time taken to complete the job during its latest run
- Avg. Duration (Last Month)** – average time it took to complete the job (total job duration time for the previous month divided by the number of times the job ran)
- Transferred Data (GB)** – amount of backup data that was transferred to the target destination (backup repository or replication target datastore/volume) during the latest job run

NOTE:

The "*No info*" label indicates that no information is available for the job because data has not been collected yet.

By analyzing job details, you can reveal potential problems with the efficiency of data protection operations.

For example, if job duration has significantly increased in comparison with the average monthly duration value, while there are no noticeable changes to the amount of transferred data, you might need to investigate the root cause. Such a behavior may evidence that the job has to wait for proxy resources, which increases the backup window.

Cloud Backup Policies

Veeam ONE Monitor allows you to track Veeam Backup for Microsoft Azure and Veeam Backup for AWS policies that store backups on external repositories integrated with Veeam Backup & Replication servers.

You can view real-time job statistics at different levels of your backup infrastructure:

- Policies targeted to external repositories of a specific backup server
- Policies targeted to external repositories of all backup servers controlled by Veeam Backup Enterprise Manager
- All policies across the entire backup infrastructure

Viewing Policy Details

To view the list of Veeam Backup for Microsoft Azure and Veeam Backup for AWS policies at the necessary backup infrastructure level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **Cloud Backup Policies** tab.
5. To find the necessary policy, you can use filters at the top of the policies list:
 - To show or hide policies whose sessions ended with a specific status, use the status buttons at the top of the list (*Show all policies*, *Show policies with errors*, *Show policies with warnings*, *Show successful policies*).
 - To show or hide policies by platform type, use the platform type buttons at the top of the list (*Show all policies*, *Show AWS policies*, *Show Microsoft Azure policies*).
 - To find policies by name, use the search field at the top right corner.

The list of jobs shows all Veeam Backup for Microsoft Azure and Veeam Backup for AWS policies for the backup infrastructure level that you selected in the inventory pane.

State	Name	Platform	Backup Server	VM Count	Last Snapshot	Last Backup	Last Replication	Resource ID
Enabled	PG_Policy_ALLTYPES	AWS	pgBR9.n.local	1	6/15/2020 10:57:05 AM	6/15/2020 11:00:51 AM	6/15/2020 10:58:12 AM	-
Enabled	PG_Policy_SNAPSHOT+REM...	AWS	pgBR9.n.local	1	6/16/2020 5:56:17 AM	No info	6/16/2020 5:58:24 AM	-
Enabled	PG_Policy_SNAPSHOT	AWS	pgBR9.n.local	1	6/16/2020 4:17:59 AM	No info	6/16/2020 5:58:24 AM	-
Enabled	NZ_License_Alltype	AWS	pgBR9.n.local	1	6/17/2020 2:51:00 AM	6/17/2020 2:54:49 AM	6/17/2020 2:52:09 AM	-
Enabled	Snapshot + Replica	AWS	srv25.tech.local	2	6/10/2020 8:01:21 AM	No info	6/10/2020 8:03:34 AM	-
Enabled	Snapshot + Replica + S3 Ba...	AWS	srv25.tech.local	3	6/10/2020 2:02:26 AM	6/10/2020 2:07:16 AM	6/10/2020 12:05:50 AM	-
-	aba-ubuntu2	-	-	-	6/10/2020 2:01:25 AM	6/10/2020 2:07:01 AM	6/10/2020 12:02:40...	i-0a82a0d7e4eff35b
-	ubuntu16	-	-	-	6/10/2020 2:02:26 AM	6/10/2020 2:12:12 AM	6/10/2020 12:02:42...	i-057a105a94556ef2b
-	ubuntu18	-	-	-	6/10/2020 2:01:25 AM	6/10/2020 2:07:16 AM	6/10/2020 12:03:50...	i-083f9155efbf1bc77
Enabled	Snapshot_Replica_Backup_...	AWS	srv25.tech.local	2	6/17/2020 1:38:09 AM	6/17/2020 1:42:44 AM	6/17/2020 1:39:25 AM	-

For every policy, the following details are available:

- State** – state of a backup policy schedule (*Enabled*, *Disabled*)
Click the + icon to show details of cloud protection sessions based on a specific policy
- Name** – backup policy name
- Platform** – name of a cloud platform for which backup policy is configured
- Backup Server** – name of a backup server to which external repository with cloud backups is connected
Click the server name link to drill down to the list of alarms for a chosen backup server.
- VM Count** – number of Microsoft Azure VMs or AWS EC2 instances included in a policy
- Last Snapshot** – date and time when the latest cloud-native snapshot was created for a Microsoft Azure VM or AWS EC2 instance
- Last Backup** – date and time of the latest backup restore point was created for a Microsoft Azure VM or AWS EC2 instance
- Last Replication** – date and time of the latest replication restore point was created for a Microsoft Azure VM or AWS EC2 instance
- Resource ID** – id of a Microsoft Azure VM or AWS EC2 instance

File Jobs

Veeam ONE Monitor allows you to track NAS backup, NAS backup copy, file to tape and file copy jobs configured to protect file shares with Veeam Backup & Replication.

You can track real-time job statistics at different levels of your backup infrastructure:

- Jobs on a specific backup server
- Jobs on all backup servers controlled by Veeam Backup Enterprise Manager
- All jobs across the entire backup infrastructure

Viewing Job Details

To view the list of file jobs at the necessary backup infrastructure level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **File Jobs** tab.
5. To find the necessary job, you can use filters at the top of the job list:
 - To show or hide jobs that ended with a specific status, use the status buttons at the top of the list (*Show failed jobs*, *Show jobs with warnings*, *Show successful jobs*, *Show running jobs* or *Show jobs with no status*).
 - To show or hide jobs of a specific type, use the job type buttons at the top of the list (*Show NAS backup jobs*, *Show NAS backup copy jobs*, *Show file to tape jobs*, *Show file copy jobs*).
 - To set the time interval when jobs ran for the last time, use the **Filter jobs by time period** button. Release the button to discard the time period filter.
 - To find jobs by name, use the search field at the top right corner.

The list of jobs shows all file backup, file backup copy, file to tape and file copy jobs for the backup infrastructure level that you selected in the inventory pane.

Status	Name	Server Name	Type	Last Run	Duration	Avg. Duration...	Transferred D...
Failed	File Backup Job 1	172.16.11.123	NAS Backup	1/12/2020 10:31:00 PM	12 s	49 s	No info
Failed	Fileser05 DB (SMB)	qa08.tech.local	NAS Backup	1/12/2020 10:32:02 PM	25 s	45 s	0.00
Failed	QA09 DB	qa08.tech.local	NAS Backup	1/12/2020 10:35:43 PM	1 min 41 s	1 min 53 s	0.00

For every job, the following details are available:

- Status** – the latest status of the job session (*Success, Warning, Failed, Running*, or jobs with no status)
- Name** – job name
- Server Name** – name of a backup server on which the job is configured. Click the server name link to drill down to the list of alarms for a chosen backup server.
- Type** – job type (*NAS Backup, NAS Backup Copy, File to Tape, File Copy*)
- Last Run** – date and time when the job was performed for the last time
- Duration** – time taken to complete the job during its latest run
- Avg. Duration (Last Month)** – average time it took to complete the job (total job duration time for the previous month divided by the number of times the job ran)
- Transferred Data (GB)** – amount of backup data that was transferred to the target destination (backup repository or tape) during the latest job run

NOTE:

The "*No info*" label indicates that no information is available for the job because data has not been collected yet.

By analyzing job details, you can reveal potential problems with the efficiency of data protection operations.

For example, if job duration has significantly increased in comparison with the average monthly duration value, while there are no noticeable changes to the amount of transferred data, you might need to investigate the root cause. Such a behavior may evidence that the job has to wait for proxy resources, which increases the backup window.

Agent Jobs

Veeam ONE Monitor allows you to track Veeam Backup Agent for Windows and Veeam Backup Agent for Linux jobs managed by Veeam Backup & Replication servers connected to Veeam ONE, as well as backup copy jobs that archive backups created with Veeam Backup Agent for Windows and Veeam Backup Agent for Linux.

You can view real-time job statistics at different levels of your backup infrastructure:

- Jobs managed by a specific backup server
- Jobs managed by all backup servers controlled by Veeam Backup Enterprise Manager
- All jobs across the entire backup infrastructure

Viewing Job Details

To view the list of Veeam Backup Agent for Windows and Veeam Backup Agent for Linux jobs at the necessary backup infrastructure level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **Agent Jobs** tab.
5. To find the necessary job, you can use filters at the top of the job list:
 - To show or hide jobs that ended with a specific status, use the status buttons at the top of the list (*Show all jobs*, *Show failed jobs*, *Show jobs with warnings*, *Show successful jobs*, *Show running jobs* or *Show jobs with no status*).
 - To show or hide jobs by type, use the job type buttons at the top of the list (*Show Windows jobs*, *Show Linux jobs*, *All*).
 - To find jobs by name, use the search field at the top right corner.

The list of jobs shows all Veeam Backup Agent for Windows and Veeam Backup Agent for Linux jobs for the backup infrastructure level that you selected in the inventory pane.

The screenshot shows the Veeam ONE Monitor interface with the 'Agent Jobs' tab selected. The left sidebar shows a tree view of backup infrastructure, including 'Backup Infrastructure' with nodes for 'backup01.tech.local' and 'backup02.tech.local', and sub-nodes like '172.17.53.46' and '192.168.1.1'. The main pane displays a table of backup jobs for 'backup02.tech.local'. The table has columns for Status, Name, Type, Last Run, Duration, Computers, Transfers, and Avg. Duration (Last Month). There are four rows: one Success job for Daily Servers Backup, one Warning job for Infrastructure Servers, one Success job for Medaservers Backup, and one Warning job for Webservers Backup. The 'Status' column uses icons to represent job status: green for Success, yellow for Warning, and red for Failed/Running.

Status	Name	Type	Last Run	Duration	Computers	Transfers	Avg. Duration (Last Month)
Success	Daily Servers Backup ...	Windows Agent Backup	11/28/2017 10:15:48 PM	2 min 49 s	3	3.21	17 min 20 s
Warning	Infrastructure Servers...	Windows Agent Backup	11/29/2017 11:12:27 AM	3 min 11 s	2	10.11	4 min 27 s
Success	Medaservers Backup ...	Windows Agent Backup	11/28/2017 11:43:12 PM	5 min 52 s	3	12.32	10 min 20 s
Warning	Webservers Backup ...	Windows Agent Backup	11/29/2017 12:14:53 AM	3 min 12 s	1	5.98	3 min 57 s

For every job, the following details are available:

- Status** – the latest status of a backup job session (*Success, Warning, Failed, Running*, or jobs with no status)
- Name** – backup job name
- Server Name** – name of a backup server on which the job is configured. Click the server name link to drill down to the list of alarms for a chosen backup server.
- Type** – backup job type (*Windows Agent Backup, Linux Agent Backup*)
- Last Run** – date and time when a backup job was performed for the last time
- Duration** – time taken to complete a backup job during its latest run
- Computers** – number of computers included in a backup job
- Transferred Data (GB)** – amount of backup data that was transferred to the target destination during the latest backup job run
- Avg. Duration (Last Month)** – average time it took to complete a backup job (total job duration time for the previous month divided by the number of times the job ran)

NOTE:

The "No info" label indicates that no information is available for the job because data has not been collected yet.

Agent Policies

Veeam ONE Monitor allows you to track Veeam Backup Agent for Windows and Veeam Backup Agent for Linux backup policies that configure Veeam Backup Agent for Windows and Veeam Backup Agent for Linux job settings on remote computers, and that are managed by Veeam Backup & Replication servers connected to Veeam ONE.

You can view backup policy statistics at different levels of your backup infrastructure:

- Backup policies managed by a specific backup server
- Backup policies managed by all backup servers controlled by Veeam Backup Enterprise Manager
- All backup policies across the entire backup infrastructure

Viewing Job Details

To view the list of Veeam Backup Agent for Windows and Veeam Backup Agent for Linux backup policies at the necessary backup infrastructure level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **Agent Policies** tab.
5. To find the necessary backup policy, you can use filters at the top of the policy list:
 - To show or hide backup policies with a specific status, use the status buttons at the top of the list (*Show all policies*, *Show failed policies*, *Show policies with warnings*, *Show successful policies*, *Show running policies*).
 - To show or hide backup policies by type, use the job type buttons at the top of the list (*Show Windows policies*, *Show Linux policies*, *All*).
 - To find backup policies by name, use the search field at the top right corner.

The list of backup policies shows all Veeam Backup Agent for Windows and Veeam Backup Agent for Linux backup policies for the backup infrastructure level that you selected in the inventory pane.

Policy Name	Policy Type	Status	Comp...	IP Addr...	Last Run	Duration	Avg. Durati...
Fileservers Backup Onsite	Windows Agent Backup	Success	Fileserver04	172.17.53.26	11/29/2017 11:11:...	1 min 53 s	2 min 52 s
Workstations Daily Backup	Windows Agent Backup	Success	vdi001	172.17.53.11	11/29/2017 10:20:...	2 min 28 s	4 min 40 s
		Success	vdi002	172.17.53.49	11/28/2017 11:20:...	2 min 40 s	2 min 40 s
		Success	vdi003	172.17.53.51	11/28/2017 11:20:...	3 min 51 s	3 min 31 s

For every backup policy in the list, the following details are available:

- **Policy Name** – name of a backup policy
Click the + icon to show details of agent job sessions based on a specific backup policy
- **Server Name** – name of a backup server on which the policy is configured. Click the server name link to drill down to the list of alarms for a chosen backup server.
- **Policy Type** – backup job type (*Windows Agent Backup*, *Linux Agent Backup*)
- **Status** – latest status of applying the backup policy (*Success*, *Warning*, *Failed*)
- **Computers** – list of computers to which a backup policy was applied
- **IP address** – IP addresses of computers to which a backup policy was applied
- **Last Run** – date and time when a backup job was performed for each computer managed by a backup policy
- **Duration** – time taken to complete a backup job during its latest run for each computer managed by a backup policy
- **Avg. Duration (Last Month)** – average time it took to complete a backup job (total job duration time for the previous month divided by the number of times the job ran)

NOTE:

The "No info" label indicates that no information is available for the backup policy because data has not been collected yet.

Veeam ONE Agents

You can monitor the state of Veeam ONE agents installed on the Veeam Backup & Replication servers that are connected to Veeam ONE.

Viewing Veeam ONE Agent Details

To view the list of Veeam ONE agents installed in the backup infrastructure:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the **Backup Infrastructure** node.
4. Open the **Veeam ONE Agent** tab.

The list of agents shows all Veeam ONE agents installed on connected Veeam Backup & Replication servers.

Backup Server	Agent Status	Remediation Actions	Log Analysis	Log Analysis Start Time	Log Analysis Session State	Port Number
qa08.tech.local (10.0.0...)	Connected	Enabled	Enabled	7:00 AM	Finished analyzing data logs	2805
172.16.11.123 (10.0.0...)	Installation failed					
veo01.tech.local (9.5.4...)	Connected	Enabled	Enabled	7:00 AM	Finished analyzing data logs	2805
gamma.tech.local (10.0...)	Not responding	Enabled	Enabled	7:00 AM		

For every agent, the following details are available:

- **Backup Server** – name of a Veeam Backup & Replication server connected to Veeam ONE.
- **Agent Status** – the latest status of Veeam ONE agent connection.
- **Remediation Actions** – displays if remediation actions for alarms are enabled for a backup server.
- **Log Analysis** – displays if log analysis is enabled for a backup server.
- **Log Analysis Start Time** – scheduled time to start log analysis session.
- **Log Analysis Session State** – state of the latest log analysis session.

Click a link in this column to see log analysis session history details.

- **Port Number** – port number used for communication with Veeam ONE agent installed on the Veeam Backup & Replication server.

Veeam Backup & Replication Performance Charts

To identify performance bottlenecks within the backup data flow, you can drill down to the following performance charts:

- [CPU Performance Chart](#)
- [Memory Performance Chart](#)
- [Disk Performance Chart](#)
- [Network Performance Chart](#)

To draw the charts, Veeam ONE gathers Windows Performance Monitor metrics from the guest OS of backup infrastructure components (for this reason, performance charts for Linux-based repositories are not available). You can track performance metrics for physical and virtual backup servers, proxies, repositories, WAN accelerators or Enterprise Manager servers.

To drill down to a performance chart for a backup infrastructure component:

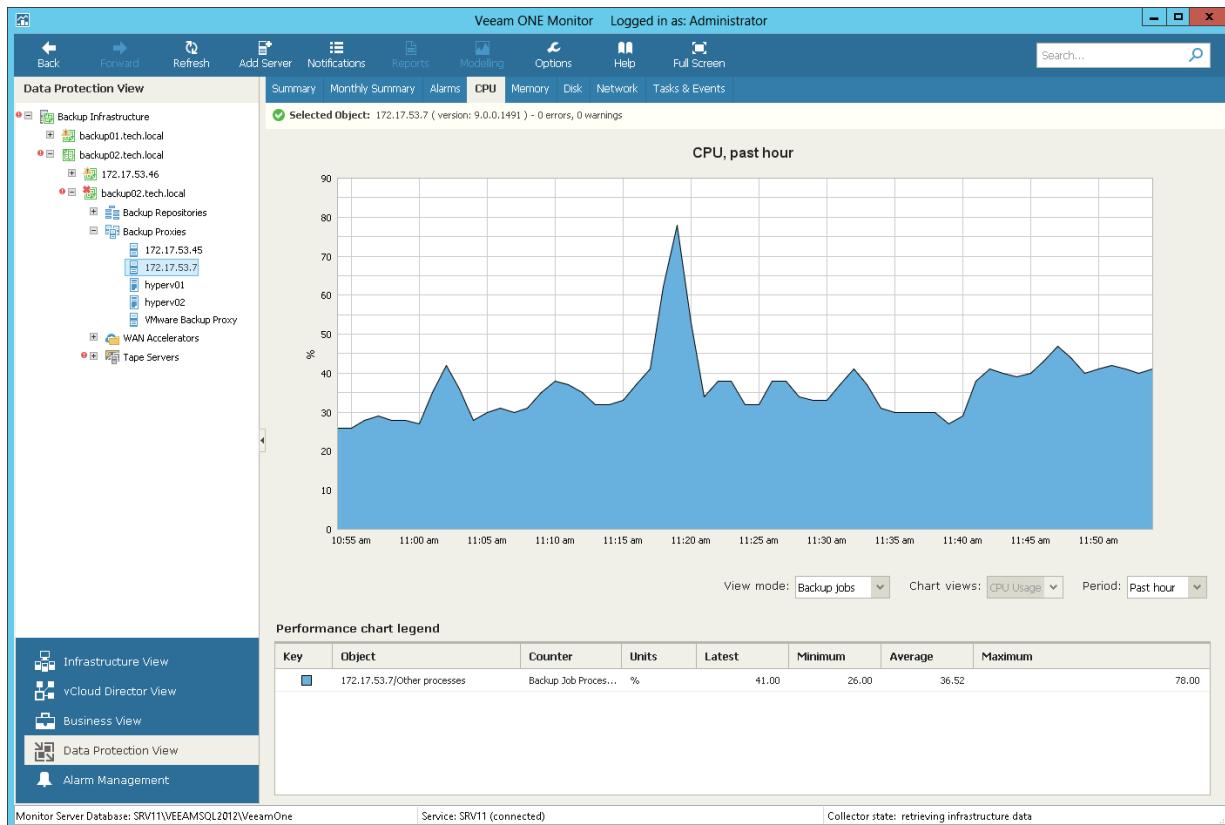
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. Select the necessary backup infrastructure component.
4. Open the necessary performance chart tab.

For performance charts in the **Data Protection View**, you can change chart views and set time intervals, define objects to show on charts or select custom metrics.

CPU Performance Chart

The **CPU** chart shows the amount of used processor resources on a machine where a backup infrastructure component runs. Graphs in the **CPU** chart illustrate the level of processor usage for every separate CPU on the machine. The **Total** graph shows the cumulative processor utilization for all CPUs.

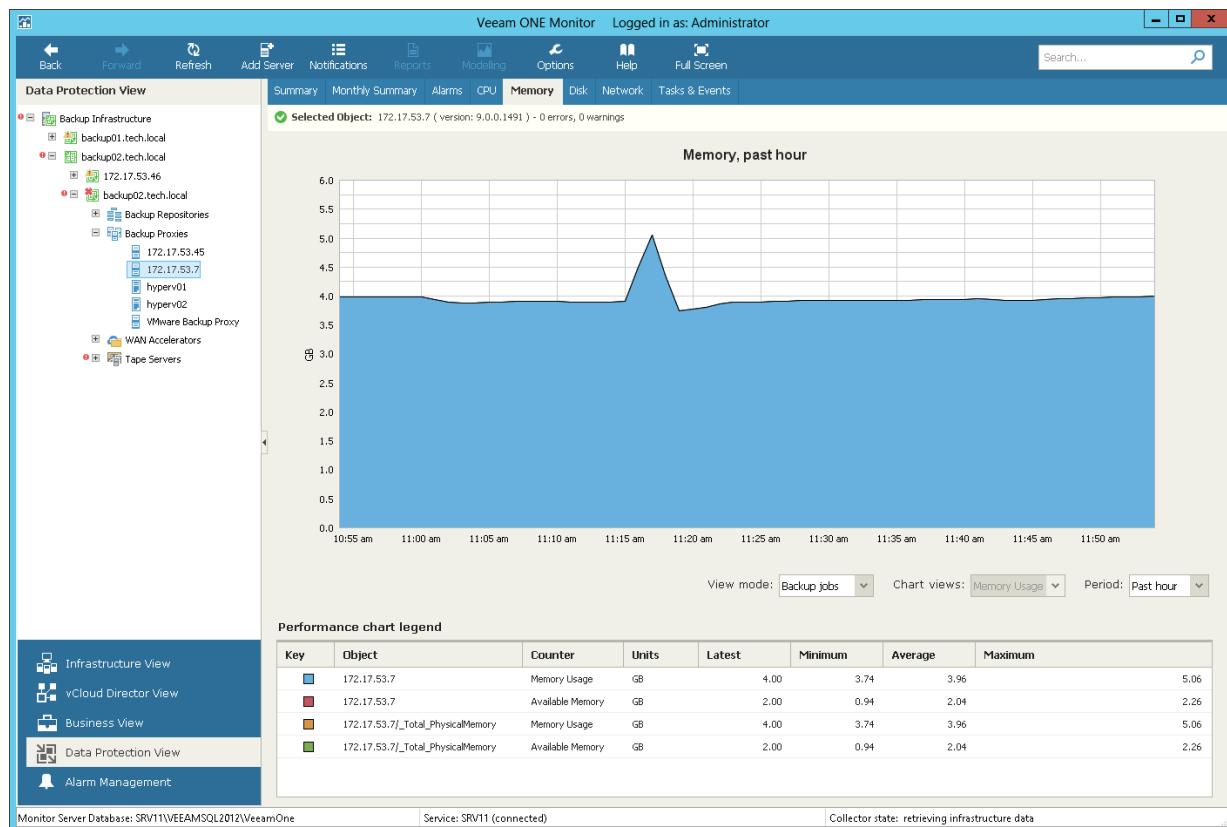
By default, the chart shows the amount of processor time used to run all processes. To view the amount of CPU resources consumed by each backup job, backup copy or replication job assigned to the selected backup infrastructure component, choose the *Backup jobs* option from the **View mode** list.



Memory Performance Chart

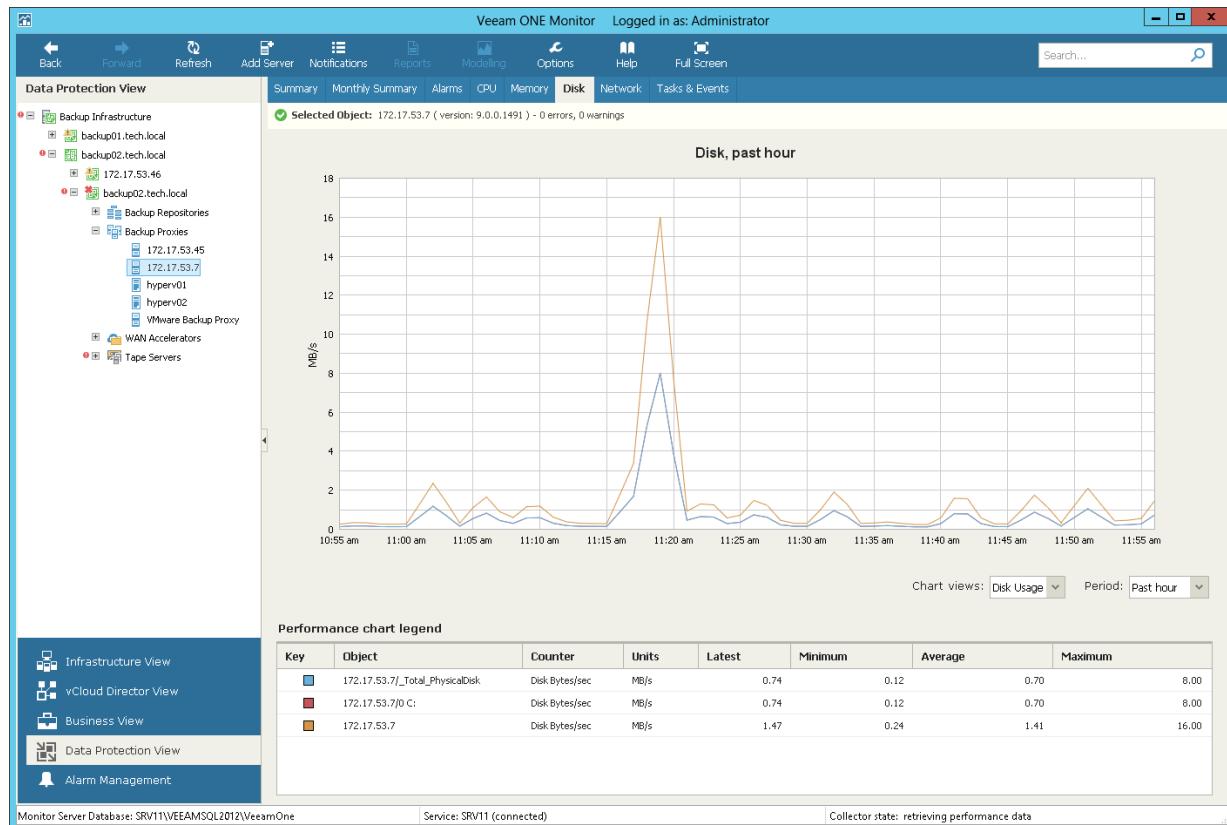
The **Memory** chart shows the amount of used memory resources on a machine where a backup infrastructure component runs. Graphs in the **Memory** chart illustrate the amount of total available memory and memory that is currently used on the machine.

By default, the chart shows the amount of memory used to run all processes. To view the amount of memory resources consumed by each backup job, backup copy or replication job assigned to the selected backup infrastructure component, choose the *Backup jobs* option from the **View mode** list.



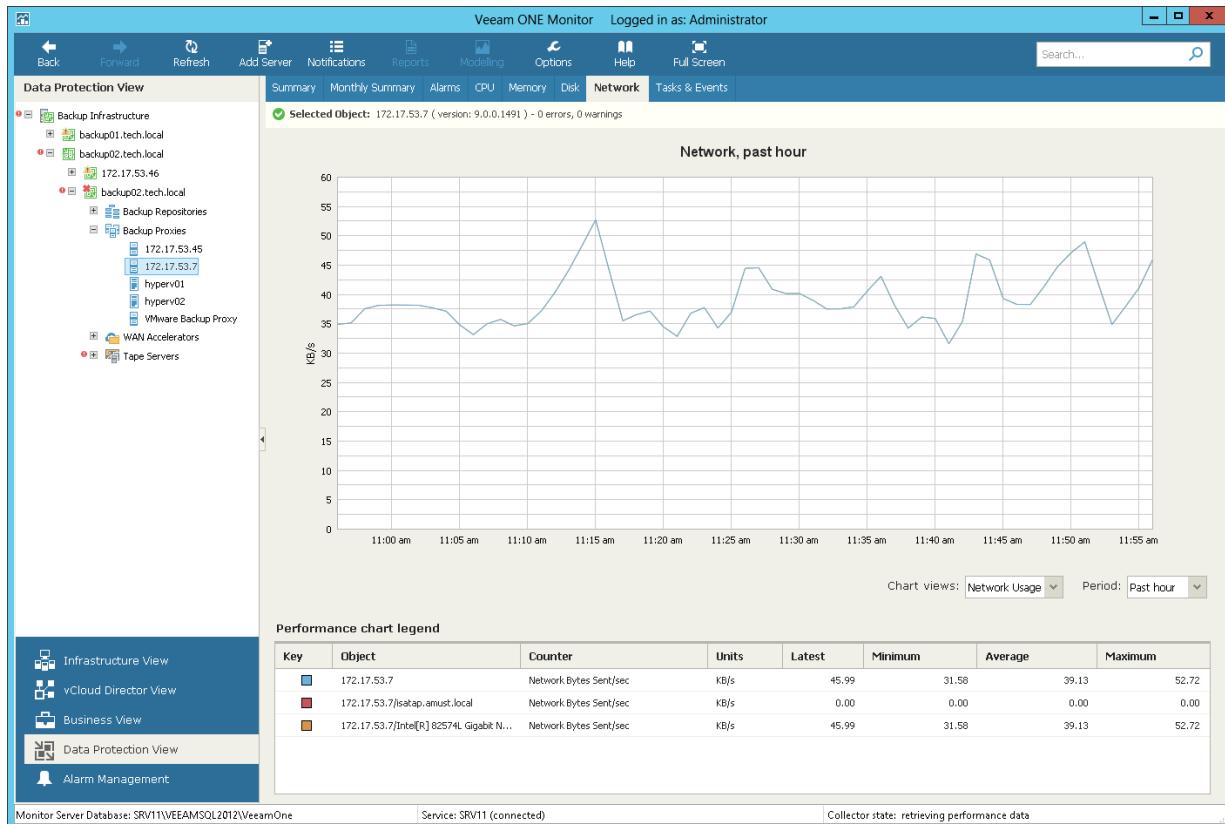
Disk Performance Chart

The **Disk** chart shows the rate at which the disk is transferring data during read and write operations. Disk usage is shown as an average for all physical disks on a machine where a backup infrastructure component runs.



Network Performance Chart

The **Network** chart shows the throughput for NICs on a machine where a backup infrastructure component runs. Graphs in the **Network** chart illustrate the rate at which data is sent on the network interface for each separate NIC. A separate graph shows the cumulative rate for all NICs on the machine.



List of VMs in Backups

The **VMs** dashboard allows you to view the list of VMs stored in backups on repositories:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary repository.
4. Open the **VMs** tab.
5. To quickly find VMs by name, use the **Search** field at the top right corner.

Latest Backup	Name	Latest Restore Point	Restore Points	Job	Job Type	Next Job Run
Warning	apache01	9/10/2016 10:02:51 PM	2	Mediaserver Backup Copy	Backup Copy	Continuous schedule
Success	nano_server	9/28/2016 11:30:45 AM	1	Wkly Weekly Backup	Backup	Manually
Warning	srv01	9/10/2016 10:03:18 PM	3	Mediaserver Backup Copy	Backup Copy	Continuous schedule
Success	srv05	9/28/2016 11:30:45 AM	1	Wkly Weekly Backup	Backup	Manually
Success	wiki	9/28/2016 11:30:45 AM	2	Wkly Weekly Backup	Backup	Manually
Warning	win01	9/10/2016 10:03:58 PM	3	Mediaserver Backup Copy	Backup Copy	Continuous schedule

For every VM in the list, the following details are shown:

- **Latest Backup** – the latest status of the job that created the VM backup (*Success, Warning, Failed or Running*)
- **Name** – name of the VM stored in a backup on the repository
- **Latest Restore Point** – date and time when the latest restore point was created for the VM
- **Restore Points** – number of restore points created for the VM
- **Job** – name of a backup or backup copy job that created VM backup
- **Job Type** – type of a job that created the VM backup (*Backup job or Copy job*)
- **Next Job Run** – schedule according to which the job will start next time

You can click column names to sort VMs by a specific parameter. For example, to view what VMs do not have recent backups, you can sort VMs in the list by **Latest Restore Point**.

File Shares in Backups

The **File Shares** dashboard allows you to view the list of source file shares stored in backups on repositories:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary repository.
4. Open the **File Shares** tab.
5. To quickly find file shares by name, use the **Search** field at the top right corner.

Latest Backup	Name	Latest Restore Point	Restore Points	Backup Size	Job	Last Run Files Processed	Next Job Run
Failed	qa09.tech.local	1/12/2020 10:35:59 PM	89 (Short term)	0.02 GB	QA09 DB	0	1/13/2020 10:00:00 PM
Failed	\\FILESERV05\Documents	1/4/2020 10:03:22 PM	10 (Short term)	0.01 GB	Fileserv05 DB (SMB)	No info	1/13/2020 10:00:00 PM
No info	\\FILESERV05\Documents	12/26/2019 10:00:43 PM	25 (Short term)	0.01 GB	Fileserv05 DB (SMB)	No info	1/13/2020 10:00:00 PM

For every file share in the list, the following details are shown:

- **Latest Backup** – the latest status of the job that created the file share backup (*Success, Warning, Failed or Running*)
- **Name** – name of the file share stored in a backup on the repository
- **Latest Restore Point** – date and time when the latest restore point was created for the file share
- **Restore Points** – number of short term and long term restore points stored on the repository
- **Backup Size** – total size of file backups on the repository
- **Job** – name of a backup or backup copy job that created file share backup
- **Last Run Files Processed** – number of files processed during the last file backup job session
- **Next Job Run** – schedule according to which the job will start next time

You can click column names to sort file shares by a specific parameter. For example, to view what file shares do not have recent backups, you can sort file shares in the list by **Latest Restore Point**.

Veeam Backup & Replication Events

The **Tasks & Events** dashboard shows the history of events that triggered Veeam Backup & Replication alarms. For the list and detailed description of data protection alarms, see section [Veeam Backup & Replication Alarms](#) of the Veeam ONE Working with Alarms Guide.

To view the list of events for a specific level:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup infrastructure node.
4. Open the **Tasks & Events** tab.
5. The **Tasks & Events** list can display up to 1000 tasks and events at a time. To find the necessary task or event, you can use the following controls:
 - To display tasks or events for a specific period, select the necessary time interval from the **Events from list**.
 - To show or hide tasks or events, use filter buttons at the top of the list – *Show all events, Show errors, Show warnings, Show info messages, Show user events, Show tasks*.
 - To find the necessary tasks or events by description, use the **Search** field at the top of the list.
6. To view the detailed description of an event, click it in the list.

The event description will be shown in the **Event Details** pane at the bottom.

When you choose a virtual infrastructure container in the inventory pane, you can view events for the selected object and events for its child objects. To hide events related to child objects, clear the **Include events from child objects** check box at the bottom of the **Event Details** section.

7. To export displayed events to a CSV file, click the **Export** button at the top of the list and specify the location where the file will be saved.

The screenshot shows the Veeam ONE Monitor interface. The main window title is "Veeam ONE Monitor" and the user is logged in as "Administrator". The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. A search bar is located in the top right corner.

The left sidebar features a "Data Protection View" tree with nodes for Backup Infrastructure, backup01.tech.local, backup02.tech.local, and 172.17.53.46. Below this are sections for Backup Repositories, Backup Proxies, WAN Accelerators, and Tape Servers.

The main content area has tabs for Summary, Alarms, VM Jobs, Agent Jobs, Agent Policies, CPU, Memory, Disk, Network, and Tasks & Events. The "Tasks & Events" tab is selected. A sub-header "Selected Object: backup02.tech.local (version: 9.5.0.1335) - 1 error, 4 warnings" is displayed. Below it are filters for All, Events from: Past day, and an Export... button. A search bar is also present.

The main pane displays a table of events:

Type	Description	Time	Target	Initiated By
Error	Veeam Backup Broker service on backup02.tech.local is not started or not working.	12/15/2016 10:02:35 PM	This object (backup02.tech.local)	Veeam ONE Monitor (SRV11)
Info	VM websrv02 task has finished with 'Success' state.	12/15/2016 10:02:35 PM	This object (backup02.tech.local)	n/a
Info	VM (apache03) VM backup job "Webservers Backup to Cloud" is started; ID: f458...	12/15/2016 10:01:29 PM	This object (backup02.tech.local)	n/a
Info	VM (websrv02) VM backup job "Webservers Backup to Cloud" is started; ID: 30a...	12/15/2016 10:01:29 PM	This object (backup02.tech.local)	n/a
Info	Backup job "Webservers Backup to Cloud" has been started.	12/15/2016 10:00:18 PM	This object (backup02.tech.local)	n/a
Info	Backup job "Webservers Backup to Cloud" finished with Success.; All VMs have been...	12/15/2016 5:14:06 PM	This object (backup02.tech.local)	n/a
Info	Session Webservers Backup to Cloud (Full) has been completed.	12/15/2016 5:14:06 PM	This object (backup02.tech.local)	n/a
Info	VM (apache03) VM backup job "Webservers Backup to Cloud" is stopped; ID: 047...	12/15/2016 5:13:39 PM	This object (backup02.tech.local)	n/a
Info	VM apache03 task has finished with 'Success' state.	12/15/2016 5:13:39 PM	This object (backup02.tech.local)	n/a
Info	VM websrv02 task has finished with 'Success' state.	12/15/2016 5:10:16 PM	This object (backup02.tech.local)	n/a
Info	VM (websrv02) VM backup job "Webservers Backup to Cloud" is stopped; ID: 697...	12/15/2016 5:10:15 PM	This object (backup02.tech.local)	n/a
Info	VM (apache03) VM backup job "Webservers Backup to Cloud" is started; ID: 047...	12/15/2016 5:08:56 PM	This object (backup02.tech.local)	n/a
Info	VM (websrv02) VM backup job "Webservers Backup to Cloud" is started; ID: 697...	12/15/2016 5:08:56 PM	This object (backup02.tech.local)	n/a
Info	Backup job "Webservers Backup to Cloud" has been started by user BACKUP01\A...	12/15/2016 5:07:56 PM	This object (backup02.tech.local)	n/a
Info	Backup "Webservers Backup to Cloud" has been created.	12/15/2016 5:07:50 PM	This object (backup02.tech.local)	BACKUP01\Administrator
Info	'2' objects has been created for 'Webservers Backup to Cloud'.	12/15/2016 5:07:50 PM	This object (backup02.tech.local)	BACKUP01\Administrator
Warning	Job "Mediaserver Backup Copy" finished with warning. Job finished with warning ...	12/14/2016 5:49:13 PM	This object (backup02.tech.local)	Veeam ONE Monitor (SRV11)
Error	Veeam Backup Broker service on backup02.tech.local is not started or not working.	12/14/2016 5:25:11 PM	This object (backup02.tech.local)	Veeam ONE Monitor (SRV11)

Below the table, there are navigation arrows, a page number indicator (1 of 1 pages), and an "Event Details" section. The "Event Details" section shows a warning event from 12/14/2016 5:49:13 PM with the name "VeeamBpBackupSyncSessionWarningEvent". The description states: "Job 'Mediaserver Backup Copy' finished with warning. Job finished with warning at 12/14/2016 5:48:20 PM". There is also a checked checkbox for "Include events from child objects".

The bottom status bar indicates "Monitor Server Database: SRV11\VEEAMSQL2012\VeeamOne" and "Service: SRV11 (connected)".

Top Cloud Tenants

The **Top Tenants** dashboard helps you detect top Veeam Cloud Connect users.

The dashboard displays top users in terms of transmitted data, used cloud storage space, number of connections, amount of gateway utilization time, traffic savings, peak transmission rate, number of failovers, number of replicated VMs and so on. By default, the dashboard displays top 3 user accounts ranged by consumed cloud repository space. You can change the number of displayed used accounts in the dashboard settings:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Data Protection View**.
3. In the inventory pane, select the necessary backup server.
4. Open the **Top Tenants** tab.
5. Click the **Change options** link in the top left corner of the dashboard and select the necessary number of tenants to display.
6. Click **OK**.

The screenshot shows the 'Data Protection View' in Veeam ONE Monitor. The 'Top Tenants' tab is selected. The left sidebar shows a tree view of backup infrastructure, with 'Backup01.tech.local' expanded to show 'Backup Repositories', 'WAN Accelerators', 'Cloud Repositories', and 'Cloud Gateways'. Other nodes like 'Backup02.tech.local' are collapsed. The main pane displays 'Last week stats' for three tenants: Alpha, Beta, and Gamma. The data is presented in several tables:

- By quota reach:**

Tenant	Quota reach	Storage provided	Storage used
Zeta	2.19%	400.0 GB	8.8 GB
Delta	2.42%	450.0 GB	10.9 GB
Alpha	1.14%	800.0 GB	9.1 GB
- By datastore usage:**

Tenant	Storage provided	Storage used	Quota reach
Delta	450.0 GB	10.9 GB	2.42%
Alpha	800.0 GB	9.1 GB	1.14%
Zeta	400.0 GB	8.8 GB	2.19%
- By repository fill:**

Tenant	Repository name	Used space	Free space
Delta	Delta Cloud Vol01	0 KB	200.0 GB
Delta	Delta Cloud Vol02	10.9 GB	239.1 GB
Alpha	Alpha Cloud Vol01	9.1 GB	290.9 GB
- By data transmitted:**

Tenant	Backup data	Replication data	Total data
Zeta	8.7 GB	9.9 GB	18.6 GB
Alpha	9.1 GB	6.3 GB	15.4 GB
Delta	10.9 GB	2.7 GB	13.5 GB
- By utilization time:**

Tenant	Utilization time	Idle time
Alpha	13 hours, 25 min	6 days, 10 hours, 34 min
Delta	1 hours, 58 min	6 days, 22 hours, 1 min
Zeta	44 min, 38 sec	6 days, 23 hours, 15 min
- By # of connections:**

Tenant	Backup	Replica	Total
Zeta	2	4	6
Alpha	1	5	6
Delta	1	3	4
- By traffic savings:**

Tenant	Total savings	Efficiency
Alpha	11.5 GB	0.99
Delta	4.7 GB	0.57
- By peak transmission rate:**

Tenant	Peak transmission rate	Occurrence time
Alpha	11.5 GB	10/20/2016 1:00:00 AM
Delta	8.3 GB	10/20/2016
Alpha	32 MB	10/20/2016 3:00:00 AM

At the bottom of the dashboard, there are links to other views: Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. The status bar at the bottom indicates 'Monitor Server Database: SRV11\VEEAMSQL2012\VeeamOne', 'Service: SRV11 (connected)', and 'Collector state: idle'.

Top Cloud Gateways

The **Top Gateways** and **Top Standalone Gateways** dashboard provides performance data of the most utilized cloud gateways for the selected server or gateway pool over the last week. The dashboard shows the most 'busy' cloud gateways for the last 7 days in terms of:

- Amount of data transferred to cloud repositories
- Number unique users connected to each cloud gateway
- Maximum number of user connections to the gateway
- Total amount of time the gateway was utilized

To view the list of the most loaded cloud gateways:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. At the bottom of the inventory pane, click **Data Protection View**.

3. In the inventory pane, expand select the necessary node:

- To view the most utilized standalone gateways, select the **Cloud Gateways** node under the necessary backup server.
- To view the most utilized gateways from a gateway pool, select the necessary gateway pool under the **Cloud Gateways** node.

4. Open the **Top Gateways** tab.

The screenshot shows the Veeam ONE Monitor application window. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. The status bar indicates 'Logged in as: administrator'. The main area has tabs for Summary, Alarms, and Top Standalone Gateways, with 'Top Standalone Gateways' currently selected. A sidebar on the left lists nodes under 'Backup Infrastructure': 'backup01.tech.local' (selected) containing 'Backup Repositories', 'Backup Proxies', 'WAN Accelerators', 'Cloud Repositories', and 'Cloud Gateways' (selected), which further contains 'Cloud gateway pool Gold' with three entries: '172.17.53.41', '172.17.53.49', and 'gateway01'. Below this is 'backup02.tech.local'. On the right, the 'Top Standalone Gateways' dashboard displays four tables under 'Last week stats':

- By data transferred**: Shows three gateways with their respective data transferred amounts: 19.6 GB, 18.0 GB, and 10.5 GB.
- By peak number of connections**: Shows three gateways with their peak connection counts: 3, 2, and 1.
- By number of connections**: Shows three gateways with their current connection counts: 7, 5, and 4.
- By utilization time**: Shows three gateways with their utilization times: 5 hours, 51 min; 5 hours, 28 min; and 3 hours, 26 min.

A footer menu on the left includes Infrastructure View, vCloud Director View, Business View, Data Protection View (selected), and Alarm Management. The status bar at the bottom shows 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

VMware vSphere Monitoring

Veeam ONE Monitor offers a variety of tools for monitoring the VMware vSphere environment from any perspective and with any level of detail.

With Veeam ONE Monitor, you can:

1. Monitor health status of the virtual environment.

- Start with the **Summary** dashboards to check the overall health status of the virtual environment and reveal hotspots.

Quickly review the state of virtual infrastructure components, see the latest alarms, detect the most problematic objects and drill down to the problem source for further investigation.

- Use the **VMs** dashboard to view the list of VMs in a virtual infrastructure container and check additional details for every VM – VM current state, parent host, IP address, DNS name and the amount of resources currently consumed by the VM.
- Use the **Top Load** and **Lowest Load** dashboards to detect the most and less loaded components in the virtual environment.

Detect what virtual infrastructure objects are consuming the most and the least amount of CPU, memory, disk, network, and swap resources, or select additional counters to detect resource consumers in other areas.

2. View triggered alarms.

Switch to the **Alarms** dashboard to see details on breached thresholds, events and problems that occurred in the virtual environment.

Use the **Actions** pane on the alarms dashboard to detect root causes – drill down to performance charts, open VM console or view the list of in-guest processes.

3. Work with performance charts and track events.

Drill down to performance charts to diagnose performance problems. You can change predefined views, quickly switch between charts and view events occurring in your environment to get all-round statistics.

4. Investigate problems from within the guest OS.

Open the VM console or view the list of in-guest processes to diagnose problems related to a specific service, module or application.

Prerequisites

Before you start monitoring your virtual environment, make sure you have configured connections to virtual servers from which Veeam ONE will collect data. For more information on configuring server connections, see section [Connecting VMware vSphere Servers](#) of the Veeam ONE Deployment Guide.

VMware vSphere Summary Dashboards

VMware vSphere infrastructure summary dashboards serve as the starting point for monitoring and troubleshooting. Summary dashboards reflect the health status of the selected infrastructure object or infrastructure segment.

The following types of summary dashboards are available for virtual infrastructure objects:

- [VMware vSphere Infrastructure Summary](#)
- [Host Summary](#)
- [Virtual Machine Summary](#)
- [Datastore Summary](#)

To access a summary dashboard for a virtual infrastructure object or virtual infrastructure segment:

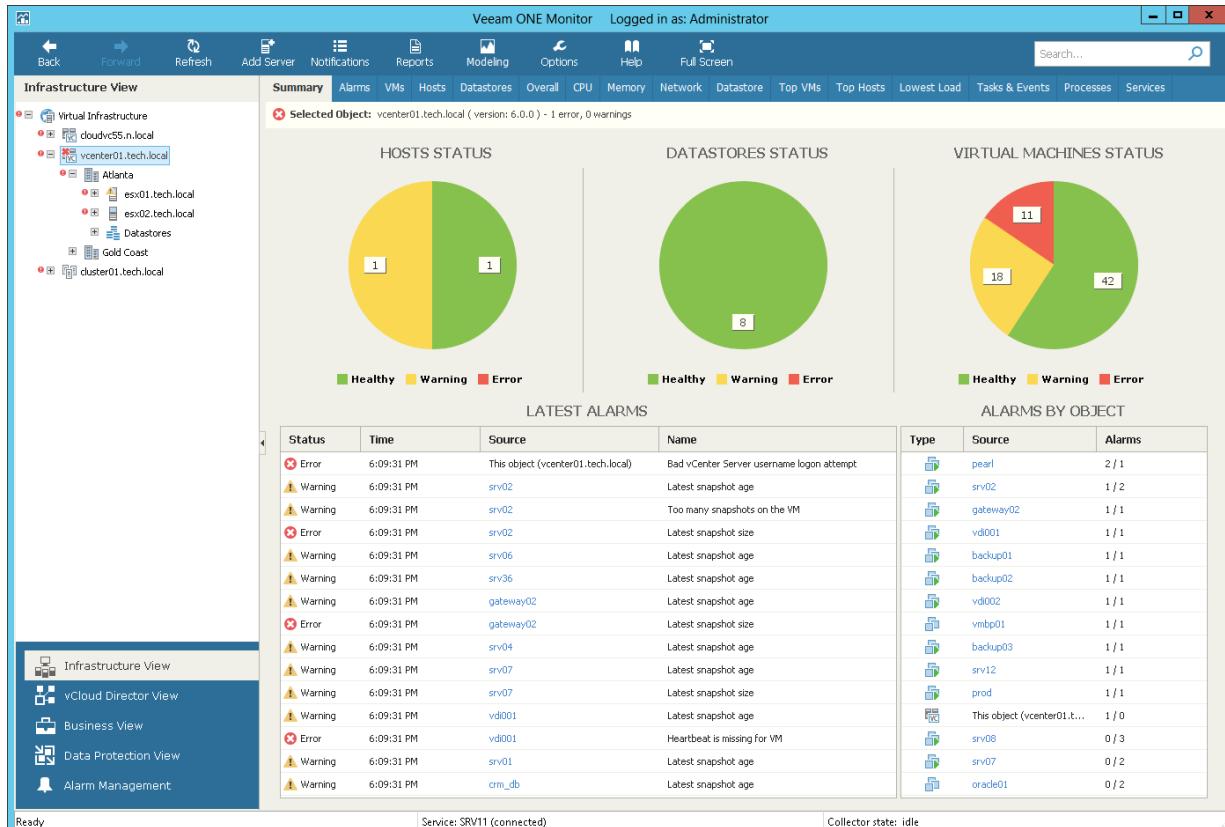
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object or segment.
4. Open the **Summary** tab.

VMware vSphere Infrastructure Summary

The VMware vSphere infrastructure summary dashboard provides the health status overview for the selected virtual environment segment.

The dashboard is available for the following infrastructure levels:

- Virtual infrastructure (root node)
- Virtual infrastructure container (such as folder, resource pool, host, cluster, datacenter or vCenter Server)



Host Status, Datastores Status, Virtual Machines Status

The charts reflect the status of virtual infrastructure objects.

Every chart segment represents the number of objects in a certain state – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for the selected type of virtual infrastructure objects.

Latest Alarms

The list displays the latest 15 alarms that were triggered for objects in the selected virtual environment segment. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

Alarms by Object

The list displays 15 objects with the highest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific virtual infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Host Summary

The host summary dashboard provides the health status and performance overview for the selected ESXi host and its child objects.

The screenshot shows the Veeam ONE Monitor interface with the 'Host Summary' dashboard selected. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. The search bar is labeled 'Search...'. The main content area has tabs for Summary, Alarms, VMs, Overall, CPU, Memory, Network, Datastore, Storage Path, Storage Adapter, Top VMs, Hardware, Tasks & Events, and Selected Object: esx01.tech.local (version: 6.0.0) - 0 errors, 0 warnings. The Infrastructure View sidebar lists Virtual Infrastructure (el.dev.anustech.local), vcenter01.tech.local (Atlanta, esx01.tech.local, esx02.tech.local, Datastores), and Gold Coast, Prague. The Datastores Status chart shows 2 healthy, 2 warning, and 2 error datastores. The Virtual Machines Status chart shows 16 healthy, 13 warning, and 6 error VMs. The Resource Usage section displays CPU usage at 12.9 GHz and Memory usage at 51.1 GB. The Latest Alarms table lists 15 entries from 5:13:44 PM to 4:50:34 PM, categorized by source (e.g., srv49, nfs_lez, tapelibrary, esx01-das3, vmfs_lez, tapesrv02, db01, esx01-ds-hpvs, tapesrv01, esx01-das3, srv11) and status (Warning or Error). The Alarms by Object table shows 15 objects with their types and sources. The Business View Groups section is currently empty.

Datastores Status, Virtual Machines Status

The charts reflect the status of datastores connected to the host and the state of VMs running on the host.

Every chart segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for host child objects.

Resource Usage

The section displays capacity and performance summary for host CPU and memory. It also shows an overview for datastores connected to the host – status of the datastore, its capacity and the amount of free space on the datastore.

Latest Alarms

The list displays the latest 15 alarms triggered for the host and its child objects. Click a link in the **Source** column to drill down to the list of alarms for the host and its child objects.

Alarms by Object

The list displays 15 objects with the greatest number of alarms (including the host and its child objects).

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to the host and its child objects.

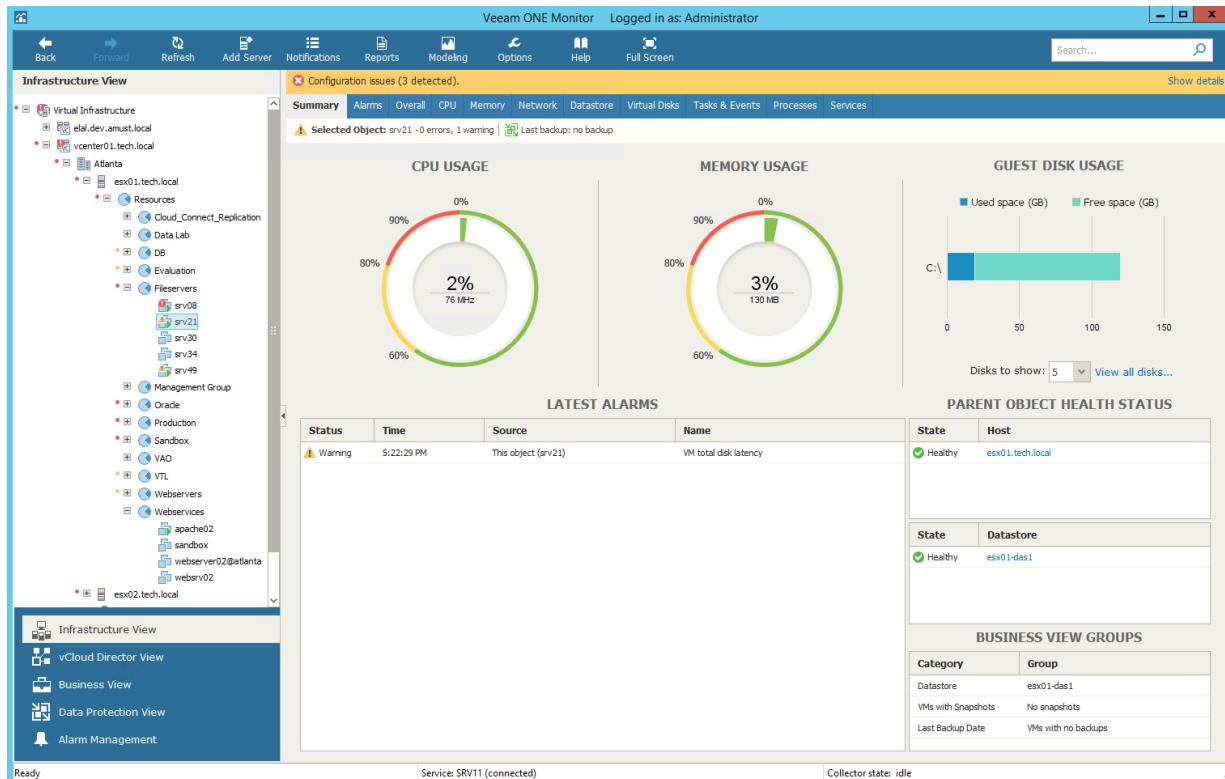
For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the host is included.

Virtual Machine Summary

The VM summary dashboard provides the health status and performance overview for the selected VM. In addition, this dashboard shows the state of objects that can affect the VM performance – the parent host and the datastores where VM files are located.



Selected Object

The section at the top of the dashboard shows the VM health status (number of warnings and errors) and the date when the latest backup or replica restore point was created for the VM with Veeam Backup & Replication.

CPU Usage, Memory Usage

The charts display the amount of CPU and memory resources currently consumed by the VM.

Guest Disk Usage

The chart displays the amount of available and used guest disk space with a breakdown by disks. By default, 5 guest disks with the greatest amount of used space are displayed.

Use the **Disks to show** list to change the number of disks to display on the chart. Click the **View all disks** link to view details for all guest disks. In the **Guests disks** window, you can suppress *Guest disk space* alarms for specific disks. To suppress alarms for a disk, select the **Suppress alarm** check boxes next to the disk name.

NOTE:

Details on the guest disk usage are available only for VMs with VMware Tools installed.

Parent Object Health Status

The section displays the current state of the host where the VM resides and the state of datastores that host VMs files. Information available in this section may help you estimate how the state of parent objects impacts the VM performance. Click the host or datastore link to drill down to the list of alarms for the host or datastore.

Latest Alarms

The list displays the latest 15 alarms for the VM.

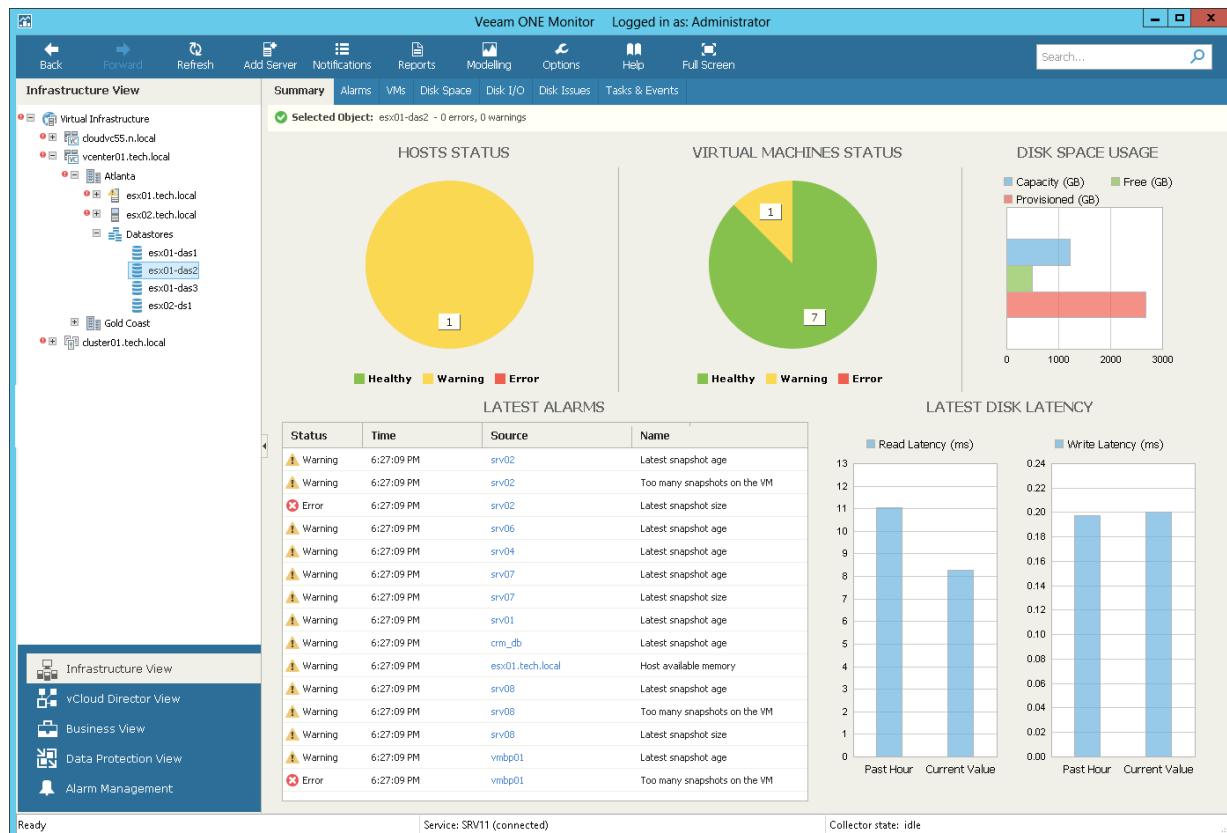
For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the VM is included.

Datastore Summary

The datastore summary dashboard provides the health status and performance overview for the selected datastore. In addition, it shows the status of objects that can affect the datastore performance – hosts that work with the datastore and VMs whose files reside on the datastore.



Hosts Status, Virtual Machines Status

The charts reflect the health status of hosts that work with the datastore and VMs whose files reside on the datastore.

Every chart segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for hosts or VMs.

Disk Space Usage

The chart shows the amount of available, used and provisioned disk space on the datastore.

Latest Disk Latency

The section displays the current read and write latency values as well as the average latency values for the past hour.

Latest Alarms

The list displays the latest 15 alarms for the datastore and for objects that work with this datastore. Click a link in the **Source** column to drill down to the list of alarms for the selected object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the datastore is included.

VMware vSphere Alarms

Veeam ONE includes a set of alarms for monitoring VMware vSphere virtual environment. These alarms warn you about events or changes that can affect performance of operations and services in the virtual environment.

To view the list of triggered VMware vSphere alarms:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary virtual infrastructure node.
4. Go to the **Alarms** tab.

On the **Alarms** dashboard, you can view triggered alarms, track alarm history, resolve and acknowledge alarms and perform other actions. For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

The screenshot shows the Veeam ONE Monitor interface. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. The title bar says "Veeam ONE Monitor" and "Logged in as: Administrator". The left sidebar has a tree view under "Infrastructure View" showing "Virtual Infrastructure" with nodes like "el1.dev.amst.local" and "vcenter01.tech.local" expanded to show "Atlanta", "Gold Coast", and "Prague" locations, each with "Hosts" and "Datastores" listed. Below the sidebar is a search bar with "Search..." and a magnifying glass icon. The main content area has tabs for Summary, Alarms (which is selected), VMs, Hosts, Datastores, Overall, CPU, Memory, Network, Datastore, Top VMs, Top Hosts, Lowest Load, Tasks & Events, Processes, and Services. The "Selected Object" is "vcenter01.tech.local (version: 6.0.0) - 1 error, 0 warnings". A table titled "Alarms" lists 11 triggered alarms, all of which are "Warning" type. The columns are Status, Time, Source, Type, Name, Repeat Count, and Remediation. The first few rows show entries for "srv08", "srv11", "esx01-das3", "esx01-das1", "tech01", "esx01-das2", and "srv21". The "Actions" panel on the right contains links for Show history..., Resolve..., Resolve all alarms..., Acknowledge..., Acknowledge all alarms..., Exclude, Edit exclusions..., and Export history... . The "Remediate" panel contains Approve action... and Approve all actions... . The "Navigation" panel includes Performance, Open console, and In-guest processes. The bottom status bar shows "Ready", "Service: SRV11 (connected)", and "Collector state: retrieving performance data".

VMware vSphere Performance Charts

Performance charts show how key performance counters have been changing over time to help you diagnose performance issues and perform root cause analysis.

Performance charts include the following elements:

- **Axes**

Performance charts display data for a particular time period (the horizontal axis) using two scales of measurement units (vertical axes). The measurement units may vary depending on selected performance counters. However, the number of units is always limited to two.

- **Graphs**

Performance charts include one or more graphs. Every graph on a performance chart visualizes a specific counter for an infrastructure object or a container of infrastructure objects.

- **Legend**

The chart legend shows details about objects and counters displayed in the chart. The details include key color, object name, list of counters and units of measurement, the latest, minimum, average, and maximum counter values.

- **Chart views**

Performance charts come with a number of predefined chart views. Every view logically groups related counters to display the most valuable data and help you speed up troubleshooting and root cause analysis of performance problems.

Performance charts can be easily customized. For more information on customization options, see [Customizing VMware vSphere Performance Charts](#).

Accessing Performance Charts

To access a performance chart for an infrastructure object or infrastructure segment:

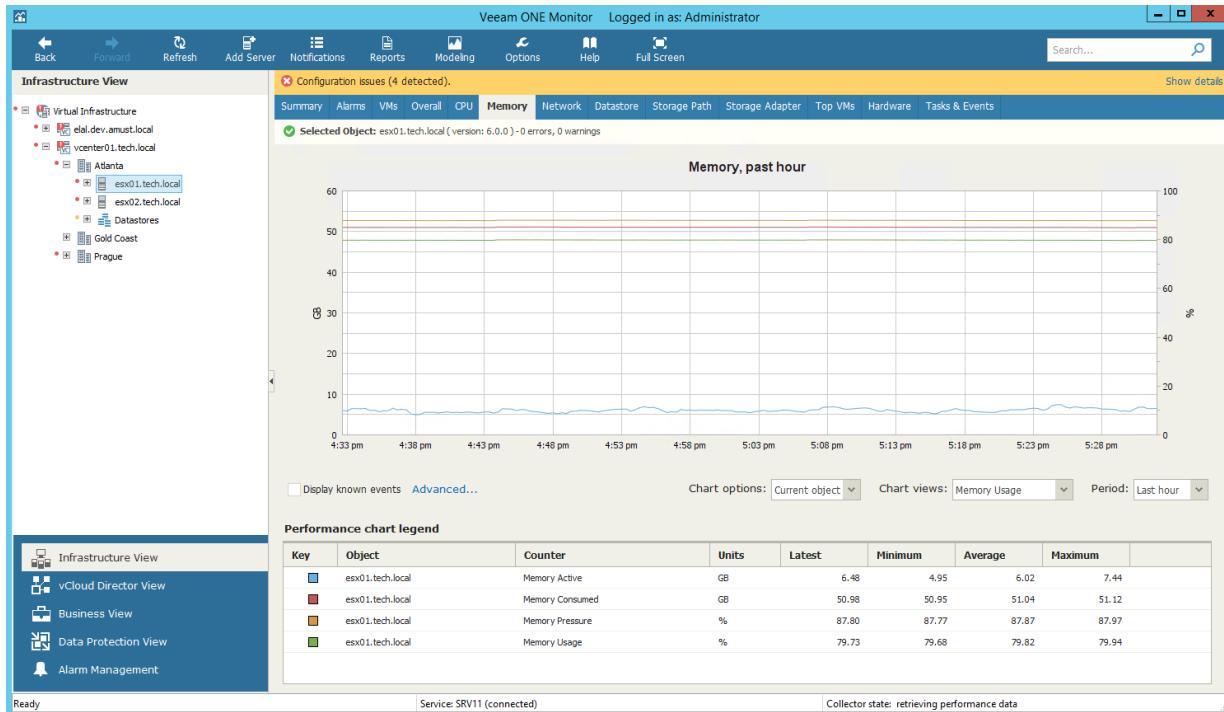
1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. At the bottom of the inventory pane, click **Infrastructure View**.

3. In the inventory pane, select the necessary infrastructure object or segment.

4. Open the necessary performance chart tab.

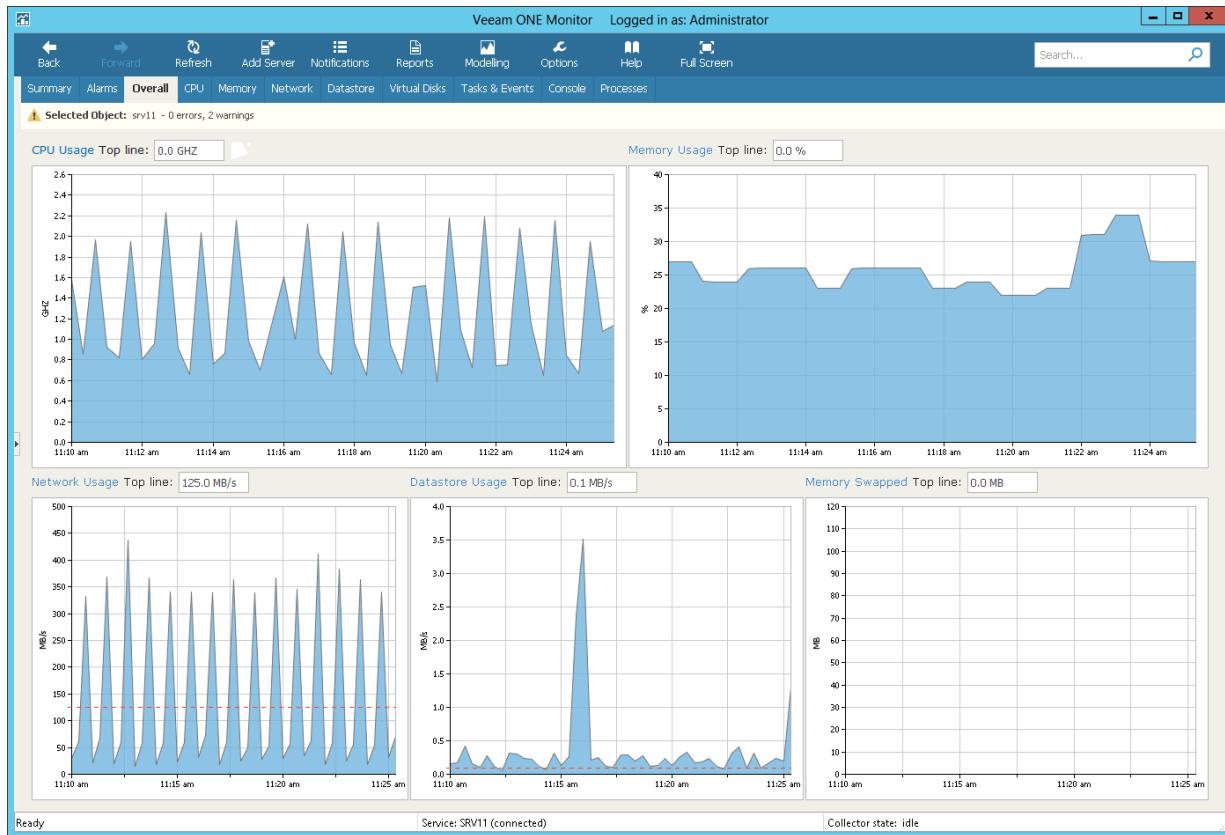


Overall Chart

The **Overall** chart shows aggregated performance data for the selected infrastructure object or segment: CPU usage, memory usage, memory swapped, network and datastore usage. Performance data in the chart is shown for the previous 15 minutes.

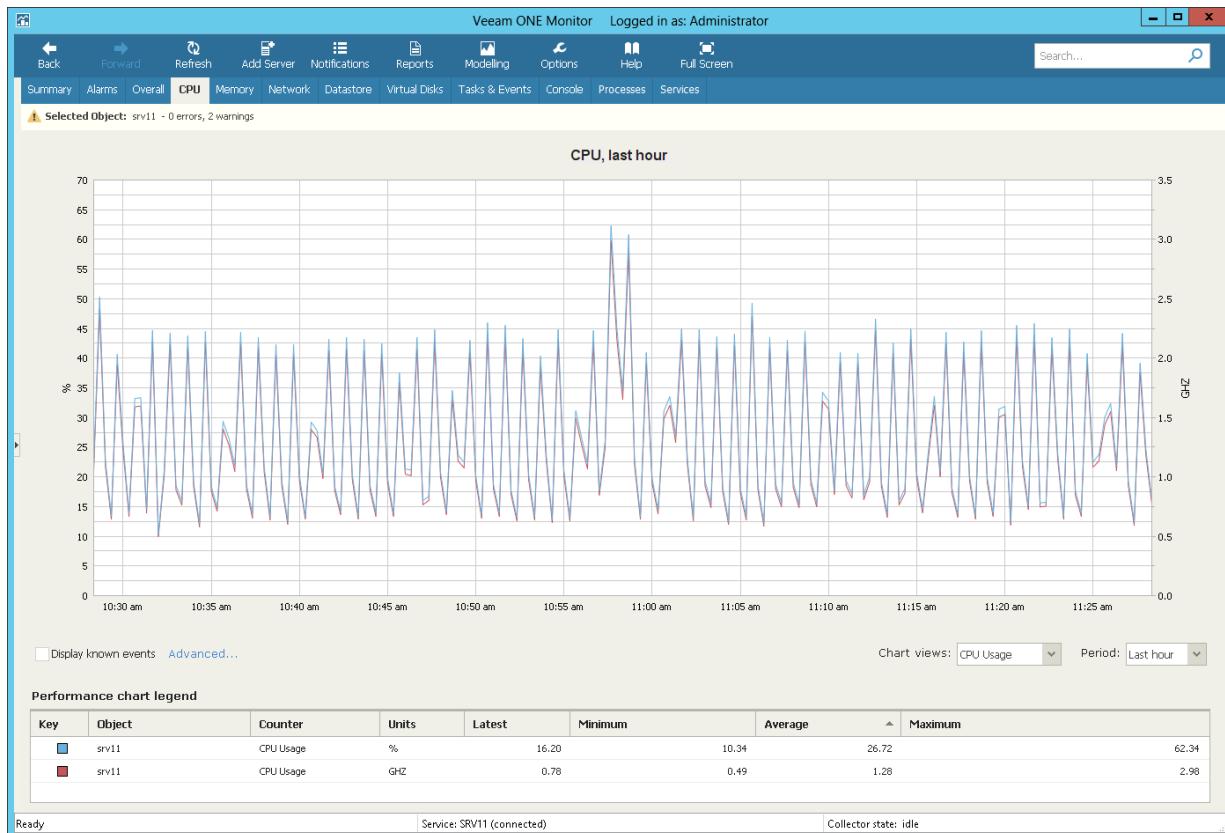
In the **Top line** field, you can set a threshold value. The top line is displayed as the red dotted line in the chart to help you monitor whether resource usage exceeds the healthy value range. If you do not need to display the top line, enter '0' (zero) in the **Top line** field or disable top lines in [Veeam ONE Monitor chart settings](#). With the top line disabled, the Y-axis will scale automatically to match the range of the displayed data.

To drill down to performance chart details, click the counter link above a performance widget. A corresponding performance chart for the selected virtual infrastructure object will open.



CPU Performance Chart

The CPU chart displays historical statistics on CPU utilization for the selected infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chat View	Counter	Measurement Unit	Description
CPU Usage	CPU Usage	Percent	CPU actively used on a host, as a percentage of total available CPU.
	CPU Usage	GHz	Sum of actively used CPU for all powered on VMs on a host.
CPU Bottlenecks	Average CPU Ready	Percent	Average CPU Ready value for all VMs on a host.

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

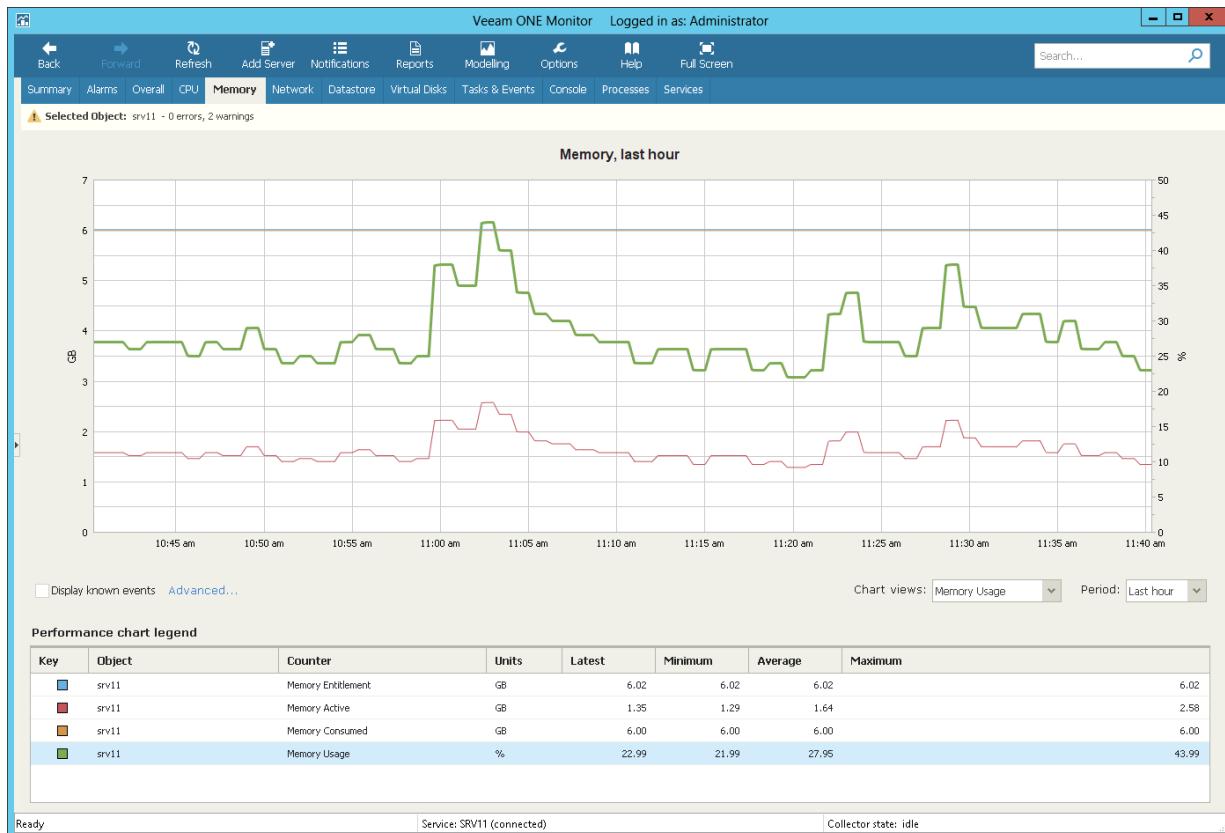
Chart View	Counter	Measurement Unit	Description
CPU Usage	CPU Usage	Percent	Amount of actively used virtual CPU resources, as a percentage of total available CPU (this is the host view, not the guest OS view).
	CPU usage	GHz	Amount of actively used virtual CPU resources (this is the host view, not the guest OS view).
CPU Bottlenecks	Average CPU Idle All Cores	Percent	Average amount of time all CPU cores spent in an idle state.
	Average CPU Ready All Cores	Percent	Average CPU Ready value across all cores on a host.
	Average CPU Standstill All Cores	Percent	Average amount of time all CPU cores spent in a standstill state.
	Average CPU Wait All Cores	Percent	Time spent waiting for hardware or VMKernel lock thread locks.
	CPU Co-Stop All Cores	Percent	Average amount of time a VM was ready but unable to run due to co-scheduling constraints.

For objects that are parent to ESXi hosts and VMs, Veeam ONE displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Chart for a resource pool displays rollup values for all VMs in the resource pool.

Memory Performance Chart

The **Memory** chart displays historical statistics on memory utilization for the selected infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
Memory Usage	Memory Active	GB	Sum of all active memory metrics for all powered-on VMs and vSphere services (such as COS, vpxa) on a host, as estimated by VMkernel based on recently touched memory pages.
	Memory Consumed	GB	Amount of physical memory used on a host, including memory used by the Service Console, VMkernel, vSphere services and total memory consumed by running VMs.
	Memory Pressure	Percent	Potential memory demand that is based on total allocated memory for running VMs, memory overhead, effects of memory Transparent Page Sharing and total available memory.

Chart View	Counter	Measurement Unit	Description
	Memory Usage	Percent	Memory usage as percentage of available machine memory.
Memory Swap Rate	Memory Swap Used	B	Amount of memory swapped to disk: sum of memory swapped for all powered on VMs and vSphere services on a host.
	Swap In Rate	B/s	Rate at which memory is swapped from disk into host active memory during the current interval.
	Swap Out Rate	B/s	Rate at which memory is swapped from host active memory to disk during the current interval.
Memory Management	Memory Balloon	B	Amount of memory allocated by the VM memory control driver (vmmemctl).
	Memory Compressed	B	Amount of RAM pages memory compressed by a host instead of swapping to disk.
	Memory Overhead	B	Total amount of memory overhead metrics for all powered-on VMs, plus memory overhead of running vSphere services on a host.
Memory Sharing	Memory Shared	MB	Sum of memory shared metrics for all powered-on VMs, and memory consumed by vSphere services on a host.
	Memory Shared Common	MB	Amount of memory shared by all powered-on VMs and vSphere services on a host.
Memory Latency	Memory Latency	Percent	Percentage of time a VM is waiting to access swapped or compressed memory.

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

Chart View	Counter	Measurement Unit	Description
Memory Usage	Memory Active	GB	Amount of guest physical memory actively used, as estimated by VMkernel based on recently touched memory pages.
	Memory Consumed	GB	Amount of guest physical memory consumed by a VM. The value includes the shared and memory that might be reserved but not actually used; overhead memory is not taken into account.
	Memory Entitlement	GB	Amount of host physical memory a VM is entitled to, as determined by the ESXi scheduler.
	Memory Usage	Percent	Memory usage as percentage of configured physical memory for a VM.
Memory Swap Rate	Memory Swapped	B	Amount of guest physical memory swapped out to the VM swap file by the VMkernel. The metrics refers to VMkernel swapping, not to guest OS swapping.
	Swap In Rate	B/s	Rate at which memory is swapped from disk into active memory during the current interval.
	Swap Out Rate	B/s	Rate at which memory is swapped from active memory to disk during the current interval.
Memory Management	Memory Balloon	MB	Amount of memory allocated by the VM memory control driver (vmmemctl).
	Memory Compressed	MB	Amount of RAM pages compressed by a host instead of swapping to disk.
	Memory Overhead	MB	Amount of machine memory used by VMkernel to run a VM.
	Memory Saved by Zipping	MB	Amount of memory saved by memory zipping.

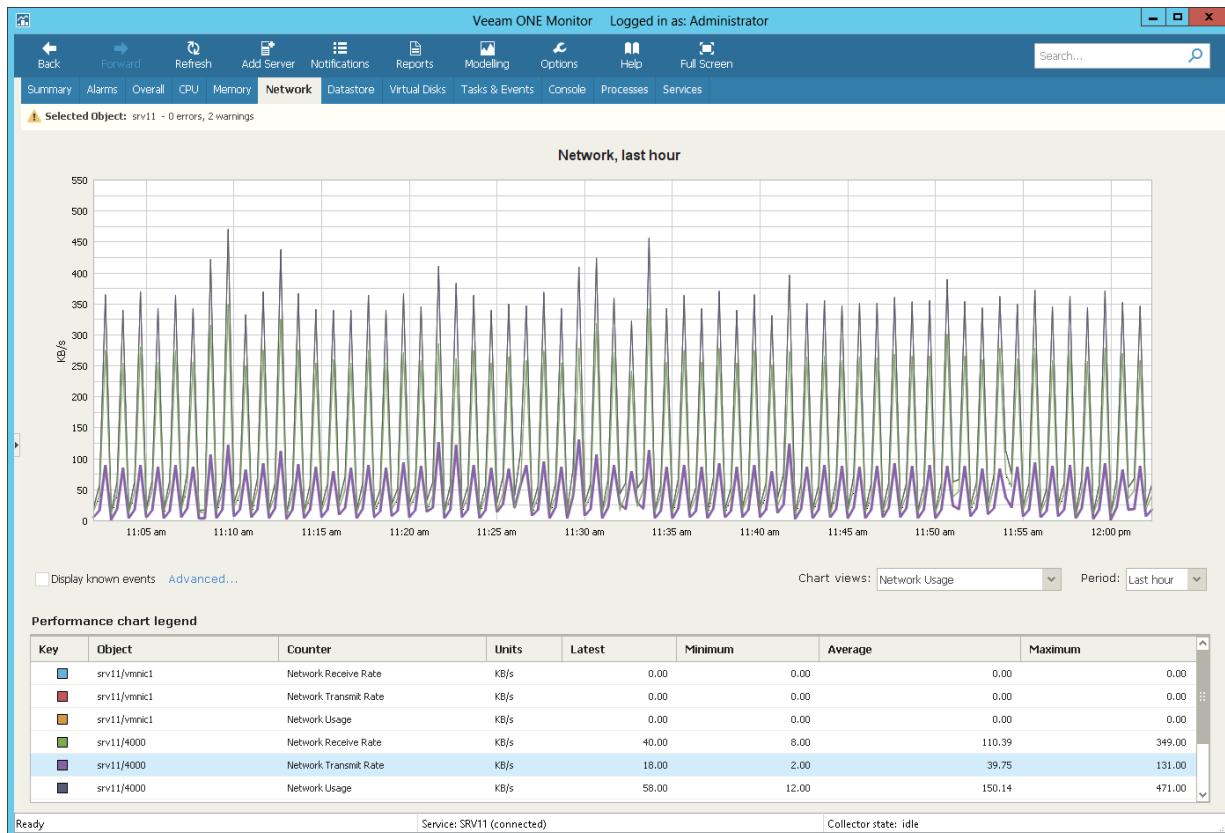
Chart View	Counter	Measurement Unit	Description
Memory Sharing	Memory Shared	B	Amount of guest physical memory that a VM shares with other virtual machines (through VMkernel Transparent Page Sharing and RAM deduplication).
Memory Latency	Memory Latency	Percent	Percentage of time a VM is waiting to access swapped or compressed memory.

For objects that are parent to ESXi hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Chart for a resource pool displays rollup values for all VMs in the resource pool.

Network Performance Chart

The **Network** chart displays historical statistics on network usage for the selected infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
Network Usage	Network Receive Rate	KB/s	Rate at which data is received across each physical NIC instance on a host. The counter represents the bandwidth of the network.
	Network Transmit Rate	KB/s	Rate at which data is transmitted across each physical NIC instance on a host.
	Network Usage	KB/s	Network utilization, sum of data received and transmitted across all physical NIC instances connected to a host.
	Received Packets per Second	Number	Average number of packets received per second across each physical NIC instance on a host.

Chart View	Counter	Measurement Unit	Description
Network Transfer Rate (Packets)	Transmitted Packets per Second	Number	Average number of packets transmitted per second across each physical NIC instance on a host.
Dropped and Error Packets	Packet Receive Errors	Number	Number of packets with errors received.
	Packet Transmit Errors	Number	Number of packets with errors transmitted.
	Receive Packets Dropped	Number	Number of receives dropped.
	Total Errors	Number	Total number of packets with errors received and transmitted.
	Total Packets Dropped	Number	Total number of dropped packets.
	Transmit Packets Dropped	Number	Number of transmits dropped.

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

Chart View	Counter	Measurement Unit	Description
Network Usage	Network Receive Rate	KB/s	Rate at which data is received across the vNIC instance on a VM. The counter represents the bandwidth of the network.
	Network Transmit Rate	KB/s	Rate at which data is transmitted across the vNIC instance on a VM.
	Network Usage	KB/s	Network utilization, sum of data received and transmitted across all vNIC instances on a VM.

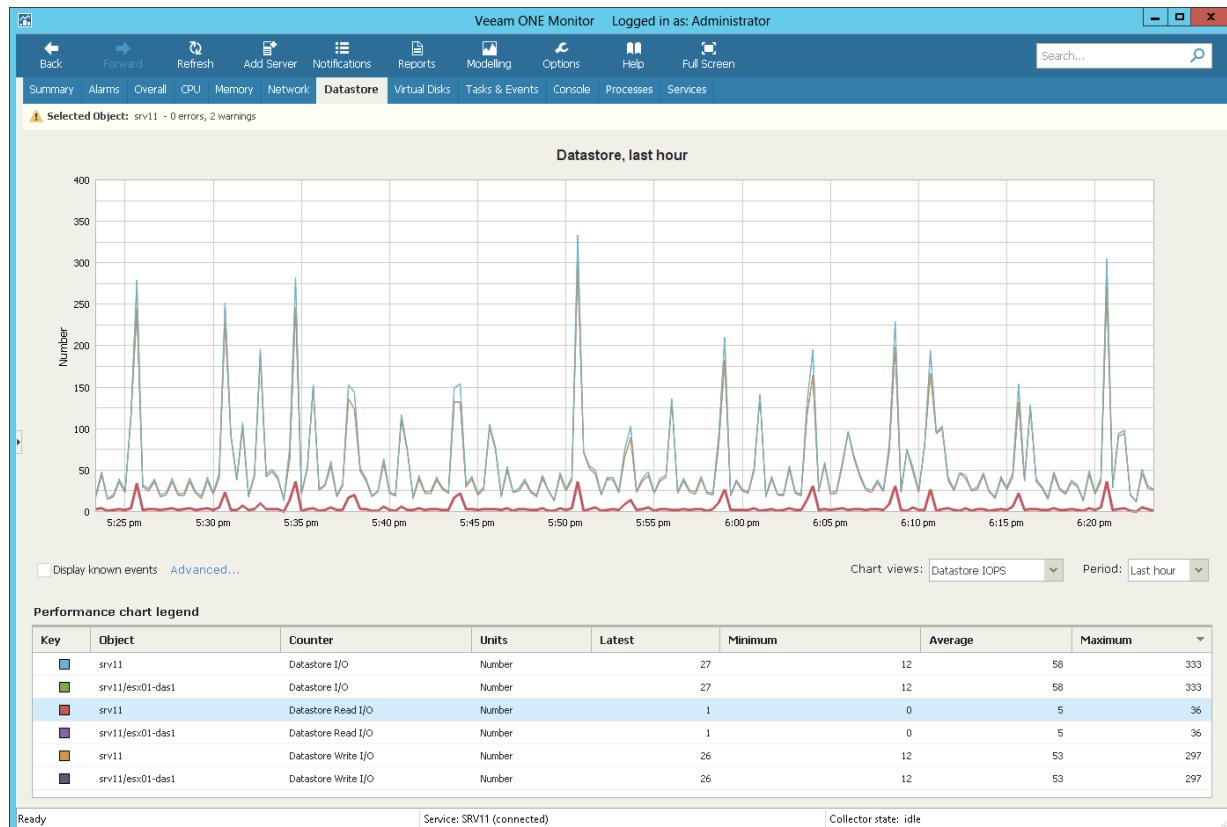
Chart View	Counter	Measurement Unit	Description
Network Transfer Rate (Packets)	Received Packets per Second	Number	Average number of packets received per second by each vNIC instance on a VM.
	Transmitted Packets per Second	Number	Average number of packets transmitted per second by each vNIC instance on a VM.

For objects that are parent to ESXi hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Chart for a resource pool displays rollup values for all VMs in the resource pool.

Datastore Performance Chart

The **Datastore** chart displays historical statistics for all datastores (including vSAN datastores) used by the selected infrastructure component and its child objects.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
Datastore IOPS	Disk/ESXi: Datastore I/O	Number	Aggregate number of I/O operations on a datastore.
	Disk/ESXi: Datastore Read I/O	Number	Average number of read commands per second to a datastore.
	Disk/ESXi: Datastore Write I/O	Number	Average number of write commands per second to a datastore.
Datastore Usage Rates	Disk/ESXi: Datastore Read Rate	MB/s	Rate at which data is read from a datastore.

Chart View	Counter	Measurement Unit	Description
	Disk/ESXi: Datastore Usage	MB/s	Sum of read and write rates to a datastore.
	Disk/ESXi: Datastore Write Rate	MB/s	Rate at which data is written to a datastore.
Datastore Latency	Disk/ESXi: Datastore Highest Latency	Millisecond	Highest latency value across all datastores used by a host.
	Disk/ESXi: Datastore Latency Observed by VMs	Millisecond	Average datastore latency as seen by VMs.
	Disk/ESXi: Datastore Read Latency	Millisecond	Average amount of time that a read from the datastore takes.
	Disk/ESXi: Datastore Write Latency	Millisecond	Average amount of time that a write operation to a datastore takes.
Datastore Issues	Disk/ESXi: Datastore Bus Resets	Number	Number of SCSI bus reset commands.
	Disk/ESXi: Datastore Command Aborts	Number	Number of aborted SCSI commands.
	Disk/ESXi: Datastore Maximum Queue Depth	Number	Number of outstanding requests to a storage device.

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

Chart View	Counter	Measurement Unit	Description
Datastore IOPS	Datastore I/O	Number	Aggregate number of I/O operations on a datastore.
	Datastore Read I/O	Number	Average number of read commands per second to a datastore.

Chart View	Counter	Measurement Unit	Description
	Datastore Write I/O	Number	Average number of write commands per second to a datastore.
	Disk/vSAN: Recovery Write I/O	Number	Average number of write commands per second to a vSAN datastore disk that contains copy of VM data.
Datastore Usage Rates	Datastore Read Rate	MB/s	Rate at which data is read from a datastore.
	Datastore Usage	MB/s	Sum of read and write rates for a datastore.
	Datastore Write Rate	MB/s	Rate at which data is written to a datastore.
	Disk/vSAN: Recovery Write Rate	MB/s	Rate of writing data to a vSAN datastore disk that stores copy of VM data.
Datastore Latency	Datastore Highest Latency	Millisecond	Highest latency value across all datastores used by a host.
	Datastore Read Latency	Millisecond	Average amount of time that a read operation from a datastore takes.
	Datastore Write Latency	Millisecond	Average amount of time that a write operation to a datastore takes.
	Disk/vSAN: Recovery Write Latency	Millisecond	Average amount of time that a write operation to a vSAN datastore disk storing copy of VM data takes.
Datastore Issues	Datastore Bus Resets	Number	Number of SCSI bus reset commands.
	Datastore Command Aborts	Number	Number of aborted SCSI commands.

For objects that are parent to ESXi hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders, clusters, datacenters, vCenter Servers display rollup values for all hosts in the container. Chart for a resource pool displays rollup values for all VMs in the resource pool.

Virtual Disks Performance Chart

The **Virtual Disks** chart displays historical statistics for partitions of all disks on the selected VM.



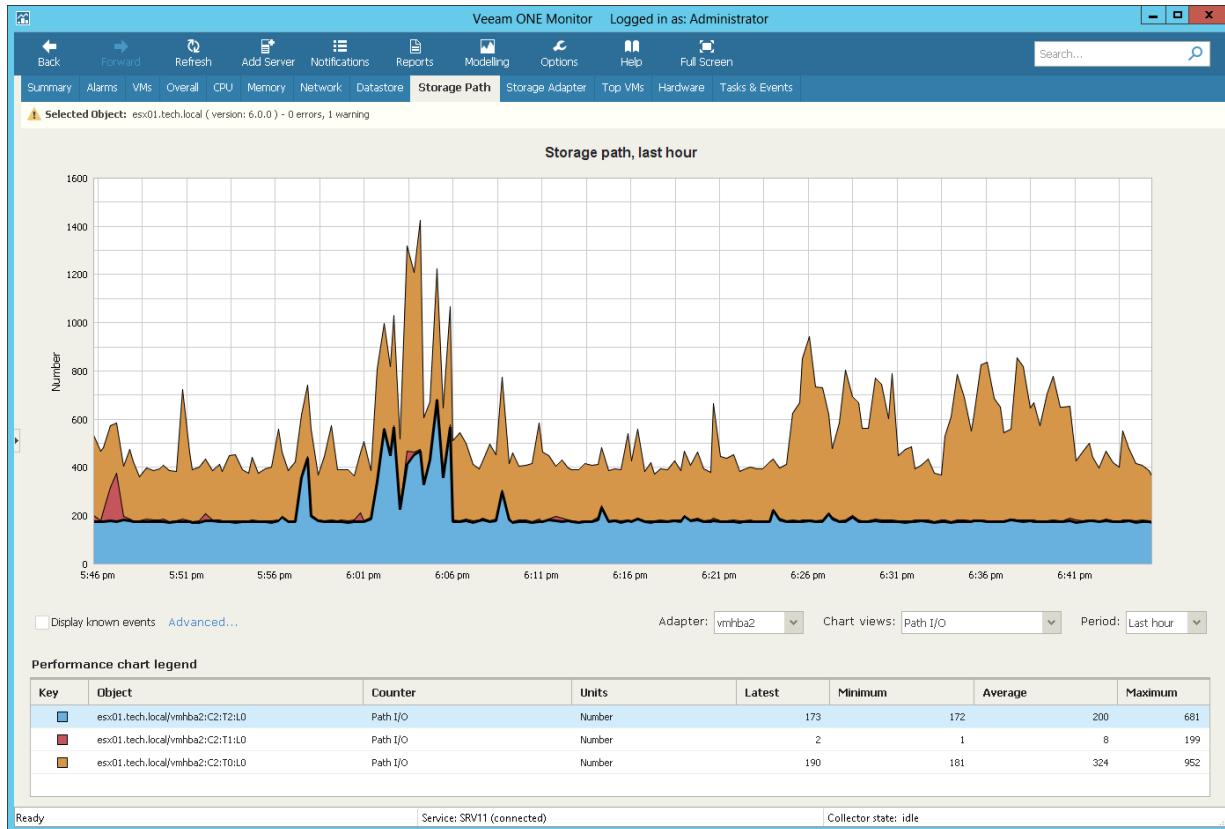
The following table provides information on predefined views and counters.

Chat View	Counter	Measurement Unit	Description
Virtual Disks IOPS	Read I/O	Number	Average number of read operations issued per second to a virtual disk.
	Write I/O	Number	Average number of write operations issued per second to a virtual disk.
Virtual Disks Usage Rates	Read Rate	MB/s	Rate at which data is read from a virtual disk.
	Write Rate	MB/s	Rate at which data is written to a virtual disk.
Virtual Disks Latency	Read Latency	Millisecond	Average amount of time that a read operation from a virtual disk takes.

Chat View	Counter	Measurement Unit	Description
	Write Latency	Millisecond	Average amount of time that a write operation to a virtual disk takes.

Storage Path Performance Chart

The **Storage Path** chart displays historical statistics for paths used by the storage adapter on the selected host.



You can switch between adapters using the **Adapter** list below the performance chart.

The name of each storage device connected to the storage adapter through the selected path is specified after the host address (separated by a forward slash). It has the following format: *<HBA>:<SCSI target>:<SCSI LUN>:<disk partition>*

The following table provides information on predefined views and counters.

Chart View	Measurement Unit	Description
Path I/O	Number	Average number of commands issued per second through a path.
Path Read I/O	Number	Average number of read commands issued per second through a path.
Path Write I/O	Number	Average number of write commands issued per second through a path.
Path Read Rate	MB/s	Rate at which data is read through a path.

Chart View	Measurement Unit	Description
Path Write Rate	MB/s	Rate at which data is written through a path.
Path Read Latency	Millisecond	Average amount of time taken for a read operation through a path.
Path Write Latency	Millisecond	Average amount of time that a write operation through a path takes.

Storage Adapter Performance Chart

The **Storage Adapter** chart displays historical statistics for the storage adapters on the selected host.



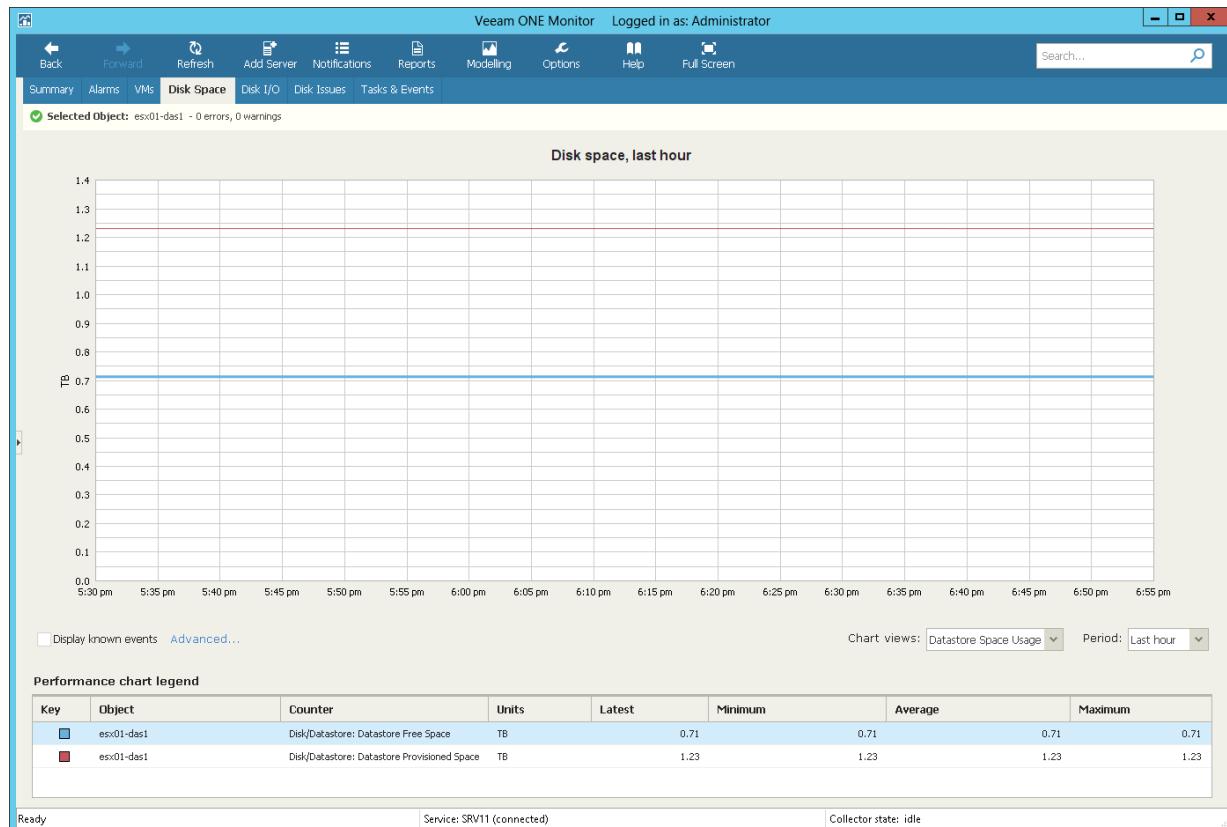
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Adapter IOPS	Adapter I/O	Number	Average number of commands issued per second on a storage path during the collection interval.
	Adapter Read I/O	Number	Average number of read commands issued per second on a storage path during the collection interval.
	Adapter Write I/O	Number	Average number of write commands issued per second on a storage path during the collection interval.
Adapter Usage Rates	Adapter Read Rate	MB/s	Rate at which data is read on a storage path.
	Adapter Write Rate	MB/s	Rate at which data is written on a storage path.

Chart View	Counter	Measurement Unit	Description
Adapter Latency	Adapter Read Latency	Millisecond	Average amount of time that a read operation on a storage path takes.
	Adapter Write Latency	Millisecond	Average amount of time that a write operation on a storage path takes.

Disk Space Chart

The **Disk Space** chart is available for datastores and datastore clusters. It displays historical statistics on disk space resources and usage for the selected datastore or datastore cluster.

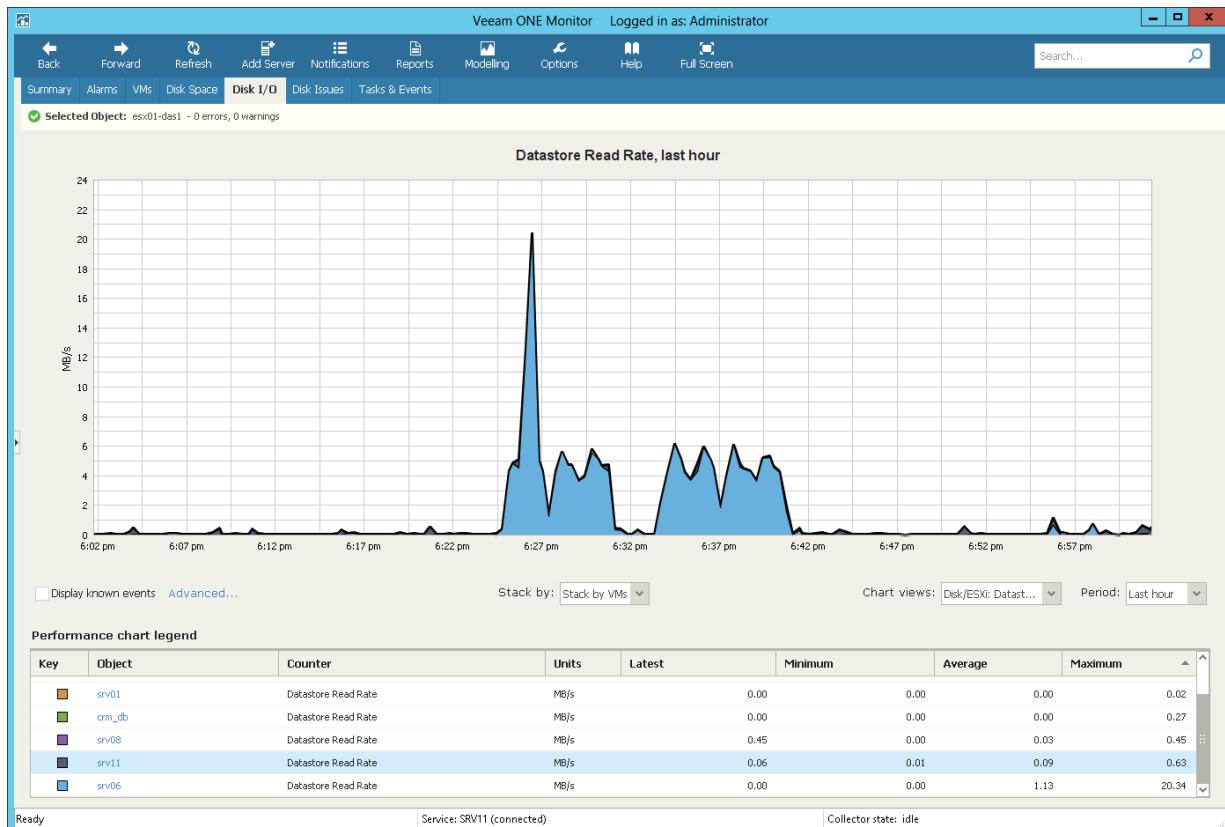


The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Datastore Space Usage	Disk/Datastore: Datastore Free Space	TB/GB	Amount of free space on a datastore.
	Disk/Datastore: Datastore Provisioned Space	TB/GB	Amount of storage allocated for a datastore. Size of files on the datastore cannot exceed this value.

Disk I/O Chart

The **Disk I/O** chart is available for datastores and datastore clusters. It displays historical statistics on the read and write load.



Use the **Chart options** list to display graphs for the current object (for example, a specific datastore or a virtual infrastructure container), for VMs or hosts that work with the selected datastore. For VMs or for hosts, this chart displays stacked graphs to let you see actual cumulative load on a particular datastore. If you choose to view the chart for the top **Datastore** parent object, you will also be able to stack graphs by all available datastores.

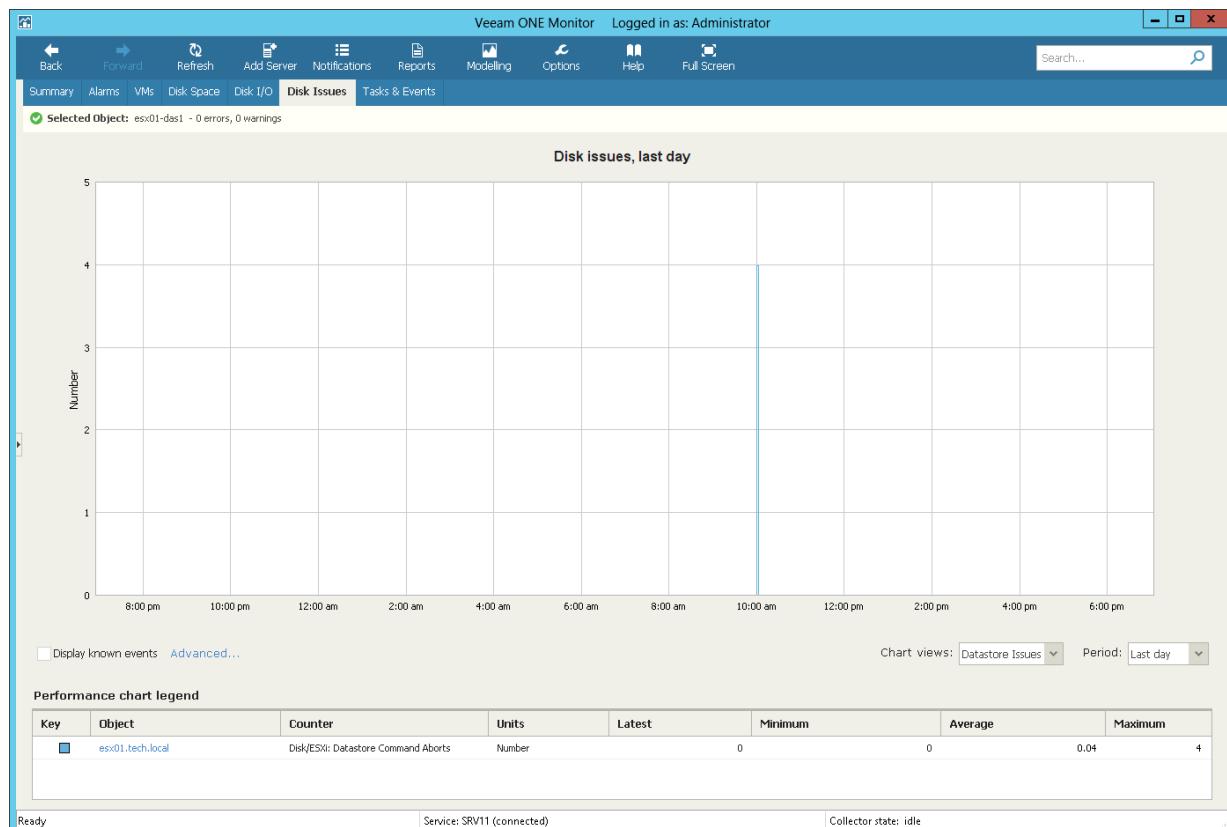
The following table provides information on predefined views and counters.

Chart View	Measurement Unit	Description
Disk/ESXi: Datastore Read Rate	MB/s	Rate at which data is read from a datastore.
Disk/ESXi: Datastore Write Rate	MB/s	Rate at which data is written to a datastore.
Disk/ESXi: Datastore Usage	MB/s	Sum of read and write rates for a datastore.

Chart View	Measurement Unit	Description
Disk/ESXi: Datastore Read I/O	Number	Number of times data was read from the disk by all VMs residing on a datastore.
Disk/ESXi: Datastore Write I/O	Number	Number of times data was written to the disk by all VMs residing on a datastore.
Disk/ESXi: Datastore I/O	Number	Average number of commands issued per second to a storage device by the adapter.
Disk/ESXi: Datastore Read Latency	Millisecond	Average amount of time that a read operation from a datastore takes (from the perspective of an ESXi host).
Disk/ESXi: Datastore Write Latency	Millisecond	Average amount of time that a write operation to a datastore takes (from the perspective of an ESXi host).

Disk Issues Chart

The **Disk Issues** chart displays historical statistics on the number of disk bus resets and disk command aborts that have occurred in the defined interval. This chart is available for datastores and datastore clusters.



The following table provides information on predefined views and counters.

Chart View	Measurement Unit	Counter	Description
Datastore Issues	Disk/ESXi: Datastore Bus Resets	Number	Number of aborted SCSI commands.
	Disk/ESXi: Datastore Command Aborts	Number	Number of SCSI bus reset commands.

Customizing VMware vSphere Performance Charts

You can customize performance charts to select specific objects, time intervals or performance counters to display on the charts.

Selecting Objects to Chart

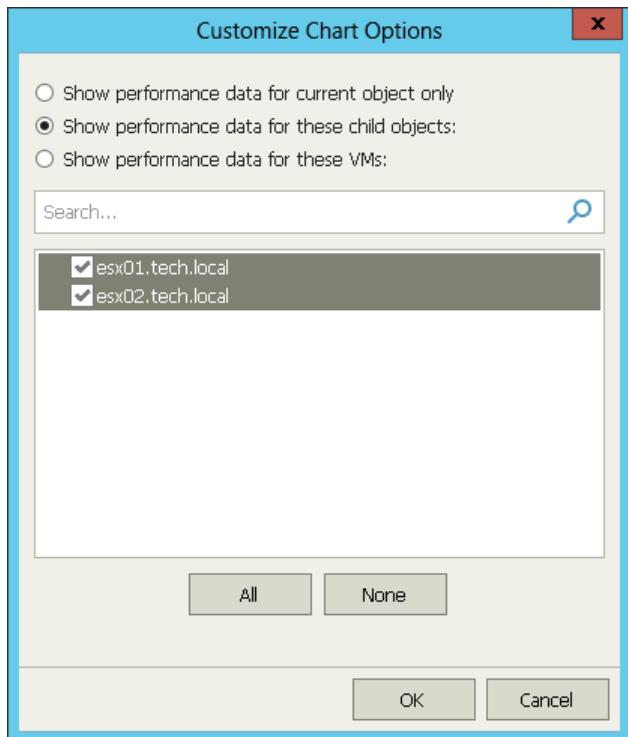
By default, all performance charts display data for an infrastructure object selected in the inventory pane. You can also choose to display performance data on charts for:

- Child components or objects of the selected virtual infrastructure object (for example, all hosts in the cluster)
- Child VMs for the selected virtual infrastructure object or segment

To display performance data for direct children of the selected virtual infrastructure object:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the necessary performance chart tab.
5. From the **Chart options** list, select *Custom*.
6. In the **Customize Chart Options** window, choose **Show performance data for these child objects**.
7. Select check boxes next to child objects that should be included in the chart scope.

8. Click OK.



To display performance data for a set of VMs in the selected infrastructure segment:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. In the inventory pane, select the necessary infrastructure object.

3. Open the necessary performance chart tab.

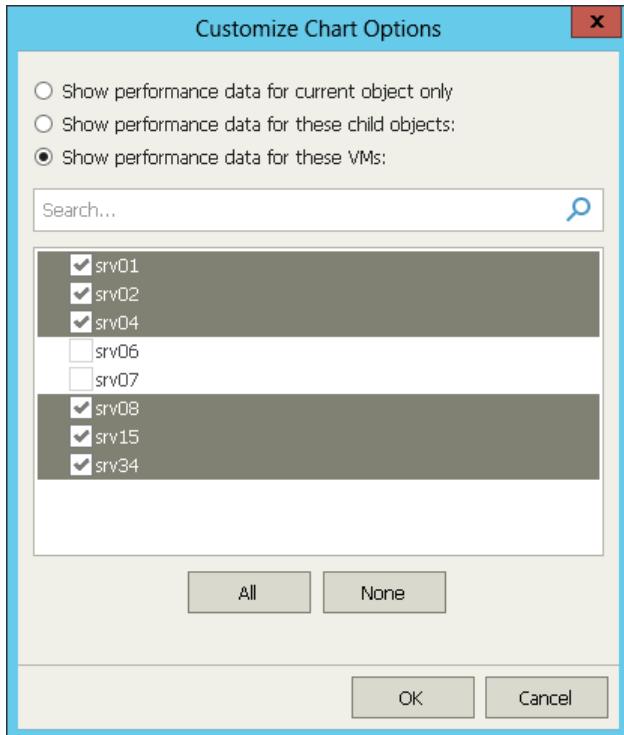
4. From the **Chart options** list, select *Custom*.

5. In the **Customize Chart Options** window, choose **Show performance data for these VMs**.

You can select both direct and indirect children (children of children) of the selected virtual infrastructure object.

6. Select check boxes next to VMs that should be included in the chart scope.

7. Click **OK**.



NOTE:

The legend pane displays objects for which data is available for the selected time interval.

Selecting Chart Views and Performance Counters

Performance charts come with a set of predefined chart views that logically group related performance counters. You can switch between chart views using the **Chart view** list at the top of the chart legend.

Instead of using predefined views, you can choose a custom set of performance counters to show on the chart:

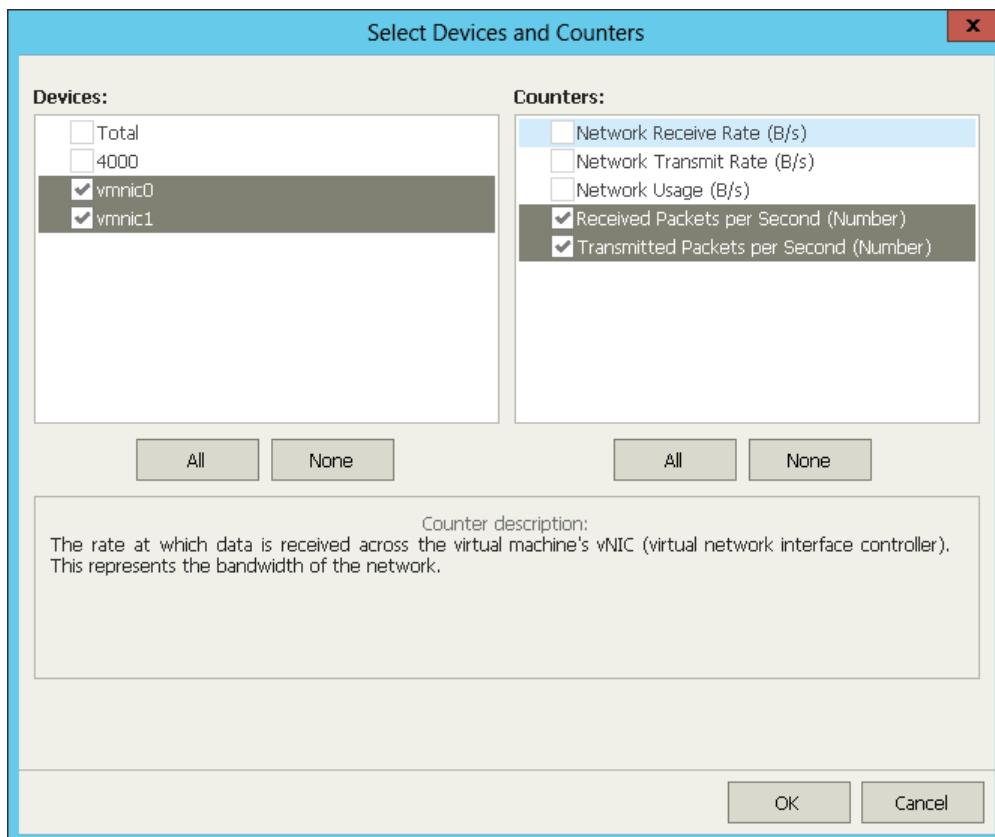
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the necessary performance chart tab.
5. From the **Chart views** list, select the *Custom* option to open the **Select Devices and Counters** window.
6. From the **Devices** list, select the necessary resource device(s).

Select *Total* to display all available devices on the chart.

NOTE:

The list of devices is not available for some performance charts. For example, for the **CPU** or **Memory** performance chart, you can only choose counters to display.

- From the **Counters** list, select counters to display on the chart.
- When you select a counter, its description appears in the **Counter description** section of the window.
- Click **OK**.



Selecting Time Interval

You can choose the time interval for which performance data on the chart will be displayed. Available options are:

- Last hour (real-time information)
- Last day
- Last week
- Last month
- Last year
- Custom time range (you can choose any time interval within the specified number of hours, days, or weeks, or specify any from/to period)

To specify a time interval for which performance data should be displayed:

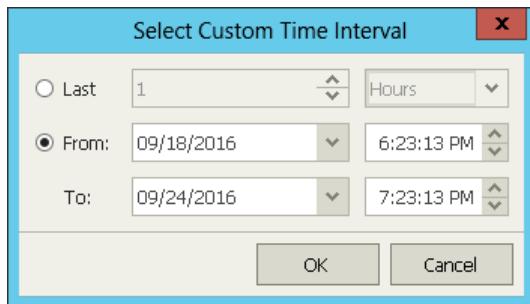
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.

4. Open the necessary performance chart tab.

5. From the **Period** list, select *Last hour*, *Last day*, *Last week*, *Last month* or *Last year*.

To define a custom time range, select *Custom*. In the **Select Custom Time Interval** window, define the necessary interval and click **OK**.

When you change the time interval, the time scale (X-axis) of the performance chart and the chart will change respectively.



VMware vSphere Tasks & Events

You can view information about tasks and events that occur in the virtual environment within the selected time interval. Veeam ONE loads tasks and events from vCenter Server. For each loaded task, it creates two events – one informs you when the task starts and the other informs you when the task ends.

To view the list of tasks and events:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Tasks & Events** tab.
5. The **Tasks & Events** list can display up to 1000 tasks and events at a time. To find the necessary task or event, you can use the following controls:
 - To display tasks or events for a specific period, select the necessary time interval from the **Events from list**.
 - To show or hide tasks or events, use filter buttons at the top of the list – *Show all events, Show errors, Show warnings, Show info messages, Show user events, Show tasks*.
 - To find the necessary tasks or events by description, use the **Search** field at the top of the list.
6. To view the detailed description of an event, click it in the **Tasks & Events** list.

The event description will be shown in the **Event Details** pane at the bottom.

When you choose a virtual infrastructure container in the inventory pane, you can view events for the selected object and events for its child objects. To hide events related to child objects, clear the **Include events from child objects** check box at the bottom of the **Event Details** section.

7. To export displayed events to a CSV file, click the **Export** button at the top of the list and specify the location where the file will be saved.

Type	Description	Time	Target	Initiated By
User	User logged event: So...	12/25/2018 12:01:54 AM	This object (apache02)	TECH\john.smith
Task	Finished: Remove sna...	12/25/2018 12:01:45 AM	This object (apache02)	TECH\john.smith
Info	Virtual machine apac...	12/25/2018 12:01:45 AM	This object (apache02)	TECH\john.smith
Task	Started: Remove snap...	12/25/2018 12:01:26 AM	This object (apache02)	TECH\john.smith
Info	Task: Remove snapshot	12/25/2018 12:01:26 AM	This object (apache02)	TECH\john.smith
Task	Finished: Create a n...	12/25/2018 12:01:05 AM	This object (apache02)	TECH\john.smith
Task	Started: Create a new...	12/25/2018 12:00:48 AM	This object (apache02)	TECH\john.smith
Info	Task: Create virtual m...	12/25/2018 12:00:48 AM	This object (apache02)	TECH\john.smith
User	User logged event: So...	12/25/2018 12:00:42 AM	This object (apache02)	TECH\john.smith
User	User logged event: So...	12/24/2018 9:01:23 PM	This object (apache02)	VSPHERE.LOCAL\William.Fox
Task	Finished: Remove sna...	12/24/2018 9:01:12 PM	This object (apache02)	VSPHERE.LOCAL\William.Fox
Info	Virtual machine apac...	12/24/2018 9:01:12 PM	This object (apache02)	VSPHERE.LOCAL\William.Fox
Task	Started: Remove snap...	12/24/2018 9:00:39 PM	This object (apache02)	VSPHERE.LOCAL\William.Fox
Info	Task: Remove snapshot	12/24/2018 9:00:29 PM	This object (apache02)	VSPHERE.LOCAL\William.Fox

For every task or event in the list, the following details are available:

- Event type (*User, Task, Info, Warning or Error*)
- Short description
- Time of occurrence
- Object to which the task or event relates
- Object or user that caused or initiated the event

Viewing Events on Performance Charts

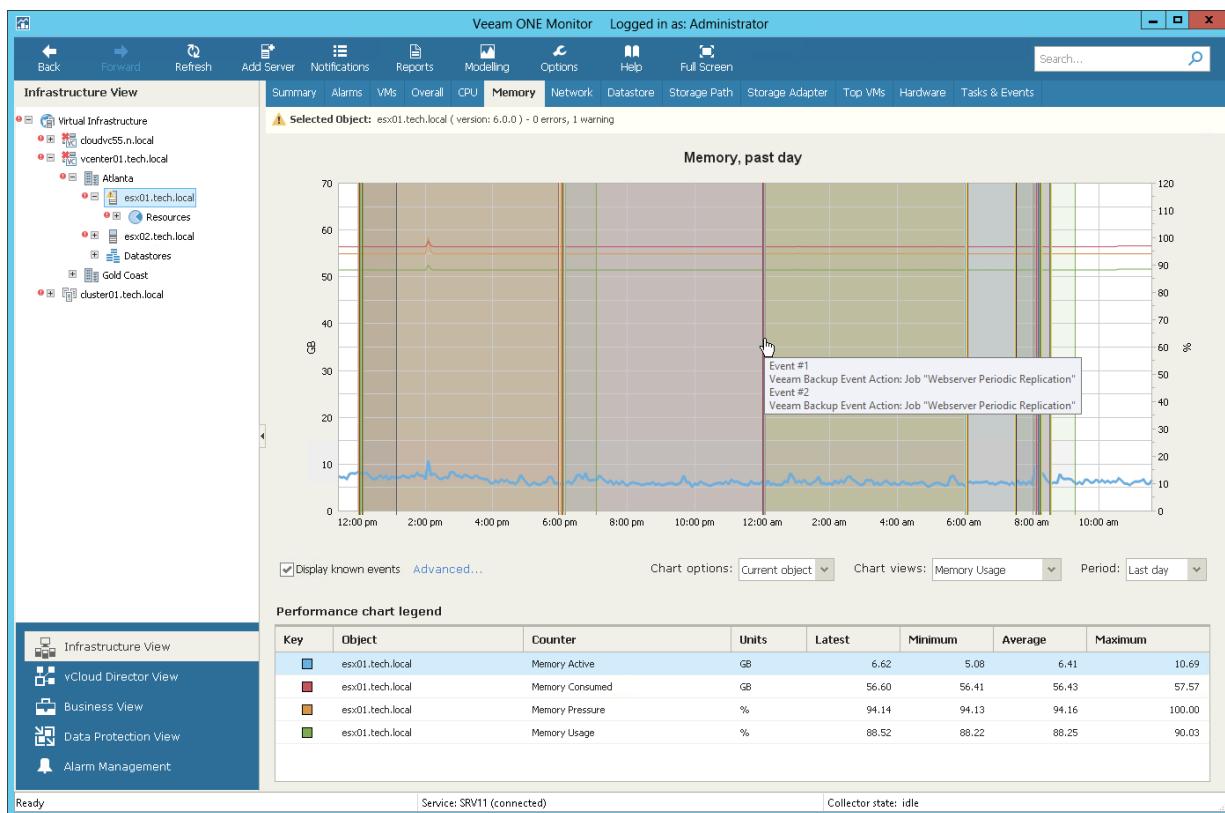
Performance charts for VMware vSphere infrastructure objects allow you to display the following resource-consuming events:

- Live Migration (vMotion)
- Snapshot creation events
- Snapshot removal events
- Veeam Backup & Replication events

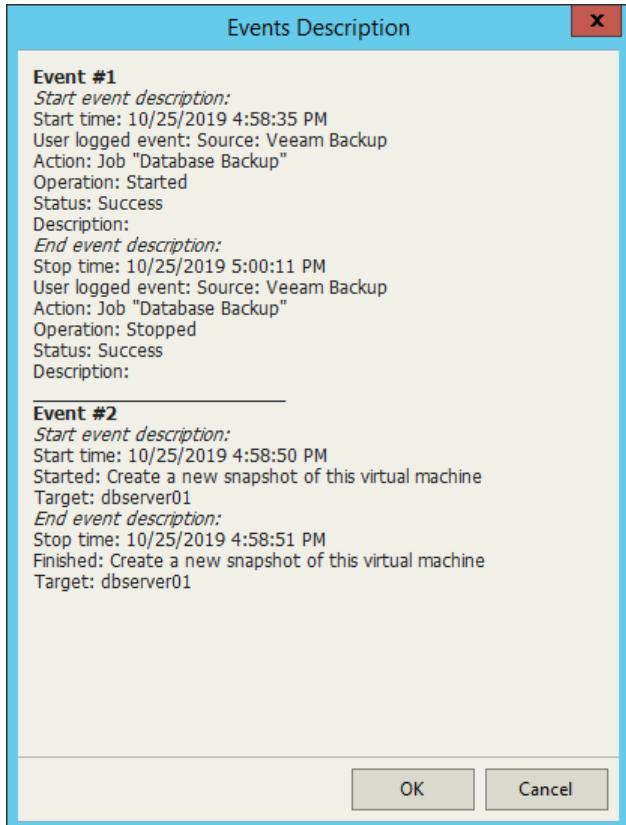
This option can help you detect events that caused performance degradation. For example, you can see what was the reason for a steep increase in the network resources usage.

To display events on a performance chart:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the necessary performance chart tab.
5. At the bottom of the performance chart, select the **Display known events** check box.
6. To choose what type of events to show on the performance chart, click the **Advanced** link next to the **Display known events** check box, and select the necessary events.



Events are shown as vertical lines crossing the performance graphs. To learn more about an event, hover the mouse cursor over it to see a tooltip, or click the line in the graph. The **Events Description** window will provide detailed information about the event.



NOTE:

The **Display known events** option is available only for time intervals not greater than 3 days. You will not be able to view events on the performance chart if a longer time interval is selected.

VMware vSphere Virtual Machines

You can view the list of VMs within a virtual infrastructure container – on a host, on a datastore, in a folder and so on.

To view the list of VMs:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **VMs** tab.
5. To find the necessary VM by name, use the **Search** field at the top of the list.
6. Click column names to sort VMs by a specific parameter.

For example, to view what VMs are consuming the greatest amount of memory, you can sort VMs in the list by **Memory Usage**.

State	Name	Status	Host	Provisioned Space	Used Space	CPU Usage	Memory Usage	IP V4 Address
Error	vm01	Error	esx01.tech.local	0.00 GB of 152.58 GB	0.00 GB of 50.48 GB			
Warning	win01	Warning	esx01.tech.local	0.00 GB of 177.32 GB	0.00 GB of 38.40 GB	0.55%	4.80%	172.17.53.14
Healthy	win01_replica	Healthy	esx01.tech.local	0.00 GB of 175.85 GB	0.00 GB of 19.69 GB			
Healthy	alpha	Healthy	esx01.tech.local	0.00 GB of 170.72 GB	0.00 GB of 14.56 GB			
Healthy	spbackupserver	Healthy	esx01.tech.local	44.16 GB	26.60 GB	9.80%	28.47%	169.254.179.107 169.254.215.97
Healthy	apache01	Healthy	esx01.tech.local	82.17 GB	8.96 GB			
Warning	svr01	Warning	esx01.tech.local	126.61 GB	35.01 GB	13.88%	0.33%	172.17.53.29 169.254.58.64
Warning	svr06	Warning	esx01.tech.local	144.81 GB	34.18 GB	17.67%	15.65%	172.17.53.53
Warning	svr04	Warning	esx01.tech.local	158.98 GB	37.69 GB			
Warning	crm_db	Warning	esx01.tech.local	182.44 GB	35.50 GB	2.45%	4.53%	172.17.53.43
Warning	svr11	Warning	esx01.tech.local	196.88 GB	109.51 GB	30.74%	32.32%	172.17.53.7
Warning	svr08	Warning	esx01.tech.local	204.33 GB	120.13 GB	6.72%	0.85%	169.254.195.106

For every VM in the list, the following details are available:

- **State** – state of the VM (*powered on, powered off, suspended*)
- **Name** – name of the VM
- **Status** – current status of the VM in terms of alarms (*healthy, warning or error*)
- **Host** – name of the host on which the VM resides
- **Provisioned Space** – amount of storage space provisioned for the VM

- **Used Space** – amount of storage space actually used for storing VM files (for VMs with thin provisioned disks, this value is normally less than *Provisioned Space*)
- **CPU Usage** – amount of actively used virtual CPU as a percentage of total available CPU resources
- **Memory Usage** – amount of actively used memory resources as a percentage of configured VM memory
- **IP V4 Address** – IP v4 address assigned to the VM
- **IP V6 Address** – IP v6 address assigned to the VM
- **DNS Name** – DNS name of the VM
- **vCPU** – number of virtual CPUs configured for the VM
- **Assigned Memory** – amount of virtual memory allocated for the VM
- **Guest OS** – guest operating system installed in the VM
- **VMware Tools** – state of VMware Tools
- **Hardware Version** – hardware version of the VM

You can choose what columns to show or hide in the **VMs** table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

VMware vSphere Hosts

You can view the list of ESXi hosts in your VMware vSphere infrastructure – on vCenter Server or in a datacenter.

To view the list of hosts:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **Hosts** tab.
5. To find the necessary host by name, use the **Search** field at the top of the list.
6. Click column names to sort hosts by a specific parameter.

For example, to view hosts with the greatest number of VMs, you can sort VMs in the list by **VM Count**.

The screenshot shows the Veeam ONE Monitor interface. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The main window has a toolbar with Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. A search bar is at the top right. Below the toolbar is a navigation bar with tabs: Summary, Alarms, VMs, **Hosts**, Datastores, Overall, CPU, Memory, Network, Datastore, Top VMs, Top Hosts, Lowest Load, Tasks & Events, Processes, and Services. The "Selected Object" is "vcneter01.tech.local (version: 6.0.0)" with 1 error and 0 warnings. The left pane shows the "Infrastructure View" tree, which includes "Virtual Infrastructure", "ebi.dev.amst.local", and "vcneter01.tech.local". Under "vcneter01.tech.local", there are "Atlanta" (with hosts "esx01.tech.local", "esx02.tech.local", and "esx03.tech.local"), "Datastores" (with "Gold Coast" and "Prague"), and "vCloud Director View", "Business View", "Data Protection View", and "Alarm Management" links. The right pane displays a table of hosts:

State	Object	Parent Object	CPU Count	CPU Frequency	Memory Size	VM Count
Up	esx03.tech.local	Prague	16	2.10 GHz	127.89 GB	24
Up	esx01.tech.local	Atlanta	8	2.39 GHz	63.94 GB	35
Up	esx02.tech.local	Atlanta	12	2.10 GHz	255.97 GB	94

At the bottom, there are status bars for "Service: SRV11 (connected)" and "Collector state: idle".

For every host in the list, the following details are available:

- **State** – state of the host (*powered on, powered off, suspended*)
- **Object** – name of the host
- **Parent Object** – name of the parent infrastructure object
- **CPU Count** – number of CPU cores on the host
- **CPU Frequency** – frequency of the host CPU core in GHz
- **Memory Size** – amount of physical memory available on the host
- **VM Count** – number of VMs that reside on the host

You can choose what columns to show or hide in the **Hosts** table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

VMware vSphere Datastores

You can view the list of datastores in your VMware vSphere infrastructure – on vCenter Server or in a datacenter.

To view the list of datastores:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **Datastores** tab.
5. To find the necessary datastore by name, use the **Search** field at the top of the list.
6. Click column names to sort datastores by a specific parameter.

For example, to view what datastores have the greatest amount of free space, you can sort datastores in the list by **Free Space, GB**.

State	Object	Parent Object	File System	Capacity	Free Space	VM Count
	datastore1	Datastores	VMFS	3718.00 GB	2352.52 GB	25
	esx01-das1	Datastores	VMFS	1256.00 GB	609.20 GB	15
	esx01-das2	Datastores	VMFS	1228.75 GB	347.31 GB	3
	esx01-das3	Datastores	VMFS	1228.75 GB	689.33 GB	15
	esx01-ds-hpvs	Datastores	VMFS	499.75 GB	440.55 GB	2
	esx02-ds1	Datastores	VMFS	11169.00 GB	2521.81 GB	93
	nfs_lez	Datastores	NFS	119.66 GB	72.45 GB	2
	vmfs_lez	Datastores	VMFS	59.75 GB	49.01 GB	1

For every host in the list, the following details are available:

- **State** – state of the datastore (*powered on, powered off, suspended*)
- **Object** – name of the datastore
- **Parent Object** – name of the parent object in the infrastructure
- **File System** – type of the file system on the datastore
- **Capacity** – total capacity of the datastore
- **Free Space** – amount of available free space on the datastore

- **VM Count** – number of VMs that reside on the datastore

You can choose what columns to show or hide in the **Hosts** table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

VMware vSphere Top and Lowest Load

The top and lowest load dashboards help you detect VMs and hosts consuming the most and the least amount of resources in the selected virtual infrastructure segment:

- **Top VMs** dashboard displays top VM consumers in terms of CPU, memory, datastore, network usage, memory swapped, active snapshot size, active snapshot age and the number of existing snapshots.
- **Top Hosts** dashboard displays top host consumers in terms of CPU, memory, datastore, network usage and swapped memory.
- **Lowest Load** dashboard displays least loaded hosts in terms of CPU, memory, datastore, network and memory swap used.

You can use this dashboard to choose hosts where you can deploy new VMs or to which you can move existing VMs.

To detect the most and the least loaded hosts or VMs:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Switch to the necessary dashboard – **Top VMs**, **Top Hosts** or **Lowest Load**.
5. At the top left corner of the dashboard, click the **Change options** link.
 - a. In the **Interval** field, set the time interval for which resource utilization statistics must be analyzed.
 - b. In the **VMs to display/Hosts to display** field, specify the number of objects to display on the dashboard.
6. At the top left corner of the dashboard, click the **Select counters** link.
 - a. In the **Select counters** window, choose metrics that must be included in the dashboard.

Press and hold the [SHIFT] or [CTRL] key on the keyboard to select multiple counters.

b. Click OK.

Selected Object: esx01.tech.local (version: 6.0.0) - 0 errors, 1 warning

Last 30 min stats

By CPU Usage		By Memory Consumed	
Virtual Machine	CPU Usage	Virtual Machine	Memory Consumed
srv11	29.30%	win01	6.00 GB
srv06	14.50%	srv11	6.00 GB
spbackupserver	9.57%	spbackupserver	4.00 GB

By Network Usage		By Datastore Usage	
Virtual Machine	Network Usage	Virtual Machine	Datastore Usage
srv11	147.87 KB/s	srn06	3.29 MB/s
srv08	72.09 KB/s	srn08	1.36 MB/s
srv01	6.94 KB/s	srn01	559.78 KB/s

By Memory Swapped		By Active Snapshot Size	
Virtual Machine	Memory Swapped	Virtual Machine	Active Snapshot Size
srv02	0.00 B	srn07	23.02 GB
srv06	0.00 B	srn08	15.80 GB
apache03_replica	0.00 B	srn02	14.49 GB

By Active Snapshot Age		By Existing Snapshots	
Virtual Machine	Active Snapshot Age	Virtual Machine	Existing Snapshots
srv01	328.96 day(s)	apache01_replica	13
srv04	285.83 day(s)	win01_replica	9
vmbp01	154.08 day(s)	vmbp01	5

Ready Service: SRV11 (connected) Collector state: idle

Host Hardware State

You can monitor the health of ESXi host hardware components. Veeam ONE collects sensor details for chassis, memory, power, processors, software components, storage, system, watchdog, fan, temperature, voltage and other components.

To monitor the health status of host hardware components:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary host.
4. Open the **Hardware** tab.

Sensor	Status	Details
Chassis	Green	
Memory	Yellow	
Power	Green	
Processors	Green	
Software Components	Green	
Storage	Green	
System	Green	
Watchdog	Green	
Fan	Green	
Fan Device 2 System Fan 2 - Normal	Green	2450 RPM. Sensor is operating under normal conditions
Fan Device 4 System Fan 4 - Normal	Green	2415 RPM. Sensor is operating under normal conditions
Fan Device 5 System Fan 5 - Normal	Green	4628 RPM. Sensor is operating under normal conditions
Other	Green	
Temperature	Green	
Voltage	Green	

The color of the status indicator changes depending on the state of the corresponding component for a standalone host and on the status of a triggered vCenter Server alarm:

- *Green* – the subsystem is functioning properly.
- *Yellow* and *Red* – the performance threshold is exceeded, performance has gone down or the subsystem has stopped operating.

VMware Remote Console (VMRC)

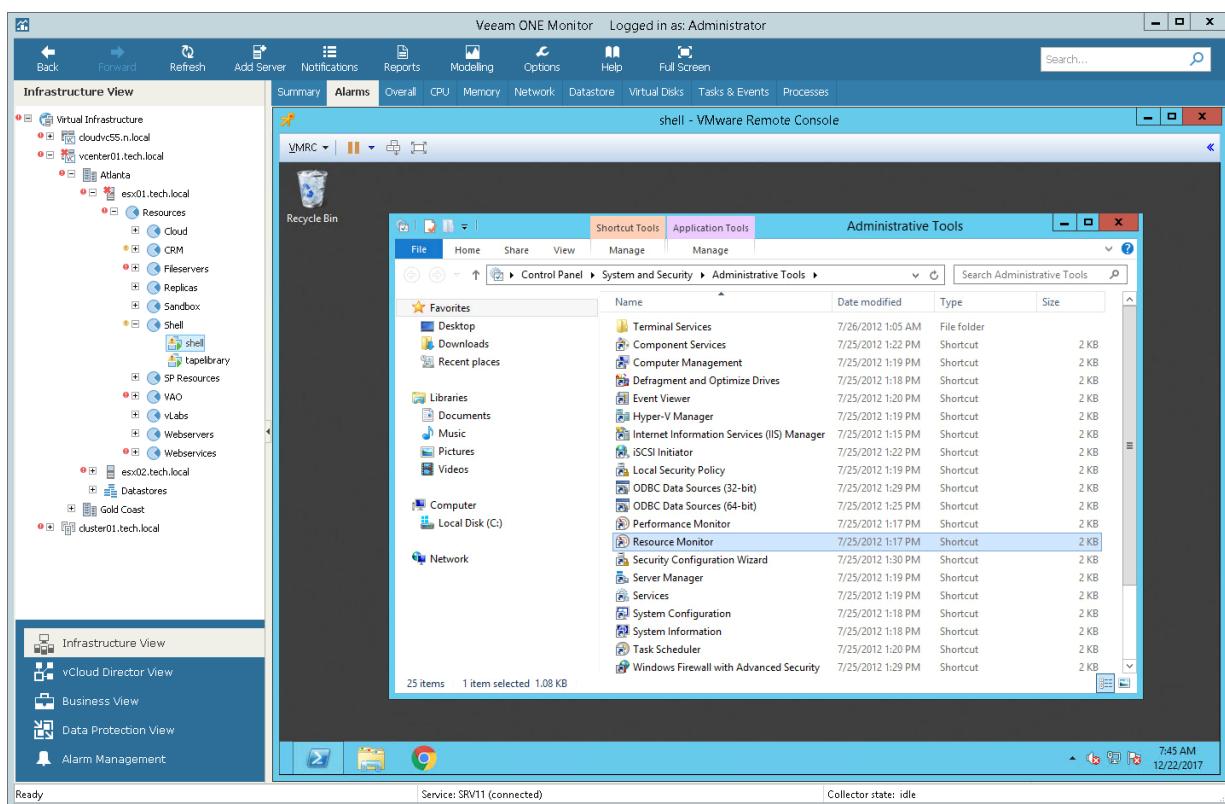
You can access the VMware Remote Console (VMRC) right from the Veeam ONE Monitor interface. From within the VMware Remote Console, you can isolate the root cause of VM performance problems and perform management tasks – for example, restart an unresponsive VM.

This option requires no additional software installed on the Veeam ONE server and is available for both Windows-based and Linux-based OS's.

Accessing VMware Remote Console

To access the VMware Remote Console:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, right-click the necessary VM and select **Open Console** from the shortcut menu.
4. You can use buttons at the top of the VMware Remote Console to manage the VM and change its power state.



You can use buttons at the top of the VMware Remote Console to manage the VM and change its power state.

To connect to a VM or change the VM power state, you can also right-click the VM in the inventory pane and use one of the following shortcut menu commands:

- To access the VM using Windows Remote Desktop Connection, choose **Remote Management > Connect to VM**.
- To change the VM power state, choose **Remote Management** and choose the necessary command.

VMware vSphere In-Guest Processes

You can view and control processes currently running inside a VM or vCenter Server.

- For Windows-based machines, you can view, end or restart processes.
- For Linux-based machines, you can view or end daemons.

Prerequisites

Before viewing in-guest processes, check the following prerequisites:

- For VMs, make sure that VMware Tools are installed.
- For Windows-based machines, make sure that the Remote Registry Service is started.
- For Linux-based machines, make sure that the SSH Server is started.

Viewing In-Guest Processes

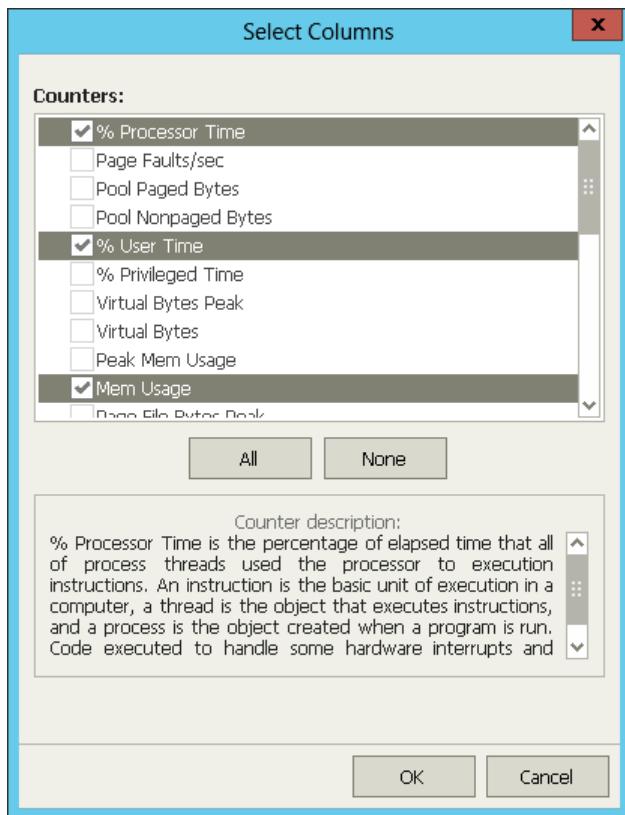
To view the list of processes:

1. Open Veeam ONE Monitor.
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Processes** tab.
5. Provide OS authentication credentials (user name and password) to access the list of running processes.

Name	% Processor Time	% User Time	Memory Usage	Thread Count	Elapsed Time	ID Process	Creating Process ID
Idle	87%	0%	4 K	2	147:03:32	0	0
System	0%	0%	276 K	110	147:03:32	4	0
smss	0%	0%	1004 K	2	147:03:31	216	4
cssr	0%	0%	4428 K	9	147:03:17	312	304
csrss	0%	0%	3456 K	8	147:03:13	368	360
wminit	0%	0%	3696 K	1	147:03:13	376	304
winlogon	0%	0%	5612 K	2	147:03:13	404	360
services	0%	0%	6872 K	4	147:03:11	460	376
lsass	0%	0%	16832 K	10	147:03:10	468	376
svchost	0%	0%	11088 K	10	147:03:05	532	460
svchost	0%	0%	9368 K	8	147:03:04	576	460
LogonUI	0%	0%	24864 K	8	147:03:03	664	404
dwm	0%	0%	22308 K	7	147:03:03	676	404
MaMpEng	0%	0%	150916 K	22	147:03:02	688	460
svchost	0%	0%	20424 K	15	147:03:01	768	460
svchost	0%	0%	51044 K	51	147:03:00	812	460
svchost	0%	0%	16936 K	17	147:03:00	896	460
svchost	0%	0%	19324 K	17	147:02:59	984	460
svchost	0%	0%	10880 K	18	147:02:57	624	460
spoolsv	0%	0%	9700 K	9	147:02:53	1124	460
sgslevr	0%	0%	16092 K	40	147:02:51	1192	460
svchost	0%	0%	14836 K	13	147:02:41	1504	460

Every process is described with a set of counters that are presented as column headings. You can add or remove counters to monitor running processes:

1. In the upper right corner of the **Processes** dashboard, click the **Select columns** link.
2. In the **Select Columns** window, select check boxes next to counters you want to display.
3. To view the detailed description of a counter, click it in the **Counters** list. The description will be displayed in the lower pane of the window.



You can end unwanted processes running on the VM or create an alarm based on the process state or object performance:

- [For Windows-based machines] To end a process, select it in the list and click the **Kill Process** button, or right-click a necessary process and select **Kill Process** from the shortcut menu.
- [For Linux-based machines] To end a daemon, select it in the list and click the **Kill Process** button and choose one of the following options:
 - **Hangup** – to send the `SIGHUP` signal
 - **Kill** – to send the `SIGKILL` signal
 - **Terminate** – to send the `SIGTERM` signal

You can also right-click a necessary process and select **Kill Process** and choose the necessary option from the shortcut menu.

- [For Windows-based machines] To create an alarm, select one or more processes in the list, click the **Create Alarm** button, and select the type of rule on which the alarm must be based. For more information on alarm rules, see section [Alarm Rules](#) of the Veeam ONE Working with Alarms Guide.

VMware vSphere In-Guest Services

You can view and control services currently running inside a VM or vCenter Server.

- For Windows-based machines, you can view, start, stop and restart services, and create alarms based on retrieved services.
- For Linux-based machines, you can view or end services.

Prerequisites

Before viewing in-guest services, check the following prerequisites:

- For VMs, make sure that VMware Tools are installed.
- For Windows-based machines, make sure that the Remote Registry Service is started.
- For Linux-based machines, make sure that the SSH Server is started.

Viewing In-Guest Services

To view the list of services:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Services** tab.
5. Provide OS authentication credentials (user name and password) to access the list of running services.

Service Name	Description	Proces...	Status	Startup Type	Log On As
AeLookupSvc	Processes application compatibility cache requests for...		Stopped	Manual (Trigger Start)	Local System
ALG	Provides support for 3rd party protocol plug-ins for In...		Stopped	Manual	Local Service
AppDsvc	Determines and verifies the identity of an application....		Stopped	Manual (Trigger Start)	Local Service
Appinfo	Facilitates the running of interactive applications with ...		Stopped	Manual (Trigger Start)	Local System
AppMgmt	Processes installation, removal, and enumeration requi...		Stopped	Manual	Local System
AppReadiness	Gets apps ready for use the first time a user signs in ...		Stopped	Manual	Local System
AppSvc	Provides infrastructure support for deploying Store ap...		Stopped	Manual	Local System
AudioEndpointBuilder	Manages audio devices for the Windows Audio serv...		Stopped	Manual	Local System
Audiosrv	Manages audio for Windows-based programs. If this s...		Stopped	Manual	Local Service
BFE	The Base Filtering Engine (BFE) is a service that mana...	624	Running	Automatic	Local Service
BITS	Transfers files in the background using idle network b...	812	Running	Manual	Local System
BrokerInfrastructure	Windows infrastructure service that controls which ba...	532	Running	Automatic	Local System
Browser	Maintains an updated list of computers on the netw...		Stopped	Disabled	Local System
CertPropSvc	Copies user certificates and root certificates from sm...	812	Running	Manual	Local System
COMSysApp	Manages the configuration and tracking of Compon...	2056	Running	Manual	Local System
CryptSvc	Provides three management services: Catalog Datab...	984	Running	Automatic	Network Service
DcomLaunch	The DCOMLAUNCH service launches COM and DCOM ...	532	Running	Automatic	Local System
defragsvc	Helps the computer run more efficiently by optimizing ...		Stopped	Manual	Local System
DeviceAssociationService	Enables pairing between the system and wired or wirel...		Stopped	Manual (Trigger Start)	Local System
DeviceInstall	Enables a computer to recognize and adapt to hardw...		Stopped	Manual (Trigger Start)	Local System
Dhcp	Registers and updates IP addresses and DNS records ...	768	Running	Automatic	Local Service
DnsCache	The DNS Client service (dnscache) caches Domain Na...	984	Running	Automatic (Trigger Start)	Network Service

You can start, stop and restart a running service, or create an alarm based on the service state or object performance:

- To restart a service, click the **Restart** button, or right-click a necessary service and select **Restart** from the shortcut menu.
- To disconnect from guest OS, click the **Disconnect** button.
- [For Windows-based machines] To create an alarm, select one or more services in the list, click the **Create Alarm** button, and select the type of rule on which the alarm must be based. For details on alarm rules, see section [Alarm Rules](#) of the Veeam ONE Working with Alarms Guide.

Launching vSphere Client

You can launch vSphere Client or vSphere Web Client from within the Veeam ONE Monitor console.

Prerequisites

Before launching vSphere Client, check the following prerequisites:

- The **Open with vSphere Client** option is available only if vSphere Client is installed on the machine where the Veeam ONE Monitor Client runs.
- To launch vSphere Client from Veeam ONE Monitor, you must have the **x86** version of Veeam ONE Monitor Client installed.

Launching vSphere Client

To launch the vSphere Client from Veeam ONE Monitor:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, right-click a vCenter Server or ESXi host and choose **Open with vSphere Client** or **Open with vSphere Web Client** from the shortcut menu.

vCloud Director Monitoring

Veeam ONE Monitor offers a comprehensive view for the logical and physical layers of the vCloud Director infrastructure. Veeam ONE collects real-time statistics from connected vCloud Director servers and underlying vCenter Servers to help you track provider capacities, monitor resource usage and identify issues that may potentially result in SLA breaches.

With Veeam ONE Monitor, you can:

1. **Monitor health status of the vCloud Director infrastructure.**

Start with the **Summary** dashboards to check the health status of the vCloud Director infrastructure and supporting VMware vSphere components.

View the latest alarms, track pending blocking tasks and expired leases and review the overall state of vApps and VMs provisioned by vCloud tenants.

2. **View triggered alarms.**

Switch to the **Alarms** dashboard to see details on issues and problems occurred in the vCloud Director infrastructure. vCloud Director alarms will notify you on increasing resource usage for provider and organization VDCs, expiring vApp runtime and storage leases, blocking tasks left with no response, and the health status of vCloud infrastructure components.

3. **Work with performance charts.**

Drill down to performance charts to diagnose performance problems and identify resource bottlenecks.

Track CPU, memory, disk and network performance for underlying hosts, VMs, VM containers, organizations, organization VDCs and vApps.

4. **Monitor vCloud Director capacities and resource usage.**

Monitor available, allocated and consumed resources to make sure that VMs and vApps have enough allocated CPU, memory and storage resources, and vCloud tenants have enough capacities to run their workloads.

5. **Investigate problems from within the guest OS.**

View the list of in-guest processes to diagnose problems related to a specific service, module or application within the guest OS.

Prerequisites

Before you start monitoring the vCloud Director environment, make sure you have configured connections to vCloud Director servers from which Veeam ONE will collect data. For more information on configuring server connections, see section [Connecting vCloud Director Servers](#) of the Veeam ONE Deployment Guide.

vCloud Director Summary Dashboards

vCloud Director summary dashboards serve as the 'launch point' for monitoring the vCloud Director infrastructure state. The dashboards reflect the health status of all vCloud Director infrastructure levels – from vCloud Director cells to separate vApps and VMs.

The following types of summary dashboards are available for vCloud Director infrastructure objects:

- [vCloud Director Infrastructure Summary](#)
- [Provider VDCs Overview](#)
- [Provider VDC Summary](#)
- [Organizations Overview](#)
- [Organization Summary](#)
- [Organization VDC Summary](#)
- [vApp Summary](#)
- [Virtual Machine Summary](#)

To access a summary dashboard for a vCloud Director infrastructure object or segment:

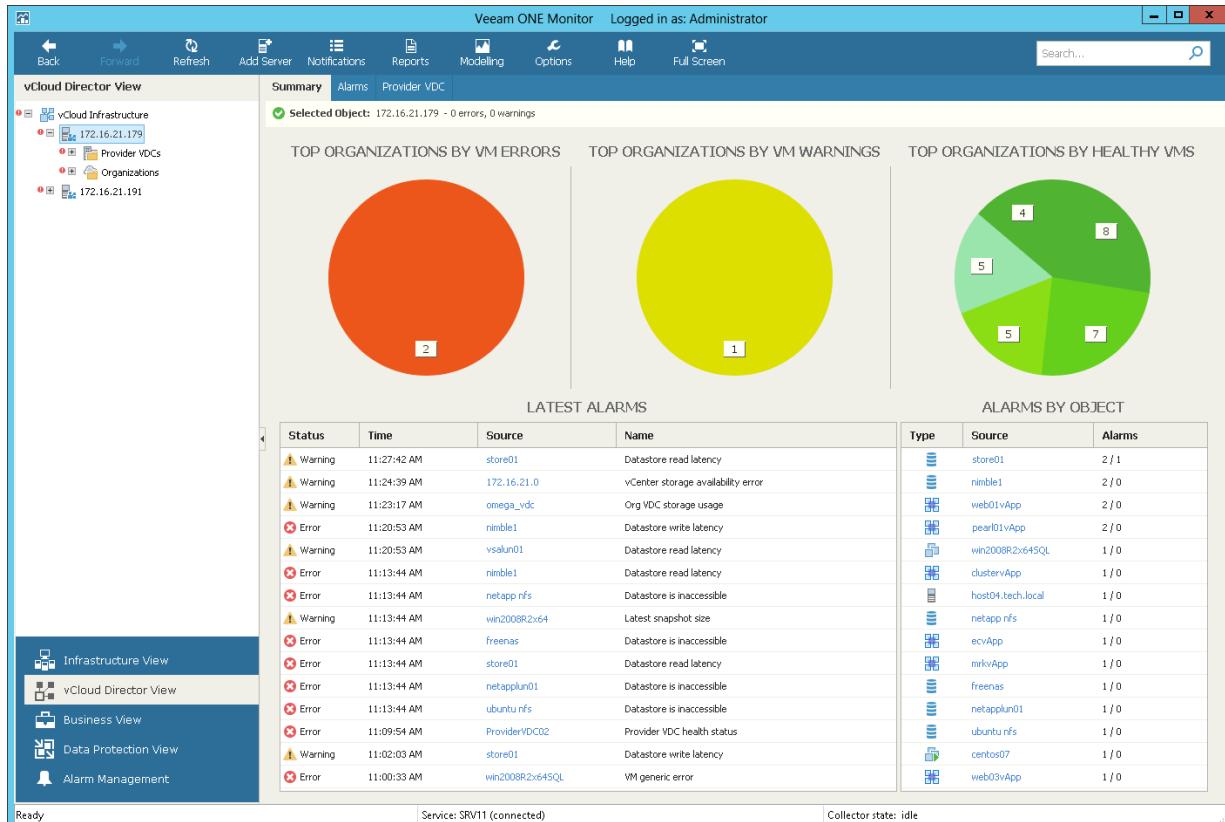
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select the necessary infrastructure object or segment.
4. Open the **Summary** tab.

vCloud Director Infrastructure Summary

The vCloud Director infrastructure summary dashboard provides the health status overview for all organizations and child vCloud Director objects.

The dashboard is available for the following infrastructure levels:

- vCloud Infrastructure (root node)
- vCloud Director cell



Top 5 Organizations by VM Errors, Top 5 Organizations by VM Warnings, Top 5 Organizations by Healthy VMs

The charts represent organizations with the greatest number of errors, warnings and organizations with no registered alarms. Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for the selected organization.

Latest Alarms

The list displays the latest 15 alarms for the selected vCloud Director segment. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific vCloud Director infrastructure object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific vCloud Director infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Provider VDCs Overview

The summary dashboard for the **Provider VDCs** node displays the health status overview for provider virtual datacenters under a vCloud Director cell.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The main menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modelling, Options, Help, and Full Screen. A search bar is at the top right. The left sidebar is titled "vCloud Director View" and lists "vCloud Infrastructure", "172.16.21.179", "Provider VDCs" (which is selected), "Organizations", and "172.16.21.191". The main content area has tabs for Summary, Alarms, Provider VDC, Datastores, and Hosts. The "Summary" tab is active, showing the message "Selected Object: Provider VDCs - 0 errors, 0 warnings". It features three charts: "ERROR OBJECTS" (red X icon, 1 object), "WARNING OBJECTS" (yellow exclamation mark icon, 1 object), and "HEALTHY OBJECTS" (green checkmark icon, 1 object). Below these are sections for "LATEST ALARMS" and "ALARMS BY OBJECT". The "LATEST ALARMS" table shows two entries: a warning from ProviderVDC01 at 11:49:09 AM for ProviderVDC storage usage, and an error from ProviderVDC02 at 11:09:54 AM for Provider VDC health status. The "ALARMS BY OBJECT" table shows two objects: ProviderVDC02 with 1/0 alarms and ProviderVDC01 with 0/1 alarms. At the bottom, there's a toolbar with icons for Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. The status bar at the bottom indicates "Ready", "Service: SRV11 (connected)", and "Collector state: idle".

Error Objects, Warning Objects, Healthy Objects

The charts group provider VDCs by their health status.

Every chart reflects the number of provider VDCs with a specific state – provider VDCs with errors (red), provider VDCs with warnings (yellow) and healthy provider VDCs (green). Click the problematic chart to drill down to the list of alarms for VDCs with the chosen health status.

Latest Alarms

The list displays the latest 15 alarms that were triggered for provider VDCs and underlying virtual infrastructure objects (datastores and hosts). Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

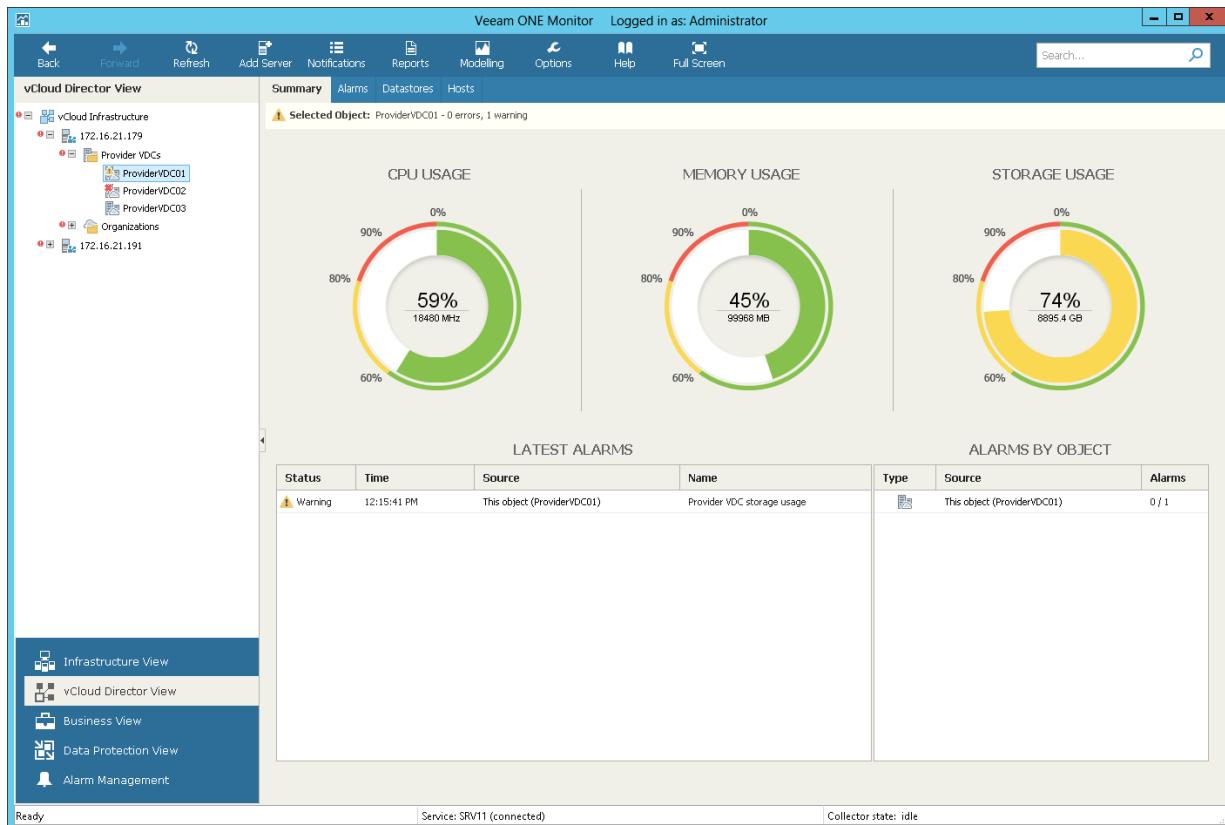
The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Provider VDC Summary

The provider VDC summary dashboard reflects resource utilization analysis results and the health status overview for the chosen provider virtual datacenter and VMware vSphere resources.



CPU Usage, Memory Usage, Storage Usage

The charts reflect the amount of currently consumed CPU, memory and storage resources for the chosen provider virtual datacenter.

Latest Alarms

The list displays the latest 15 alarms for the provider VDC and underlying virtual infrastructure objects (datastores and hosts). Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

The section displays the current state of hosts and datastores that provide compute and storage resources for the provider VDC. Information in this section may help you estimate the impact of underlying VMware vSphere objects on the provider VDC and speed up root cause analysis.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Organizations Overview

The summary dashboard for the **Organizations** node provides an overview for organizations under the selected vCloud Director cell.

The screenshot shows the Veeam ONE Monitor interface with the title bar "Veeam ONE Monitor" and "Logged in as: Administrator". The left sidebar includes "vCloud Director View", "Infrastructure View", "vCloud Director View", "Business View", "Data Protection View", and "Alarm Management". The main content area has tabs for "Summary", "Alarms", "Overall", "CPU", "Memory", "Network", "Datastore", "Top VMs", "Organizations", and "Blocking Tasks". The "Selected Object" is set to "Organizations - 0 errors, 0 warnings". The dashboard is divided into three sections: "ERROR OBJECTS" (4 objects), "WARNING OBJECTS" (3 objects), and "HEALTHY OBJECTS" (32 objects). Below these are two tables: "LATEST ALARMS" and "ALARMS BY OBJECT".

Status	Time	Source	Name
Warning	11:23:17 AM	omega_vdc	Org VDC storage usage
Warning	11:13:44 AM	win2008R2x64	Latest snapshot size
Error	11:00:33 AM	win2008R2x64SQL	VM generic error
Error	10:59:49 AM	web03vApp	vApp storage lease timeout
Error	10:59:49 AM	web03vApp	vApp health status
Error	10:59:49 AM	web02vApp	vApp health status
Error	10:59:49 AM	vAppSQL	vApp runtime lease timeout
Error	10:59:49 AM	omega_org_vdc	Org VDC health status
Error	10:59:49 AM	vAppCRM	vApp runtime lease timeout
Error	10:59:49 AM	vAppPearl01	vApp storage lease timeout
Error	10:59:49 AM	vAppPearl03	vApp runtime lease timeout
Error	10:59:49 AM	vAppSRV02	vApp storage lease timeout
Error	10:59:49 AM	vAppSRV04	vApp storage lease timeout
Error	10:59:49 AM	vAppStarFish	vApp health status
Error	10:59:49 AM	vAppWeb02	vApp storage lease timeout

Type	Source	Alarms
grid	web03vApp	2 / 0
grid	vAppStarFish	2 / 0
grid	win2008R2x64SQL	1 / 0
grid	centos07	1 / 0
grid	web02vApp	1 / 0
grid	vAppSQL	1 / 0
grid	omega_org_vdc	1 / 0
grid	vAppCRM	1 / 0
grid	vAppPearl01	1 / 0
grid	vAppPearl03	1 / 0
grid	vAppSRV02	1 / 0
grid	vAppWeb02	1 / 0
grid	CRM_DB	1 / 0
grid	web02vApp_restored	1 / 0
grid	Oracle	1 / 0

Error Objects, Warning Objects, Healthy Objects

The charts group VMs in organizations by their health status.

Every chart reflects the number of organization VMs with a specific state – VMs with errors (red), VMs with warnings (yellow) and healthy VMs (green). Click the problematic chart to drill down to the list of alarms for VMs with the chosen health status.

Latest Alarms

The list displays the latest 15 alarms that were triggered for organizations, organization VDCs, as well as for VMs and vApps within these organizations. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Organization Summary

The organization summary dashboard presents the health status overview for the chosen organization and its child objects.

Virtual Machines by State

The chart reflects the summary health status of VMs in the organization.

Every colored segment represents the number of VMs in a certain state – VMs with errors (red), VMs with warnings (yellow) and healthy VMs (green). Click the chart segment or a legend label to drill down to the list of alarms triggered for organization VMs with the chosen health status.

Latest Blocking Tasks

The list displays the latest 15 suspended operations that require approval before the operation will resume.

For each pending operation, Veeam ONE Monitor provides a description, the organization for which the operation was initiated and the time when the operation was initiated by an organization user. Blocking tasks that expired with timeout are not included in the list.

Latest Alarms

The list displays the latest 15 alarms for the organizations, organization VDCs, as well as for VMs and vApps within these organizations. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Organization VDC Summary

The organization VDC summary dashboard presents resource utilization analysis and the health status overview for the chosen organization virtual datacenter.

VIRTUAL MACHINES BY STATE

State	Count
Healthy	5
Warning	1
Error	2

VAPPS EXPIRATION

Name	VMs	Expiration
web03vApp	2	1 d, 5 h
winSQLvApp	1	0 d, 2 h
web01vApp	2	2 d, 2 h
web02vApp	2	2 d, 2 h

LATEST ALARMS

Status	Time	Source	Name	Type	Source	Alarms
Warning	11:13:44 AM	win2008R2x64SQL	Latest snapshot size	VM	win2008R2x64SQL	1 / 0
Error	11:00:33 AM	win2008R2x64SQL	VM generic error	VM	centos07	1 / 0
Error	10:59:49 AM	winSQLvApp	vApp runtime lease timeout	vApp	winSQLvApp	1 / 0
Error	10:59:49 AM	web03vApp	vApp runtime lease timeout	vApp	web03vApp	1 / 0
Error	10:59:49 AM	web01vApp	vApp runtime lease timeout	vApp	web02vApp	1 / 0
Error	10:59:49 AM	web02vApp	vApp runtime lease timeout	vApp	web01vApp	1 / 0
Warning	10:59:26 AM	win2008R2x64	Latest snapshot age	VM	win2008R2x64	0 / 2
Error	10:59:26 AM	centos07	Orphaned VM backup snapshot	VM		

Virtual Machines by State

The chart reflects the summary health status of VMs in the organization virtual datacenter.

Every colored segment represents the number of VMs in a certain state – VMs with errors (red), VMs with warnings (yellow) and healthy VMs (green). Click a chart segment or legend label to drill down to the list of alarms triggered for VMs with the chosen health status.

vApps Expiration

The list displays vApps whose runtime lease or storage lease has expired. The list shows 15 items with the recently expired lease, and is only populated if the storage lease cleanup policy for the organization is set to **Move to Expired Items**.

Latest Alarms

The list displays the latest 15 alarms for the organization VDC and its child objects (vApps and VMs). Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

vApp Summary

The vApp summary dashboard provides a health status overview for the chosen vApp and VMs in this vApp.

The screenshot shows the Veeam ONE Monitor interface with the 'vCloud Director View' selected. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. The search bar says 'Search...'. The main content area has tabs for Summary, Alarms, Overall, CPU, Memory, Network, Datastore, and Top VMs. The 'Summary' tab is active, showing the 'Selected Object: web01vApp - 1 error, 0 warnings'. It features three donut charts: 'VIRTUAL MACHINES BY STATE' (red: 1 error, green: 1 warning), 'VIRTUAL MACHINES BY TOOLS STATE' (green: 2 ok), and 'VIRTUAL MACHINES BY POWER STATE' (green: 2 powered on). Below the charts are sections for 'LATEST ALARMS' and 'ALARMS BY OBJECT'. The 'LATEST ALARMS' table lists two errors: 'vApp runtime lease timeout' and 'Orphaned VM backup snapshot'. The 'ALARMS BY OBJECT' table lists two alarms: 'centos07' and 'This Object (web01vApp)'. A sidebar on the left contains links for Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. At the bottom, it says 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

Virtual Machines by State

The chart groups VMs in the vApp by health status.

Every colored segment represents the number of VMs in a certain state – VMs with errors (red), VMs with warnings (yellow) and healthy VMs (green). Click a chart segment or a legend label to drill down to the list of alarms triggered for VMs with the chosen health status.

Virtual Machines by Tools State

The chart groups VMs in the vApp by VMware Tools state.

Every colored segment reflects the number of VMs with a specific state – VMware Tools need to be updated to the latest version (red), VMware Tools not installed (yellow), VMware Tools up-to-date and running (green) and VMware Tools installed but not running for some reason (grey).

Virtual Machines by Power State

The chart groups VMs in the vApp by power state. Every colored segment reflects the number of VMs with a specific power state – powered off VMs (red), suspended VMs (yellow) and powered on VMs (green).

Latest Alarms

The list displays the latest 15 alarms triggered for the vApp and VMs that belong to it. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific object.

Alarms by Object

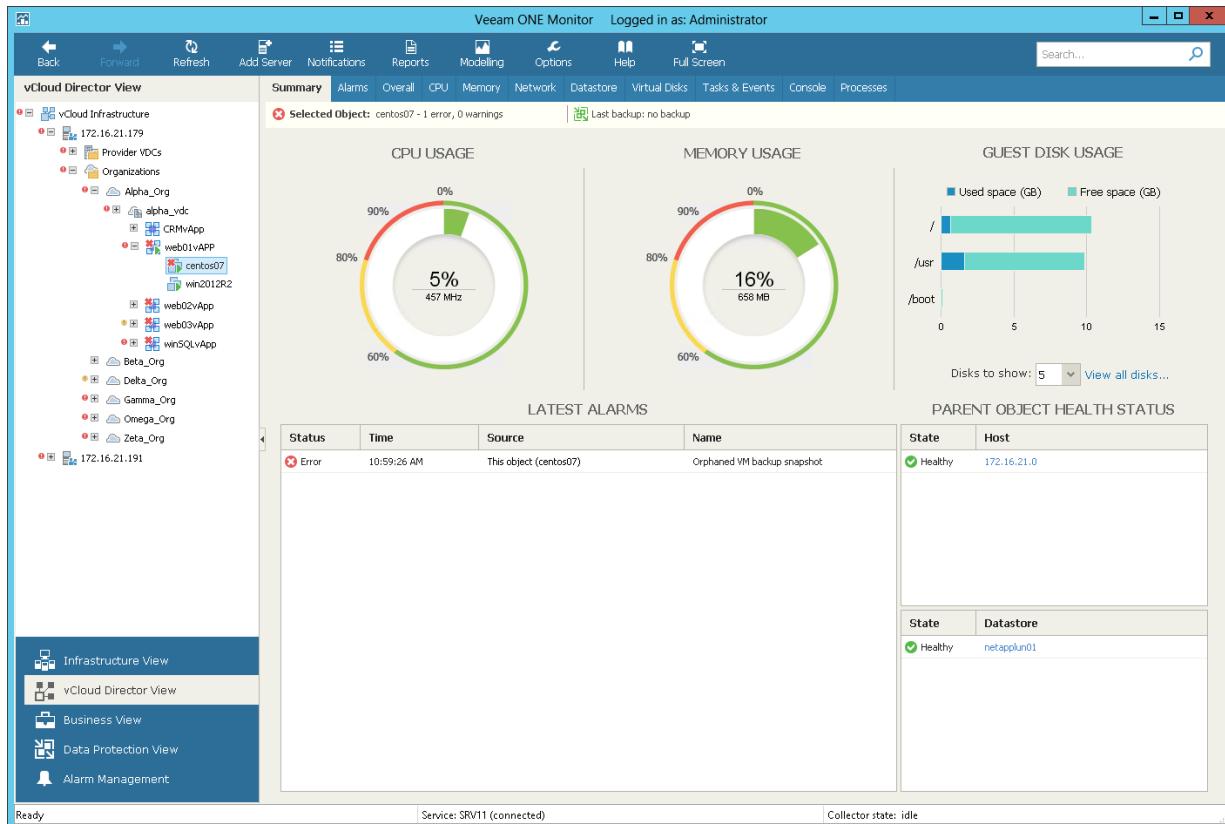
The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Virtual Machine Summary

The VM summary dashboard provides the health status and performance overview for the selected VM. In addition, this dashboard shows the state of objects that can affect the VM performance – the parent host and the datastores where VM files are located.



Selected Object

The section at the top of the dashboard shows the VM health status (number of triggered warnings and errors) and the date when the latest backup or replica restore point was created for the VM with Veeam Backup & Replication.

CPU Usage, Memory Usage

The charts display the amount of CPU and memory resources currently consumed by the VM.

Guest Disk Usage

The chart displays the amount of available and used guest disk space with a breakdown by disks. By default, 5 guest disks with the greatest amount of used space are displayed.

Use the **Disks to show** list to change the number of disks to display on the chart. Click the **View all disks** link to view details for all guest disks. In the **Guests disks** window, you can suppress *Guest disk space* alarms for specific disks. To suppress alarms for a disk, select the **Suppress alarm** check boxes next to the disk name.

NOTE:

Details on the guest disk usage are available only for VMs with VMware Tools installed.

Latest Alarms

The list displays the latest 15 alarms for the VM.

Parent Object Health Status

The section displays the current state of the host where the VM resides and the state of datastores that host VMs files. Information available in this section may help you estimate how the state of parent objects impacts VM performance. Click the host or datastore link to drill down to the list of alarms for the host or datastore.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the VM is included.

vCloud Director Alarms

Veeam ONE includes a set of alarms for monitoring vCloud Director health status and resource usage. Predefined vCloud Director alarms are configured to warn you about events or issues that can cause disruptions in cloud service availability:

- Expiring runtime and storage leases for customers' vApps
- Pending blocking tasks left without timely response
- Breached thresholds for compute, storage and network resource utilization at various layers of the vCloud Director infrastructure
- Changes in health status of vCloud Director components

To view the list of alarms for vCloud Director infrastructure:

1. Open Veeam ONE Monitor.
- For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select the necessary infrastructure node.
4. Open the **Alarms** tab.

In addition to vCloud-specific alarms, the dashboard displays alarms triggered for VMware vSphere infrastructure components. Thus you can monitor both the logical cloud layer and the state of underlying VMware vSphere infrastructure components.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

The screenshot shows the Veeam ONE Monitor interface with the vCloud Director View selected. The left sidebar lists infrastructure nodes: vCloud Infrastructure, Alpha_Org, Beta_Org, Gamma_Org, Omega_Org, Zeta_Org, and two IP addresses (172.16.21.179, 172.16.21.191). The main pane displays the Alarms tab for the selected 'alpha_vdc' object. The alarm table shows the following data:

Status	Alarm Time	Source	Type	Name	Repeat Count
Warning	11:13:44 AM	win2008R2x64	File	Latest snapshot size	1
Error	11:00:33 AM	win2008R2x64SQL	File	VM generic error	1
Warning	10:59:26 AM	win2008R2x64	File	Latest snapshot age	1
Error	10:59:26 AM	centos07	File	Orphaned VM backup snapshot	1

The right pane contains sections for **ACTIONS** (Alarm actions, Remediate, Navigation) and **Alarm details** (Description, Cause, Knowledge). The bottom navigation bar shows tabs for Infrastructure View, Business View, Data Protection View, and Alarm Management.

vCloud Director Performance Charts

To facilitate the troubleshooting process and quickly identify resource bottlenecks, you can drill down to performance charts right from the vCloud Director View:

- [Overall Chart](#)
- [CPU Performance Chart](#)
- [Memory Performance Chart](#)
- [Datastore Performance Chart](#)
- [Network Performance Chart](#)
- [Virtual Disks Performance Chart](#)

You can track performance metrics for separate VMs within an organization, for a VM container (such as vApp, organization or organization VDC) and for hosts that support provider VDCs.

To drill down to a performance chart from the vCloud Director View, do one of the following:

- In the vCloud Director inventory, select an infrastructure object (VM or VM container) and go to the necessary performance chart tab in the information pane.
- Open the **Alarms** dashboard. In the list of alarms, select an alarm for the necessary VM or host. Click **Performance** in the **Actions** pane on the right and choose the required performance chart.
- Open the **Alarms** dashboard. In the list of alarms, select an alarm for the necessary VM or host. Right-click the alarm, choose **Performance** and select necessary performance chart from the shortcut menu.

NOTE:

When you open a performance chart for a host, Veeam ONE Monitor automatically switches to the Virtual Infrastructure View.

For performance charts in the vCloud Director View, Veeam ONE supports a similar set of actions as for virtual infrastructure performance charts: you can change chart views and set time intervals, define objects to show on charts or select custom metrics. For more information on customizing performance charts, see [Customizing VMware vSphere Performance Charts](#).

vCloud Director Resources

Veeam ONE Monitor includes a set of dashboards for monitoring resource allocation and utilization at the vCloud Director infrastructure and service layers. These dashboards help you compare vCloud Director capacities to the current level of resource usage and estimate the size of virtual datacenter capacities required to maintain customer workloads.

Provider VDCs

You can view a list of provider virtual datacenters configured within a vCloud Director cell:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select a vCloud Director cell or the **Provider VDCs** node.
4. Open the **Provider VDC** tab.

The screenshot shows the Veeam ONE Monitor interface with the 'Provider VDC' tab selected. The left sidebar displays a tree view of vCloud Director infrastructure, including a cell named '172.16.21.179' which contains three provider VDCs: 'ProviderVDC01', 'ProviderVDC02', and 'ProviderVDC03'. The main pane shows a table with the following data:

Name	Processor us...	Memory us...	Storage us...	Processor allocati...	Memory allocati...	Storage allocati...	Resource ...
ProviderVDC01	74	49	73	49.5	221.2	17122.6	10
ProviderVDC02	15	23	36	25.5	30.0	12.0	8
ProviderVDC03	21	44	73	5.9	8.0	124.0	5

The bottom navigation bar includes links for Infrastructure View, vCloud Director View (selected), Business View, Data Protection View, and Alarm Management. Status indicators at the bottom show 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

For every provider VDC in the list, the following details are shown:

- **Name** – name of the provider virtual datacenter
- **Processor used, %** – amount of provider VDC CPU resources that is currently used by organizations
- **Memory used, %** – amount of provider VDC memory resources that is currently used by organizations
- **Storage used, %** – amount of provider VDC storage resources that is currently used by organizations
- **Processor allocation, GHz** – amount of provider VDC CPU resources that is committed to organization VDCs
- **Memory allocation, GB** – amount of provider VDC memory resources that is committed to organization VDCs
- **Storage allocation, GB** – amount of provider VDC storage resources that is committed to organization VDCs
- **Resource pools** – number of resource pools that are backing compute resources of the provider VDC

You can click column names to sort provider VDCs by a specific parameter. For example, to identify what provider VDCs are running out of storage resources, you can sort provider VDCs in the list by **Storage used, %**.

Datastore Resources

You can view a list of datastores attached to provider virtual datacenters:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select a provider VDC node to view datastores attached to this provider VDC. Select the **Provider VDCs** node to view datastores attached to all provider VDCs within the vCloud Director cell.
4. Open the **Datastores** tab.

The screenshot shows the Veeam ONE Monitor interface with the 'vCloud Director View' selected in the sidebar. The main pane displays a list of datastores under the 'Provider VDCs' node. The 'Datastores' tab is active. A table provides detailed information for each datastore, including Name, Type, Used Storage, GB, Provisioned Storage, GB, Requested Storage, GB, Provider VDC, and vCenter. The table includes rows for freenas, netapp nfs, netapp lun01, netapp lun02, nimble1, nimble2, store01, store02, ununtu nfs, vsalun01, and vsalun02. The 'Selected Object' status bar at the top indicates 'Provider VDCs - 0 errors, 0 warnings'. The bottom navigation bar shows 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

Name	Type	Used Storage, GB	Provisioned Storage, GB	Requested Storage, GB	Provider VDC	vCenter
freenas	NFS	96.6	215.8	0.0	2	cloudvc55
netapp nfs	NFS	183.7	3500.7	0.0	2	cloudvc55
netapp lun01	VMFS5	139.6	284.6	0.0	2	cloudvc55
netapp lun02	VMFS5	32.6	150.4	128.0	2	cloudvc55
nimble1	VMFS	21.4	97.4	0.0	2	cloudvc55
nimble2	VMFS	217.4	867.5	597.5	2	cloudvc55
store01	VMFS5	41.9	41.9	0.0	2	cloudvc55
store02	VMFS5	38.2	55.4	32.0	2	cloudvc55
ununtu nfs	NFS	19.5	77.6	0.0	2	cloudvc55
vsalun01	VMFS5	170.5	180.9	0.0	2	cloudvc55
vsalun02	VMFS5	39.4	153.5	0.0	2	cloudvc55

For every datastore in the list, the following details are shown:

- **Name** – name of the datastore (you can click the name to switch to the [summary dashboard for the datastore](#))
- **Type** – datastore file system (*VMFS* or *NFS*)
- **Used Storage, GB** – amount of storage resources currently consumed on the datastore
- **Provisioned Storage, GB** – amount of space provisioned to VMs. If VMs are created using thin provisioning, some of the provisioned space might not be used
- **Requested storage, GB** – amount of provisioned storage used by vCloud Director-managed objects. If thin provisioning is enabled on vCloud Director, some of the requested space might not be used
- **Provider VDC** – number of provider VDCs to which the datastore is attached
- **vCenter** – name of the vCenter Server that manages the datastore

Host Resources

You can view a list of hosts that are backing a provider virtual datacenter:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select a provider VDC node.
4. Open the **Hosts** tab.

The screenshot shows the Veeam ONE Monitor interface. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The top menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modelling, Options, Help, and Full Screen. A search bar is at the top right. The left sidebar has a tree view under "vCloud Director View" with nodes like vCloud Infrastructure, 172.16.21.179, Provider VDCs (with sub-nodes ProviderVDC01, ProviderVDC02, ProviderVDC03), Organizations, and 172.16.21.191. Below the sidebar is a navigation bar with Infrastructure View, vCloud Director View (selected), Business View, Data Protection View, and Alarm Management. The main content area is titled "Selected Object: Provider VDCs - 0 errors, 0 warnings" and shows a table of hosts. The table has columns: Name, Status, Enabled, Ready, Available, Total VMs, and vCenter. It lists two hosts: 172.16.21.0 (Status: Error, Enabled: Disabled, Ready: Prepared and ready, Available: Available, Total VMs: 12, vCenter: cloudc55) and host04.tech.local (Status: Healthy, Enabled: Enabled, Ready: Prepared and ready, Available: Available, Total VMs: 30, vCenter: cloudc55). The status column uses red circles for Error and green circles for Healthy.

Name	Status	Enabled	Ready	Available	Total VMs	vCenter
172.16.21.0	Error	Disabled	Prepared and ready	Available	12	cloudc55
host04.tech.local	Healthy	Enabled	Prepared and ready	Available	30	cloudc55

For every host in the list, the following details are shown:

- **Name** – name of the host (you can click the name to switch to the [summary dashboard for the host](#))
- **Status** – health status of the host (*Healthy*, *Warning* or *Error*)
- **Enabled** – flag indicating whether the host is enabled or disabled (that is, whether new vApps can start up on the host)
- **Ready** – flag indicating whether the host has been prepared for a provider VDC to use host resources
- **Available** – flag indicating whether the host is available to vCloud Director
- **Total VMs** – number of VMs currently registered on the host
- **vCenter** – name of the vCenter Server that manages the host

Organizations

You can view a list of organizations within the vCloud Director cell:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select the **Organizations** node.
4. Open the **Organizations** tab.

Name	Status	VDCs	Catalogs	vApps	Running VMs
Alpha_Org	Enabled	1	1	5	6
Beta_Org	Enabled	1	2	4	1
Delta_Org	Enabled	2	2	2	2
Gamma_Org	Enabled	2	1	1	2
Omega_Org	Enabled	1	1	1	1
Zeta_Org	Enabled	1	0	2	0

For every organization in the list, the following details are shown:

- **Name** – name of the organization
- **Status** – status of the organization indicating whether the organization is enabled (that is, users can log in to the organization and the current user sessions can run)
- **VDCs** – number of virtual datacenters configured for the organization
- **Catalogs** – number of organization's catalogs, both shared and non-shared
- **vApps** – number of vApps configured for the organization (including expired vApps)
- **Running VMs** – number of VMs currently running within this organization

Organization VDCs

You can view a list of VDCs configured for a specific organization:

1. Open Veeam ONE Monitor.
- For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select an organization node.
4. Open the **Virtual Datacenters** tab.

The screenshot shows the Veeam ONE Monitor interface. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The top menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modelling, Options, Help, Full Screen, and a search bar. The main window has tabs for Summary, Alarms, Overall, CPU, Memory, Network, Datastore, Top VMs, Virtual Datacenters (which is selected and highlighted in blue), and Blocking Tasks. On the left, there's a tree view under "vCloud Director View" showing a hierarchy of vCloud Infrastructure, including nodes like 172.16.21.191, Provider VDCs, Organizations (Alpha_Org, Beta_Org, Delta_Org, Gamma_Org, Omega_Org, Zeta_Org), and specific VDCs (zeta_vdc01, zeta_vdc02, zeta_vdc03, zeta_vdc04). A status message "Selected Object: Zeta_Org - 0 errors, 0 warnings" is displayed above the table. The central area contains a table with the following data:

Name	CPU, %	Memory, %	Storage, %	Allocation Model
zeta_vdc01	Unlimited	Unlimited	Unlimited	Pay-as-you-go
zeta_vdc02	Unlimited	Unlimited	Unlimited	Pay-as-you-go
zeta_vdc03	20	33	1	Allocation Pool
zeta_vdc04	14	7	22	Reservation Pool

The bottom navigation bar includes links for Infrastructure View, vCloud Director View (which is active), Business View, Data Protection View, and Alarm Management. Status indicators at the bottom show "Ready", "Service: SRV11 (connected)", and "Collector state: idle".

For every virtual datacenter in the list, the following details are shown:

- **Name** – name of the organization VDC
- **CPU, %** – amount of CPU resources currently used by the organization (as a percentage of resources allocated to the organization within this virtual datacenter)
- **Memory, %** – amount of memory resources currently used by the organization (as a percentage of resources allocated to the organization within this virtual datacenter)
- **Storage, %** – amount of storage resources currently used by the organization (as a percentage of resources allocated to the organization within this virtual datacenter)
- **Allocation Model** – allocation model for the virtual datacenter (*Allocation Pool*, *Reservation Pool*, *Pay-as-you-go*)

NOTE:

For organization virtual datacenters that use the *Pay-as-you-go* allocation model, the amount of used resources is shown as '*Unlimited*'.

vApps

You can view a list of virtual applications created within a specific organization VDC:

1. Open Veeam ONE Monitor.
- For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select an organization VDC node.
4. Open the **vApps** tab.

Name	State	Processor, GHz	Memory, GB	Storage, GB	Lease Expiration Period
CRMvApp	Healthy	2	4.0	40.0	25 d, 23 h
web01vApp	Healthy	3	5.0	60.0	1 d, 1 h
web02vApp	Healthy	4	8.0	80.0	1 d, 22 h
web03vApp	Healthy	4	8.0	80.0	1 d, 22 h
wmSQLvApp	Healthy	2	4.0	40.0	29 d, 22 h

For every vApp in the list, the following details are shown:

- **Name** – name of the vApp
- **State** – health status of the vApp
- **Processor, GHz** – amount of CPU resources currently consumed by the vApp and all its VMs
- **Memory, GB** – amount of memory resources currently consumed by the vApp and all its VMs
- **Storage, GB** – amount of storage resources currently consumed by the vApp and all its VMs
- **Lease Expiration Period** – amount of time left before the vApp runtime lease expires (for running vApps), or amount of time left before the vApp storage lease expires (for inactive vApps and templates)

Tracking Blocking Tasks

You can track pending blocking task requests for a specific organization or all organizations at once:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **vCloud Director View**.
3. In the inventory pane, select an organization node to view blocking tasks pending for this organization.
Select the **Organizations** node to view blocking tasks pending for all organizations within this vCloud Director cell.
4. Open the **Blocking Tasks** tab.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The top menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen. A search bar is also present. The main interface has a left sidebar titled "vCloud Director View" with a tree structure showing "vCloud Infrastructure", "172.16.21.179", "Provider VDCs", "Organizations", and several sub-organizations like "Alpha_Org", "Beta_Org", "Gamma_Org", "Omega_Org", and "Zeta_Org". Below the sidebar is a navigation bar with tabs: Summary, Alarms, Overall, CPU, Memory, Network, Datastore, Top VMs, Virtual Datacenters, and Blocking Tasks. The "Blocking Tasks" tab is selected, indicated by a blue border. A message "Selected Object: Alpha_Org - 0 errors, 0 warnings" is displayed above the table. A table below lists three blocking tasks for the "Alpha_Org":

Name	Status	User	Started At	Timeout	Timeout Action
Alpha_Org	active	system	09.30.2016	10.05.2016	ABORT
Alpha_Org	active	system	09.30.2016	10.05.2016	ABORT
Alpha_Org	active	administrator	09.30.2016	10.05.2016	ABORT

At the bottom of the interface, there is a footer with "Ready", "Service: SRV11 (connected)", and "Collector state: idle".

For every blocking task in the list, the following details are shown:

- **Name** – name of the organization
- **Status** – current status of the blocking task
- **User** – name of the user who initiated the task
- **Started At** – date and time when the task was initiated
- **Timeout** – default timeout set for blocking tasks
- **Timeout Action** – the action that will be triggered upon the task after the timeout expires

Troubleshooting Virtual Machine Performance

Veeam ONE Monitor includes a set of dashboards that give you enhanced control over VMs provisioned in the vCloud Director environment, and help you facilitate the troubleshooting process:

- **Top VMs** dashboard displays the top resource consumers for CPU, memory, datastore, network usage, snapshot size and snapshot age.

To view VMs that consume the greatest amount of compute, network and storage resources, select the necessary VM container in the inventory pane and go to the **Top VMs** tab. For more information, see [VMware vSphere Top and Lowest Load](#).
- **Tasks & Events** dashboard shows VMware vSphere tasks and events targeted at a specific VM.

To view the list of tasks and events for a VM, select it in the inventory pane and go to the **Tasks & Events** tab. For more information, see [VMware vSphere Tasks & Events](#).
- **Processes** dashboard provides control over processes currently running inside the guest OS of a VM. You can view, end and restart processes on Windows- based machines. You can also view and end daemons on Linux-based machines.

To view the list of processes, select the necessary VM in the inventory pane and go to the **Processes** tab. For more information, see [VMware vSphere In-Guest Processes](#).
- **Services** dashboard provides control over services currently running inside the guest OS of a VM. You can view, start, stop and restart services on VMs. For Windows-based machines, you can also create alarms based on the service state or object performance.

To view the list of processes, select the necessary VM in the inventory pane and go to the **Services** tab. For more information, see [VMware vSphere In-Guest Services](#).
- **Console** dashboard lists running in-guest processes and helps you diagnose problems related to a specific service, module or application.

To access a VM console, select the necessary VM in the inventory pane and go to the **Console** tab. For more information, see [VMware vSphere VM Console](#).

Hyper-V Monitoring

Veeam ONE offers a variety of tools for monitoring the Microsoft Hyper-V environment from any perspective and with any level of detail.

With Veeam ONE Monitor, you can:

1. Monitor health status of the virtual environment.
 - Start with the **Summary** dashboards to check the overall health status of the virtual environment and reveal hotspots.

Quickly review the state of virtual infrastructure components, see the latest alarms, detect the most problematic objects and drill down to the problem source for further investigation.
 - Use the **VMs** dashboard to view the list of VMs in a virtual infrastructure container and check additional details for every VM – such as VM current status, parent host, IP address, DNS name and the amount of resources currently consumed by the VM.
 - Use the **Top Load** and **Lowest Load** dashboards to detect the most and less loaded components in the virtual environment.

Detect what virtual infrastructure objects are consuming the most and the least amount of CPU, memory, disk, network, and swap resources, or select additional counters to detect resource consumers in other areas.
2. View triggered alarms.

Switch to the **Alarms** dashboard to see details on breached thresholds, events and problems that occurred in the virtual environment.

Use the **Actions** pane on the alarms dashboard to detect root causes – drill down to performance charts, open VM console or view the list of in-guest processes.
3. Work with performance charts and track events.

Drill down to performance charts to diagnose performance problems. You can change predefined views, quickly switch between charts and view events that occur in your environment to get all-round statistics.
4. Investigate problems from within the guest OS.

Open VM console or view the list of running in-guest processes to diagnose problems related to a specific service, module or application.

Prerequisites

Before you start monitoring your virtual environment, make sure you have configured connections to virtual servers from which Veeam ONE will collect data. For more information on configuring server connections, see section [Connecting Microsoft Hyper-V Servers](#) of the Veeam ONE Deployment Guide.

Microsoft Hyper-V Summary Dashboards

Microsoft Hyper-V infrastructure summary dashboards serve as the starting point for monitoring and troubleshooting. Summary dashboards reflect the health status of the selected infrastructure object or infrastructure segment.

The following types of summary dashboards are available for virtual infrastructure objects:

- [Infrastructure Summary](#)
- [Host Summary](#)
- [Virtual Machine Summary](#)
- [Local Storage Summary](#)
- [SMB Share Summary](#)
- [Cluster Shared Volume Summary](#)

To access a summary dashboard for a virtual infrastructure object or virtual infrastructure segment:

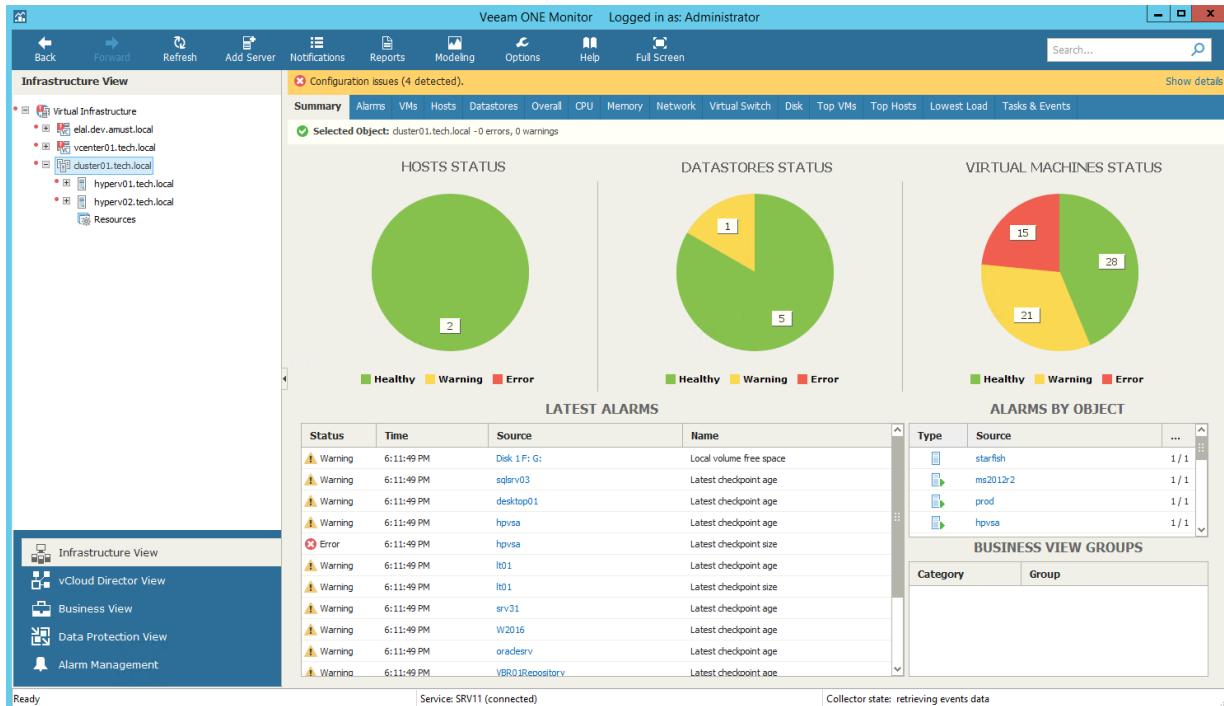
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object or segment.
4. Open the **Summary** tab.

Microsoft Hyper-V Infrastructure Summary

The Hyper-V infrastructure summary dashboard provides the health status overview for the selected virtual environment segment.

The dashboard is available for the following infrastructure levels:

- Virtual infrastructure (root node)
- Virtual infrastructure container (such as SCVMM, cluster or storage container)



Hosts Status, Datastores Status, Virtual Machines Status

The charts reflect the status of virtual infrastructure objects.

Every chart segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for the selected type of virtual infrastructure objects.

Latest Alarms

The list displays the latest 15 alarms that were triggered for objects in the selected virtual environment segment. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

Alarms by Object

The list displays 15 objects with the highest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to a specific virtual infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the cluster is included.

Host Summary

The host summary dashboard provides the health status and performance overview for the selected Microsoft Hyper-V host and its child objects.

The screenshot shows the Veeam ONE Monitor interface with the 'Host Summary' dashboard selected. The left sidebar shows navigation links for Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. The main area displays the following sections:

- Infrastructure View:** Shows a tree view of objects under 'Virtual Infrastructure'. Selected object: 'hyperv01.tech.local'.
- Summary:** Shows configuration issues (4 detected) and a summary of alarms, VMs, Overall, CPU, Memory, Network, Virtual Switch, Disk, Top VMs, Tasks & Events, and Processes.
- DATASTORES STATUS:** A pie chart showing 1 Healthy, 1 Warning, and 1 Error.
- VIRTUAL MACHINES STATUS:** A pie chart showing 7 Error, 10 Healthy, and 11 Warning.
- RESOURCE USAGE:** CPU usage: 3.0 GHz, Capacity: 12x2.1 GHz. Memory usage: 63.0 GB, Capacity: 127.97 GB. Storage table:

Storage	Type	State	Capacity	Free
Disk 0 C: D: E:	Disk	OK	4654.48 GB	3202.34 GB
Volume1	Volume	OK	399.87 GB	399.71 GB

- LATEST ALARMS:** A table listing 15 latest alarms. Example rows:

Status	Time	Source	Name
Warning	6:11:49 PM	Disk 1 F: G:	Local volume free space
Warning	6:11:49 PM	desktop01	Latest checkpoint age
Warning	6:11:49 PM	lt01	Latest checkpoint age
Warning	6:11:49 PM	lt01	Latest checkpoint size
Warning	6:11:49 PM	VBR0 IRepository	Latest checkpoint age
Error	6:11:49 PM	VBR0 IRepository	Latest checkpoint size
Warning	6:11:49 PM	vsa	Latest checkpoint age
Warning	6:11:49 PM	VBR01	Latest checkpoint age
Warning	6:11:49 PM	VBR02	Latest checkpoint age
Warning	6:11:49 PM	ms2012r2	Latest checkpoint age
Error	6:11:49 PM	ms2012r2	Latest checkpoint size
- ALARMS BY OBJECT:** A table showing 15 objects with the greatest number of alarms. Example rows:

Type	Source	Alarms
File Repository	VBR0 IRepository	3/1
File Repository	ms2012r2	1...
File Repository	starfish	1...
File Repository	fleserver04	1...
- BUSINESS VIEW GROUPS:** A table showing business view groups categorized by category and group.

Datastores Status, Virtual Machines Status

The charts reflect the status of volumes connected to the host and the status of VMs running on the host.

Every chart segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for host child objects.

Resource Usage

The section displays capacity and usage summary for host CPU and memory. It also shows an overview for volumes connected to the host – state of the volume, its capacity and the amount of free space on the volume.

Latest Alarms

The list displays the latest 15 alarms triggered for the host and its child objects. Click a link in the **Source** column to drill down to the list of alarms for the host and its child objects.

Alarms by Object

The list displays 15 objects with the greatest number of alarms (including the host and its child objects).

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 error alarms and 1 warning alarm triggered for the object. Click a link in the **Source** column to drill down to the list of alarms related to the host and its child objects.

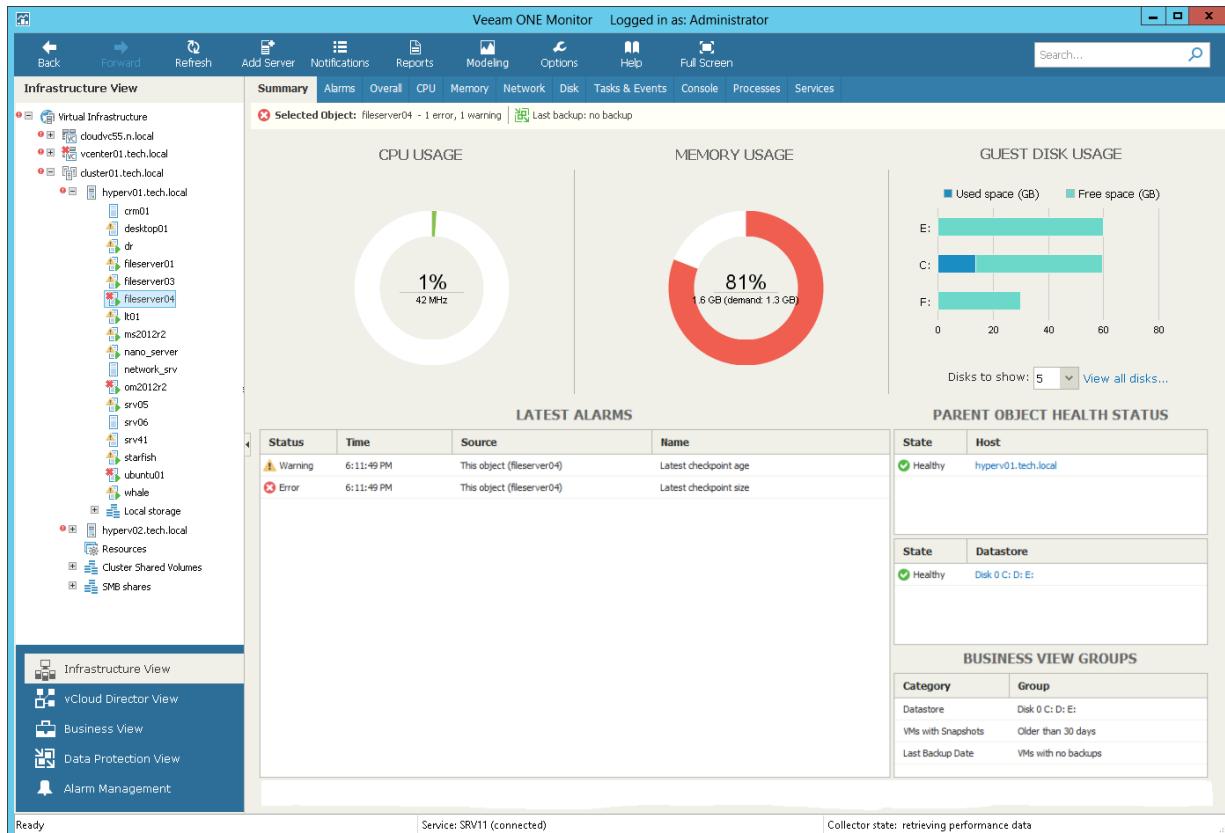
For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the host is included.

Virtual Machine Summary

The VM summary dashboard provides the health status and performance overview for the selected VM. In addition, this dashboard shows the status of objects that can affect the VM performance – the parent host and the volumes where VM files are located.



Selected Object

The section at the top of the dashboard shows the VM health status (number of warnings and errors) and the date when the latest backup or replica restore point was created for the VM with Veeam Backup & Replication.

CPU Usage, Memory Usage

The charts display the amount of CPU and memory resources currently consumed by the VM.

NOTE:

- On Hyper-V hosts prior to version 2016, memory usage is shown as 100% for VMs with Static Memory.
- For Microsoft SQL Server or Exchange VMs running on Hyper-V 2016 hosts, memory usage can be shown to exceed 100%.

Guest Disk Usage

The chart displays the amount of available and used guest disk space with a breakdown by disks. By default, 5 guest disks with the greatest amount of used space are displayed.

Use the **Disks to show** list to change the number of disks to display on the chart. Click the [View all disks](#) link to view details for all guest disks. In the **Guests disks** window, you can suppress *Guest disk space* alarms for specific disks. To suppress alarms for a disk, select the **Suppress alarm** check boxes next to the disk name.

Parent Object Health Status

The section displays the current state of the host where the VM resides and the state of volumes that host VMs files. Information in this section may help you to estimate the impact of parent objects on the VM performance. Click the host or volume name link to drill down to the list of alarms for the host or volume.

Latest Alarms

The list displays the latest 15 alarms for the VM.

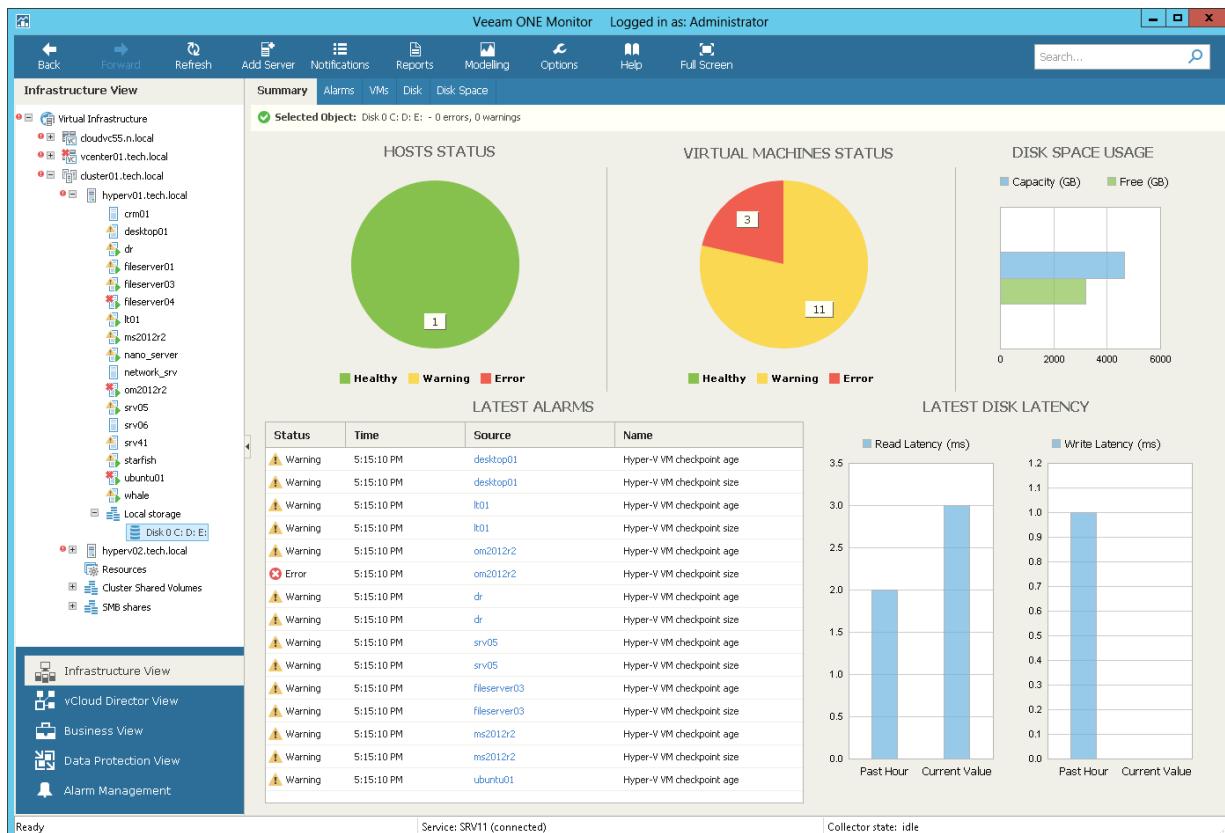
For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the VM is included.

Local Storage Summary

The local storage summary dashboard provides the health status and performance overview for the selected host local storage. In addition, it shows the state of objects that can affect the storage performance – the parent host and VMs on the local storage.



Hosts Status, Virtual Machines Status

The charts reflect the health status of the host and VMs that work with the local storage.

Every chart segment represents the number of objects in a certain state – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for hosts or VMs.

Disk Space Usage

The chart reflects the amount of available and used disk space on the local storage.

Latest Alarms

The list displays the latest 15 for the local storage and objects that work with the local storage. Click a link in the Source column to drill down to the list of alarms for the selected object.

Latest Disk Latency

The section displays the current read and write latency values as well as the average latency values for the past hour.

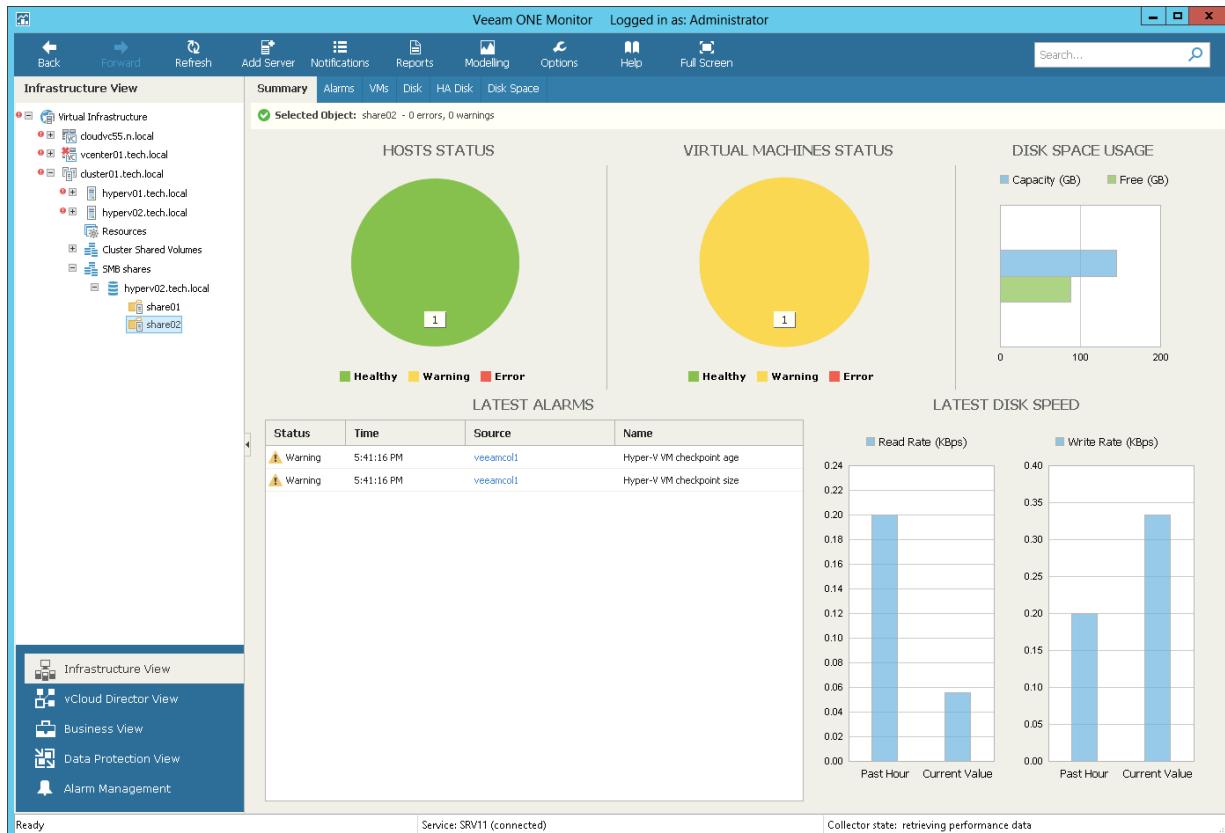
For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Business View Groups

The section displays the list of categories and groups to which the storage is included.

SMB Share Summary

The SMB shares summary dashboard provides the health status and performance overview for the selected SMB share. In addition, it shows the state of objects that can affect SMB share performance – hosts that work with SMB shares and VMs residing on the shares.



Hosts Status, Virtual Machines Status

The charts reflect the health status of the hosts that work with the SMB share and VMs located on the share.

Every chart segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for hosts or VMs.

Disk Space Usage

The chart reflects the amount of available and used disk space on the SMB share.

Latest Alarms

The list displays the latest 15 alarms for the SMB share and alarms for hosts that work with the file share and for VMs located on the share. Click a link in the **Source** column to drill down to the list of alarms for the selected object.

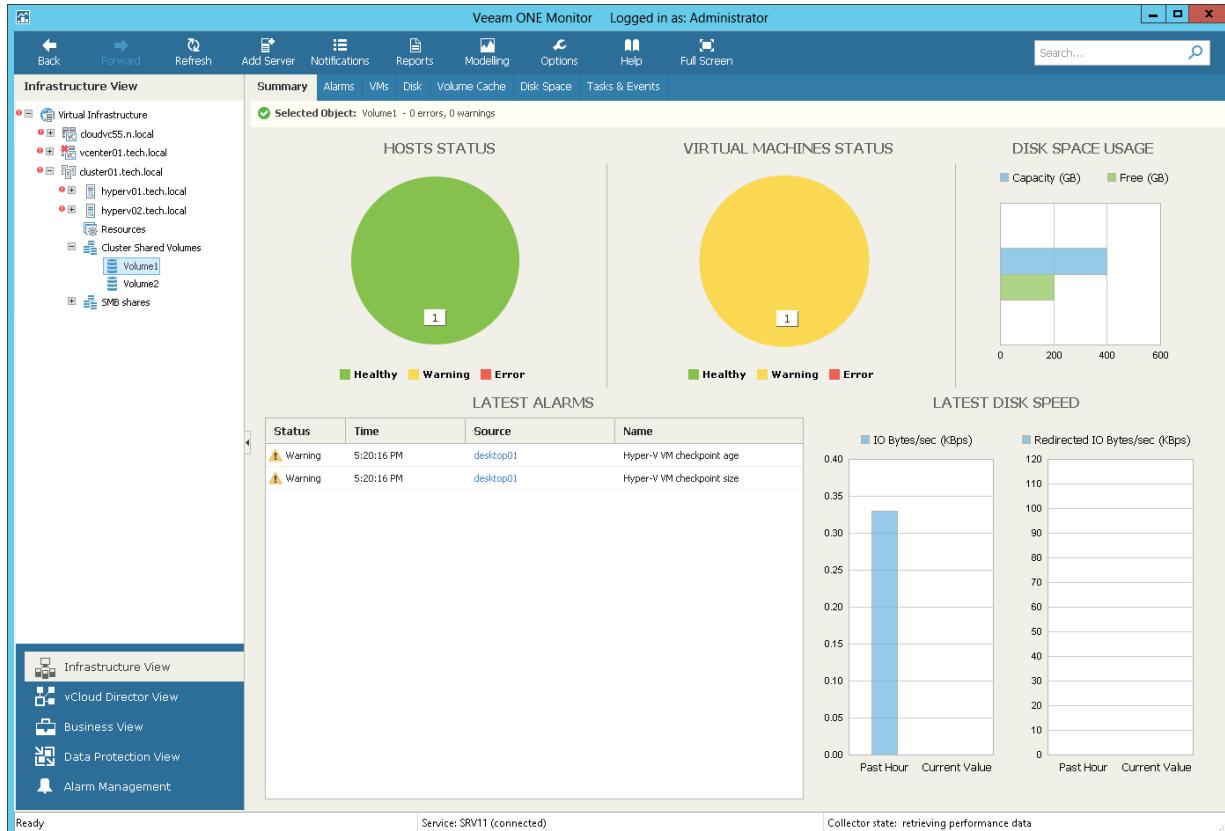
Latest Disk Speed

The section displays the current read and write rate as well as the average read and write rate values for the past hour.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Cluster Shared Volume Summary

The CSV summary dashboard provides the health status and performance overview for the selected Cluster Shared Volume. In addition, it shows the state of objects that can affect the volume performance – hosts that work with the CSV and VMs residing on the CSV.



Hosts Status, Virtual Machines Status

The charts reflect the health status of hosts that work with the volume and the state of VMs stored on the volume.

Every colored segment represents the number of objects with a certain status – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for hosts or VMs.

Disk Space Usage

The chart reflects the amount of available and used disk space on the Cluster Shared Volumes.

Latest Alarms

The list displays the latest 15 alarms for the Cluster Shared Volumes and objects that work with the volumes. Click a link in the **Source** column to drill down to the list of alarms for the selected object.

Latest Disk Speed

The section displays the current direct and redirected I/O values as well as the average values for the past hour.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Microsoft Hyper-V Alarms

Veeam ONE includes a set of alarms for monitoring Microsoft Hyper-V virtual environment. These alarms warn you about events or changes that can affect performance of operations and services in the virtual environment.

To view the list of triggered Microsoft Hyper-V alarms:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary virtual infrastructure node.
4. Open the **Alarms** tab.

On the **Alarms** dashboard, you can view triggered alarms, track alarm history, resolve and acknowledge alarms and perform other actions. For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Status	Time	Source	Type	Name	Repeat Count	Remediation
Error	6:34:50 PM	hyperv02.tech.local		Bad Hyper-V username lo	1	
Warning	6:11:49 PM	Disk 1 F: G:		Local volume free space	1	
Warning	6:11:49 PM	sqlsvr03		Latest checkpoint age	1	
Warning	6:11:49 PM	desktop01		Latest checkpoint age	1	
Error	6:11:49 PM	hpvsaa		Latest checkpoint size	1	
Warning	6:11:49 PM	lt01		Latest checkpoint age	1	
Warning	6:11:49 PM	lt01		Latest checkpoint size	1	

Microsoft Hyper-V Performance Charts

Performance charts show how key performance counters have been changing over time to help you diagnose performance issues and perform root cause analysis.

Performance charts include the following elements:

- **Axes**

Performance charts display data for a particular time period (the horizontal axis) using two scales of measurement units (vertical axes). The measurement units may vary depending on selected performance counters. However, the number of units is always limited to two.

- **Graphs**

Performance charts include one or more graphs. Every graph on a performance chart visualizes a specific counter for an infrastructure object or a container of infrastructure objects.

- **Legend**

The chart legend shows details about objects and counters displayed in the chart. The details include key color, object name, list of counters and units of measurement, the latest, minimum, average, and maximum counter values.

- **Chart views**

Performance charts come with a number of predefined chart views. Every view logically groups related counters to display the most valuable data and help you speed up troubleshooting and root cause analysis of performance problems.

Performance charts can be easily customized. For more information on customization options, see [Customizing Microsoft Hyper-V Performance Charts](#).

Accessing Performance Charts

To access a performance chart for an infrastructure object or infrastructure segment:

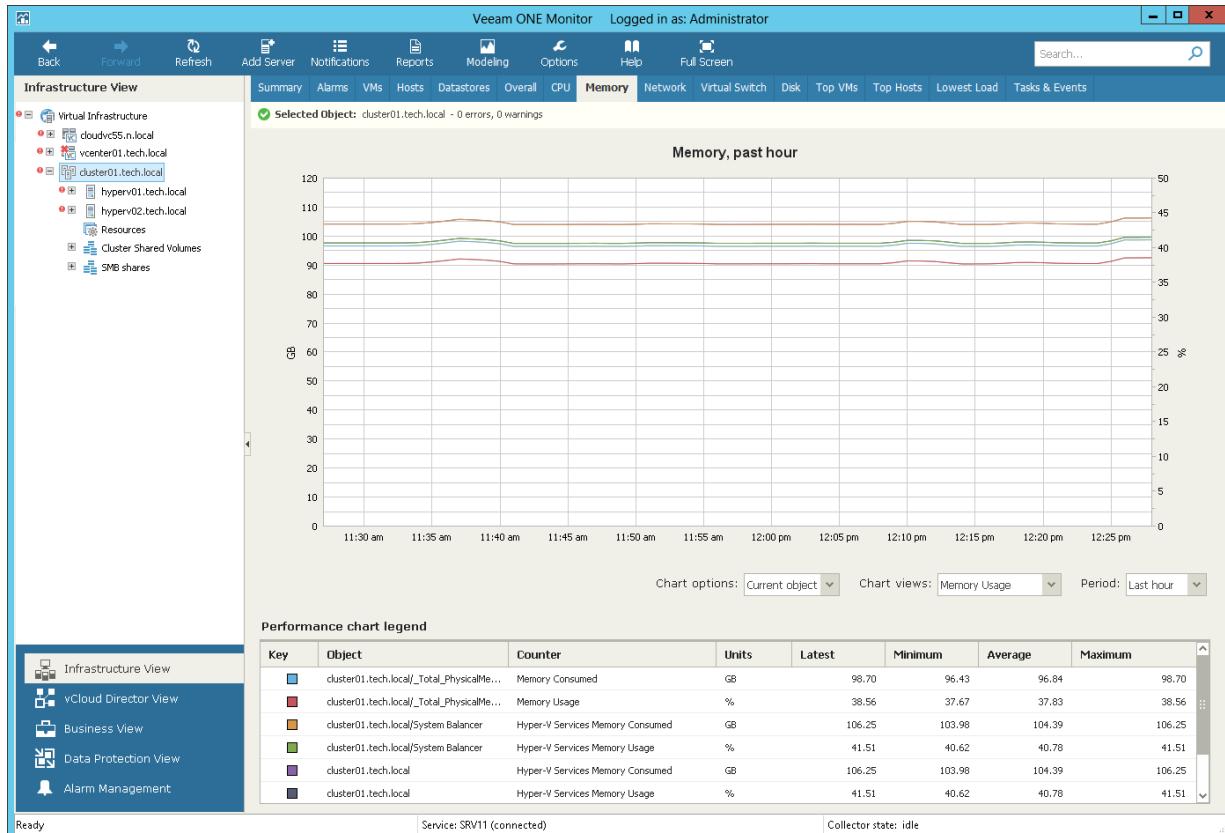
1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. At the bottom of the inventory pane, click **Infrastructure View**.

3. In the inventory pane, select the necessary infrastructure object or segment.

4. Open the necessary performance chart tab.

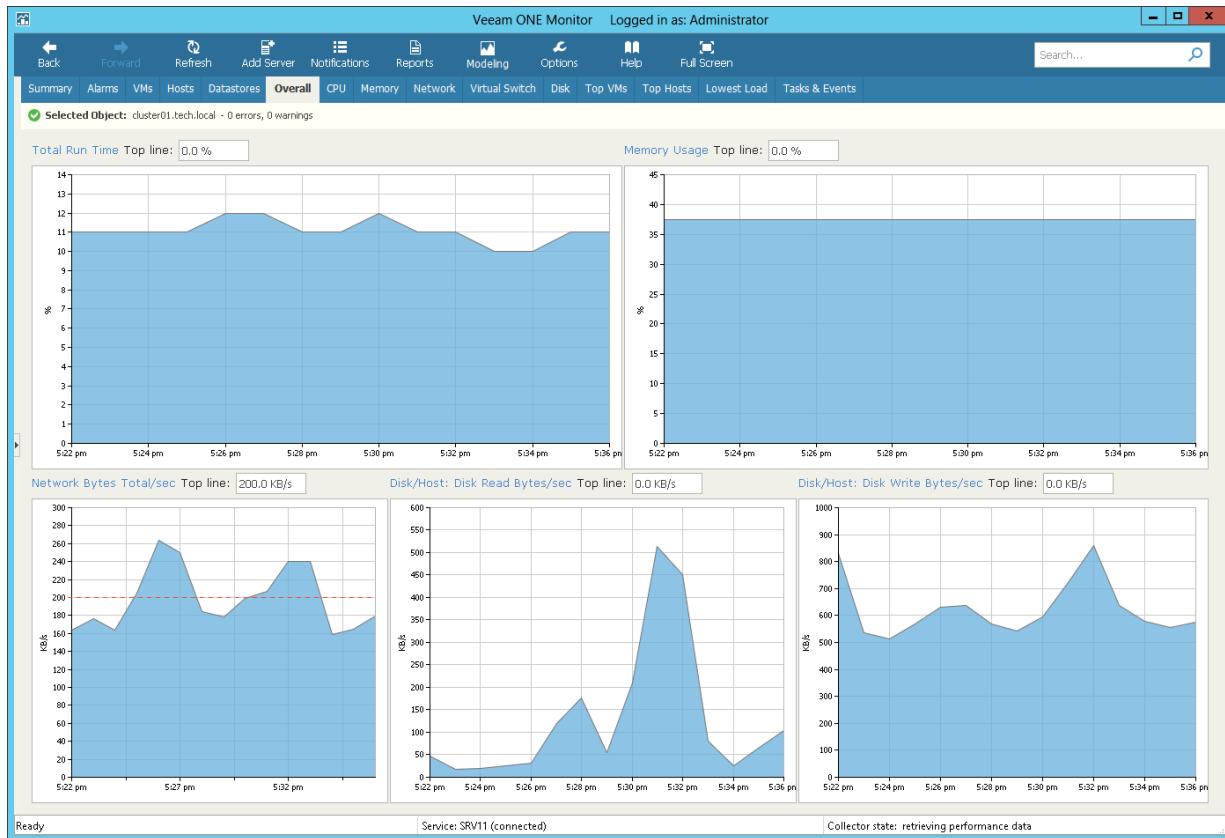


Overall Chart

The **Overall** chart shows aggregated performance data for the selected virtual infrastructure object or segment: total run time, memory usage, network, disk/host read and write speed. Performance data in the chart is shown for the previous 15 minutes.

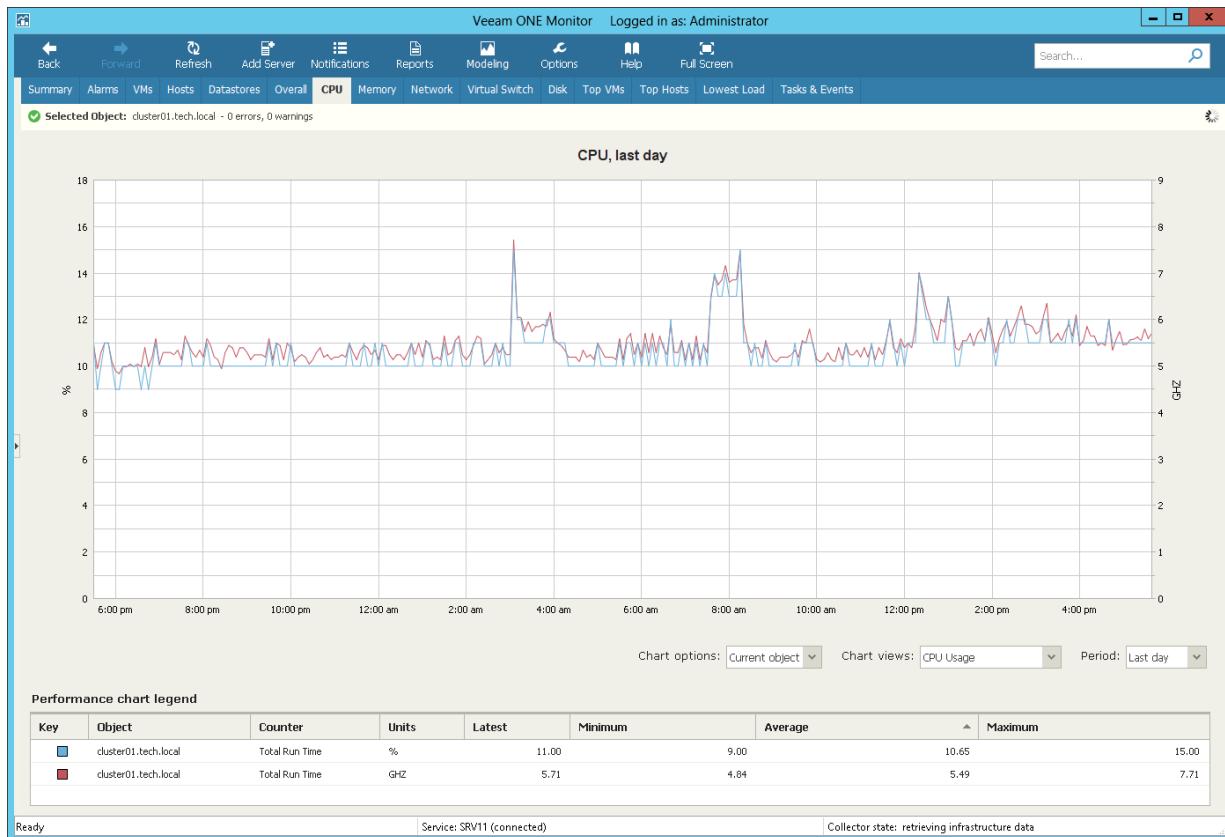
In the **Top line** field, you can set a threshold value. The top line is displayed as the red dotted line on the chart to help you monitor whether resource usage exceeds the healthy value range. If you do not need to display the top line, enter '0' (zero) in the **Top line** field or disable top lines in [Veeam ONE Monitor chart settings](#). With the top line disabled, the Y-axis will scale automatically to match the range of the displayed data.

To drill down to performance chart details, click the counter link above a performance widget. A corresponding performance chart for the selected virtual infrastructure object will open.



CPU Performance Chart

The CPU chart displays historical statistics on CPU utilization for the selected virtual infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
CPU Usage	Total Run Time	Percent	Percentage of time a physical processor required to run both VMs and the hypervisor itself.
	Total Run Time	GHz	Amount of time physical processor required to run both VMs and the hypervisor itself.
CPU Usage by Host/VMs	Guest Run Time	Percent	Percentage of time a physical processor required to run VMs.
	Hypervisor Run Time	Percent	Percentage of time a physical processor required to run a hypervisor.

Chart View	Counter	Measurement Unit	Description
	vCPU Total Run Time	Percent	Percentage of time vCPUs were used by all VMs on a host.
CPU Idle Time	Idle Time	Percent	Percentage of time a physical processor spent in an idle state.
CPU Interrupts	Total Interrupts/sec	Number	Number of interrupts to which a processor was asked to respond. Interrupts are generated from hardware components like hard disk controller adapters and network interface cards. A sustained value over 1000 usually indicates of a problem.
CPU Bottlenecks	Host CPU Wait Time	Microsecond	Average amount of time that VMs on a host spend waiting for their virtual processors to be dispatched onto a logical processor.

Virtual Machine

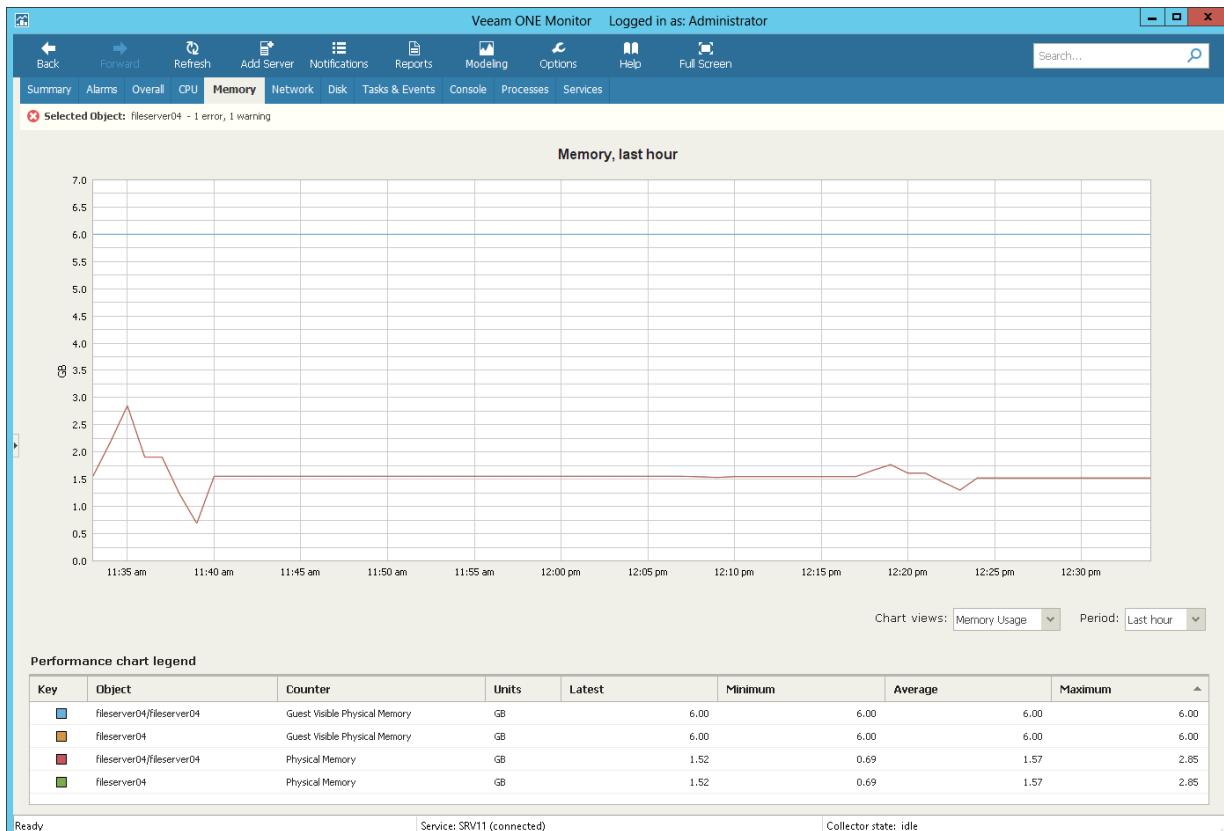
The following table provides information on predefined views and counters that apply to VMs.

Chart View	Counter	Measurement Unit	Description
CPU Usage	Guest Run Time	Percent	Percentage of time a physical processor required to run a VM.
	Guest vCPU Run Time	MHz	Amount of virtual CPU resources used by a VM.
CPU Usage by Host	Hypervisor Run Time	Percent	Percentage of physical processor time consumed by Hyper-V host for a VM.
	Total Run Time	Percent	Percentage of time a Hyper-V host required to run a VM, plus time consumed by the VM itself.
	vCPU Total Run Time	MHz	Amount of vCPU resources consumed by all VMs on a host.
CPU Bottlenecks	CPU Wait Time	Microsecond	Amount of time that a virtual processor spends waiting to be dispatched onto a logical processor.

For objects that are parent to hosts and VMs, Veeam ONE Monitor displays rollup values. Charts for folders and clusters display rollup values for all hosts in the container. Chart for a resource displays rollup values for all VMs registered as shared resources.

Memory Performance Chart

The **Memory** chart displays historical statistics on memory utilization for the selected virtual infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
Memory Usage	Hyper-V Services Memory Consumed	GB	Amount of memory currently consumed by Hyper-V services.
	Hyper-V Services Memory Usage	Percent	Amount of memory resources currently used by Hyper-V services.
	Memory Consumed	GB	Amount of physical memory resources used on a host.

Chart View	Counter	Measurement Unit	Description
	Memory Usage	Percent	Memory usage as percentage of available machine memory.
Memory Pressure	Average Pressure	Percent	Amount of memory resources available on a host.
Committed Memory	Committed	GB	Demand for virtual memory. The counter shows how much memory were allocated for processes and to which processes the OS has committed a RAM page frame or a page slot in the pagefile (or both). As the Committed counter grows above the available RAM, paging increases and the amount of the pagefile in use increases as well. At some point, paging activity starts to affect perceived performance significantly.
Memory Swap Faults	Page Faults/sec	Number	<p>Page faults that occur when any process attempts to read from a virtual memory location that is marked as 'not present'. The best counter value is zero.</p> <p>The counter displays both hard page and soft page faults.</p>
Memory Swap Rate	Page Reads/sec	Number	<p>Lack of memory resources. The counter shows how often the system reads from disk because of hard page faults.</p> <p>The counter shows the number of read operations, not taking into account the number of pages retrieved in each operation. The counter can reveal different kinds of faults that cause system delays.</p>
	Page Writes/sec	Number	<p>Number of attempts taken by running the write command/operation to clear unused items out of memory.</p> <p>Pages are written to disk only if they change while in physical memory, so they are likely to hold data, not code. The counter shows write operations, not taking into account the number of pages written in each operation.</p>
	Pages Input/sec	Number	Rate at which memory pages are read from disk.
	Pages Output/sec	Number	Rate at which memory pages are written to disk.

Chart View	Counter	Measurement Unit	Description
	Pages/sec	Number	<p>Sum of Pages Input/sec and Pages Output/sec counters.</p> <p>The counter indicates how often the system uses a hard drive to store and retrieve memory-associated data.</p>

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

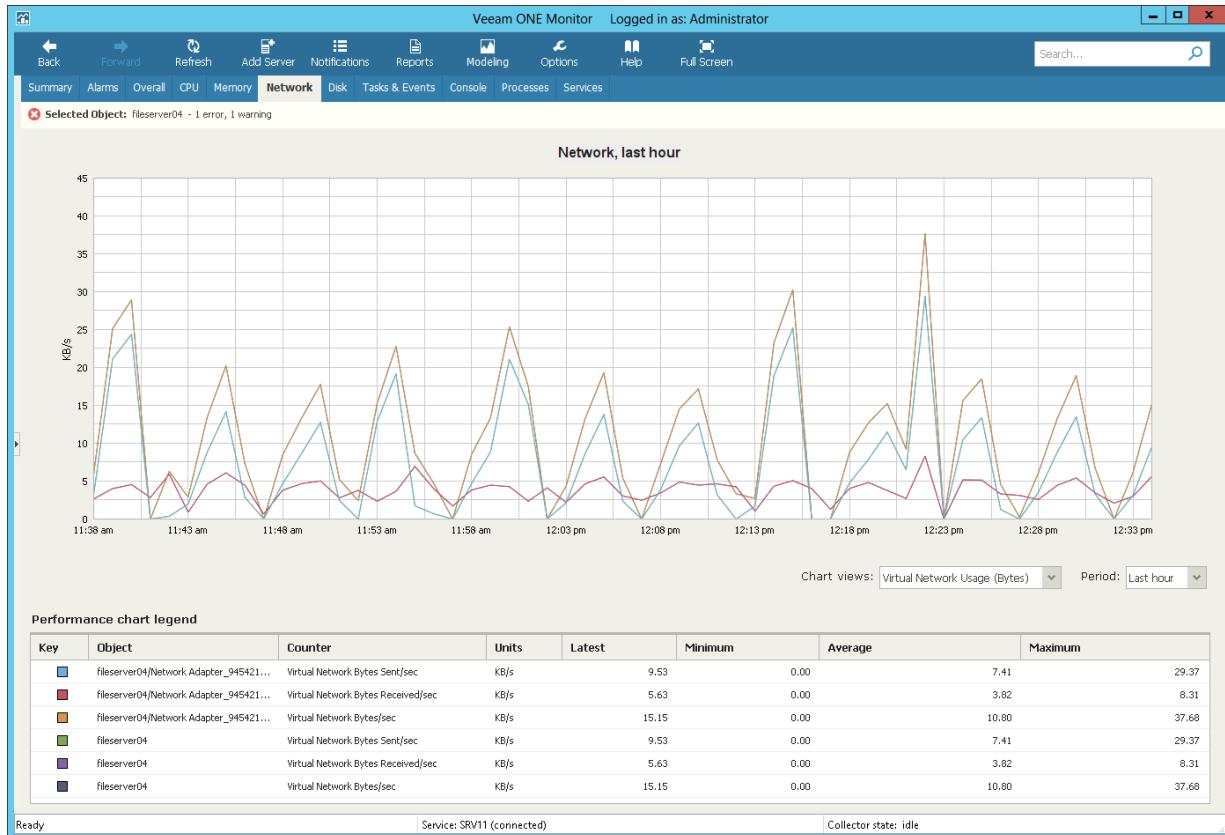
Chart View	Counter	Measurement Unit	Description
Memory Usage	Guest Visible Physical Memory	GB	Amount of memory visible to the guest OS running inside a VM.
	Physical Memory	GB	Amount of memory currently used by a VM.
Memory Pressure	Demand	B	<p>Amount of memory a VM requires to run all active processes.</p> <p>The counter represents the total committed memory based on data obtained from other performance counters.</p>
	Current Pressure	Percent	<p>Current pressure in a VM.</p> <p>To calculate the counter, Microsoft Hyper-V analyzes the VM total committed memory and calculates the pressure as the following ratio: the amount of memory the VM wants / the amount of memory the VM has.</p>

For objects that are parent to hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders and clusters display rollup values for all hosts in the container. Chart for a resource displays rollup values for all VMs registered as shared resources.

Network Performance Chart

The **Network** chart displays historical statistics on network usage for the selected virtual infrastructure object.



Host

The following table provides information on predefined views and counters that apply to hosts.

Chart View	Counter	Measurement Unit	Description
Network Transfer Rate	Network Bytes Received/sec	KB/s	Rate at which data is received across each network adapter on a host. The counter represents the bandwidth of the network.
	Network Bytes Sent/sec	KB/s	Rate at which data is sent across each network adapter on a host.
	Network Bytes Total/sec	KB/s	Rate at which data is sent and received across a network interface.

Chart View	Counter	Measurement Unit	Description
Network Output Queue Length	Network Output Queue Length	Number	<p>Length of the output queue, in packets.</p> <p>If the Output Queue Length value exceeds 2, it can be an indicator of delays across the network. In this case, you should find and eliminate the bottleneck to improve performance.</p>
Network Connections	Network Offloaded Connections	Number	Number of TCP connections (over both IPv4 and IPv6) currently handled by a TCP Chimney Offload network adapter.
Network Errors	Network Outbound Errors	Number	Number of outbound packets that could not be transmitted because of errors.
	Network Received Errors	Number	Number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol.
Network Transfer Rate (Packets)	Network Packets Received/sec	Number	Rate at which packets are received on the network interface.
	Network Packets Sent/sec	Number	Rate at which packets are sent on the network interface.
	Network Packets/sec	Number	Rate at which packets are sent and received on the network interface.

Virtual Machine

The following table provides information on predefined views and counters that apply to VMs.

Chart View	Counter	Measurement Unit	Description
Virtual Network Usage	Virtual Network Bytes Received/sec	KB/s	Rate at which data is received across the vNIC instance on a VM. The counter represents the bandwidth of the network.
	Virtual Network Bytes Sent/sec	KB/s	Rate at which data is sent across the vNIC instance on a VM.

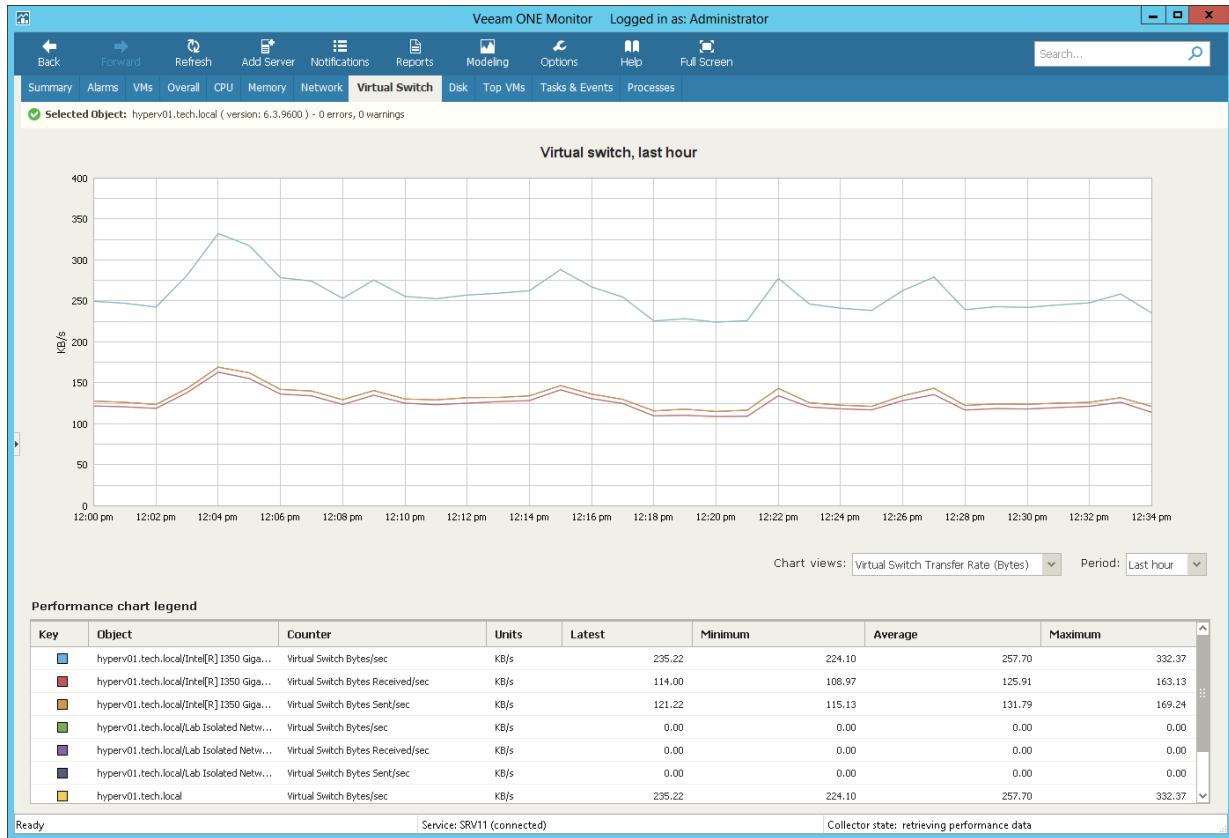
Chart View	Counter	Measurement Unit	Description
	Virtual Network Bytes/sec	KB/s	Network utilization, sum of data received and sent across all vNIC instances on a VM.
Virtual Network Usage (Packets)	Virtual Network Packets Received/sec	Number	Total number of packets received per second by the network adapter.
	Virtual Network Packets Sent/sec	Number	Total number of packets sent per second by the network adapter.
Legacy Network Bytes Dropped	Legacy Network Bytes Dropped	B	Amount of data dropped on the network adapter.
Legacy Network Usage	Legacy Network Bytes Received/sec	B/s	Amount of data received by the network adapter.
	Legacy Network Bytes Sent/sec	B/s	Amount of data sent by the network adapter.

For objects that are parent to hosts and VMs, Veeam ONE Monitor displays rollup values.

Charts for folders and clusters display rollup values for all hosts in the container. Chart for a resource displays rollup values for all VMs registered as shared resources.

Virtual Switch Performance Chart

The Virtual Switch chart displays historical statistics on virtual switch usage for Microsoft Hyper-V hosts.



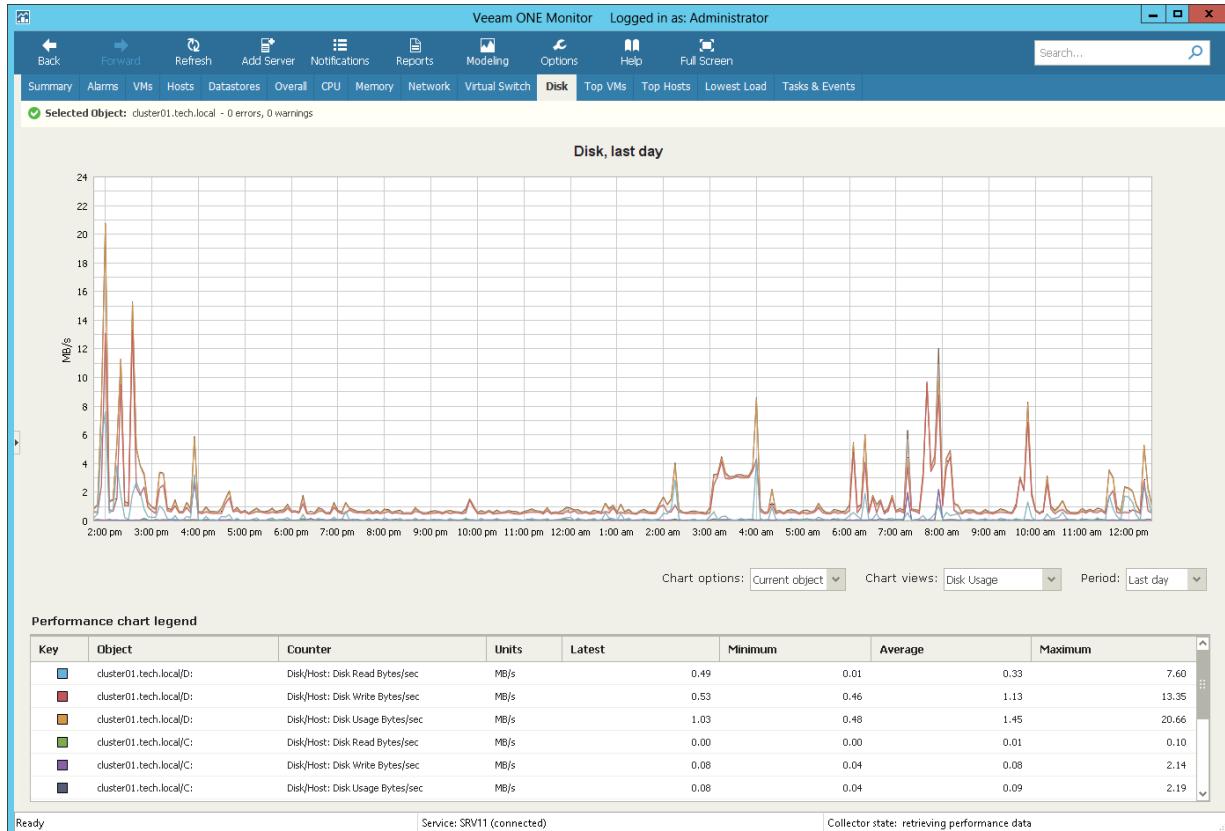
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Virtual Switch Transfer Rate (Bytes)	Virtual Switch Bytes Received/sec	KB/s	Amount of data received per second by a virtual switch.
	Virtual Switch Bytes Sent/sec	KB/s	Amount of data sent per second by a virtual switch.
	Virtual Switch Bytes/sec	KB/s	Amount of data received and sent per second by a virtual switch.
Virtual Switch Transfer Rate (Packets)	Virtual Switch Packets Received/sec	Number	Total number of packets received per second by a virtual switch.
	Virtual Switch Packets Sent/sec	Number	Total number of packets sent per second by a virtual switch.

Chart View	Counter	Measurement Unit	Description
	Virtual Switch Packets/sec	Number	Total number of packets received and sent per second by a virtual switch.

Cluster/Host Disk Performance Chart

The **Disk** chart is available for Microsoft Hyper-V clusters and hosts. The chart displays historical statistics on disk usage for the selected cluster or host.



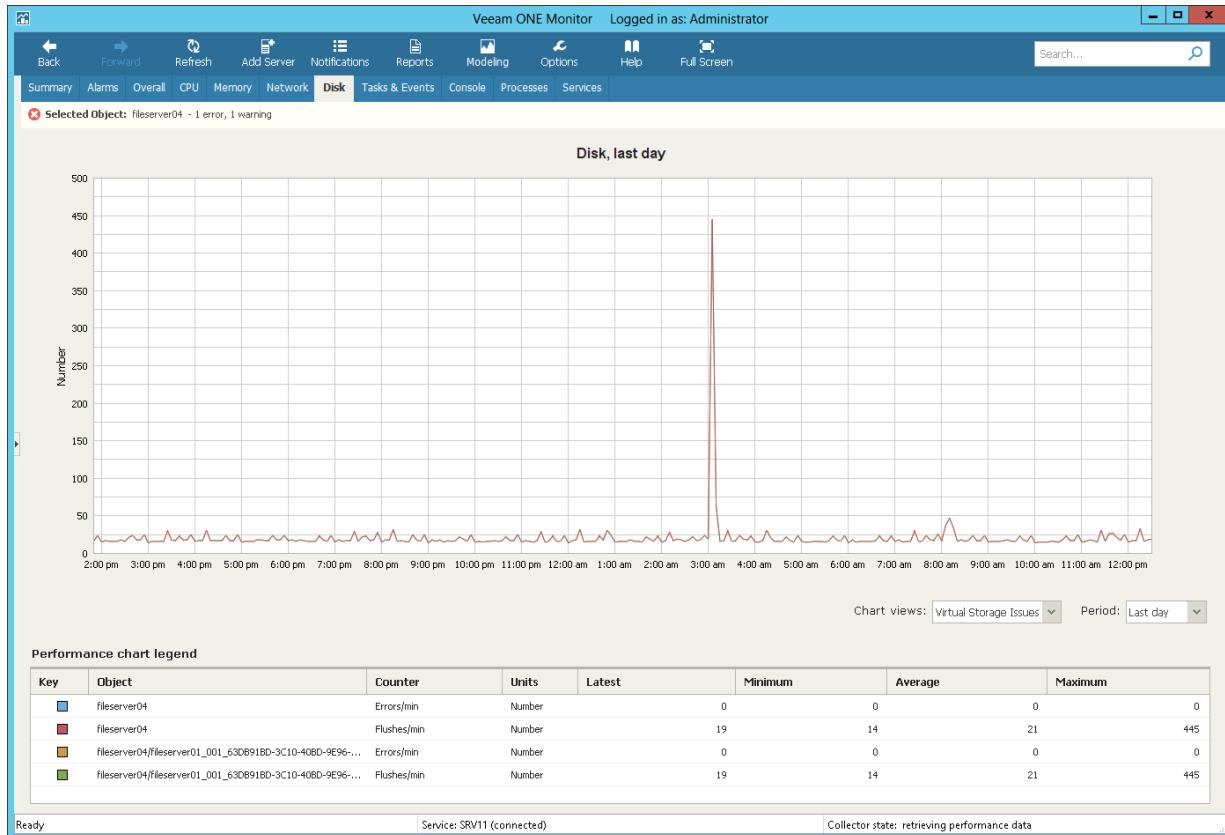
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Disk Usage	Disk/Host: Disk Read	MB/s	Rate at which bytes are transferred from a disk during read operations.
	Disk/Host: Disk Write	MB/s	Rate at which bytes are transferred from a disk during write operations.
	Disk/Host: Disk Usage	MB/s	Rate at which bytes are transferred to and from a disk during read and write operations.
Disk Queue Length	Disk/Host: Avg Disk Queue Length	Number	Average number of read and write requests that were queued for a disk during the sample interval.
Disk Latency	Disk/Host: Avg Disk sec/Read	Millisecond	Average amount of time that a read operation from a disk takes.

Chart View	Counter	Measurement Unit	Description
	Disk/Host: Avg Disk sec/Write	Millisecond	Average amount of time that a write operation to a disk takes.

VM Disk Performance Chart

The **Disk** chart for VMs displays historical statistics for partitions of all disks on the selected VM.



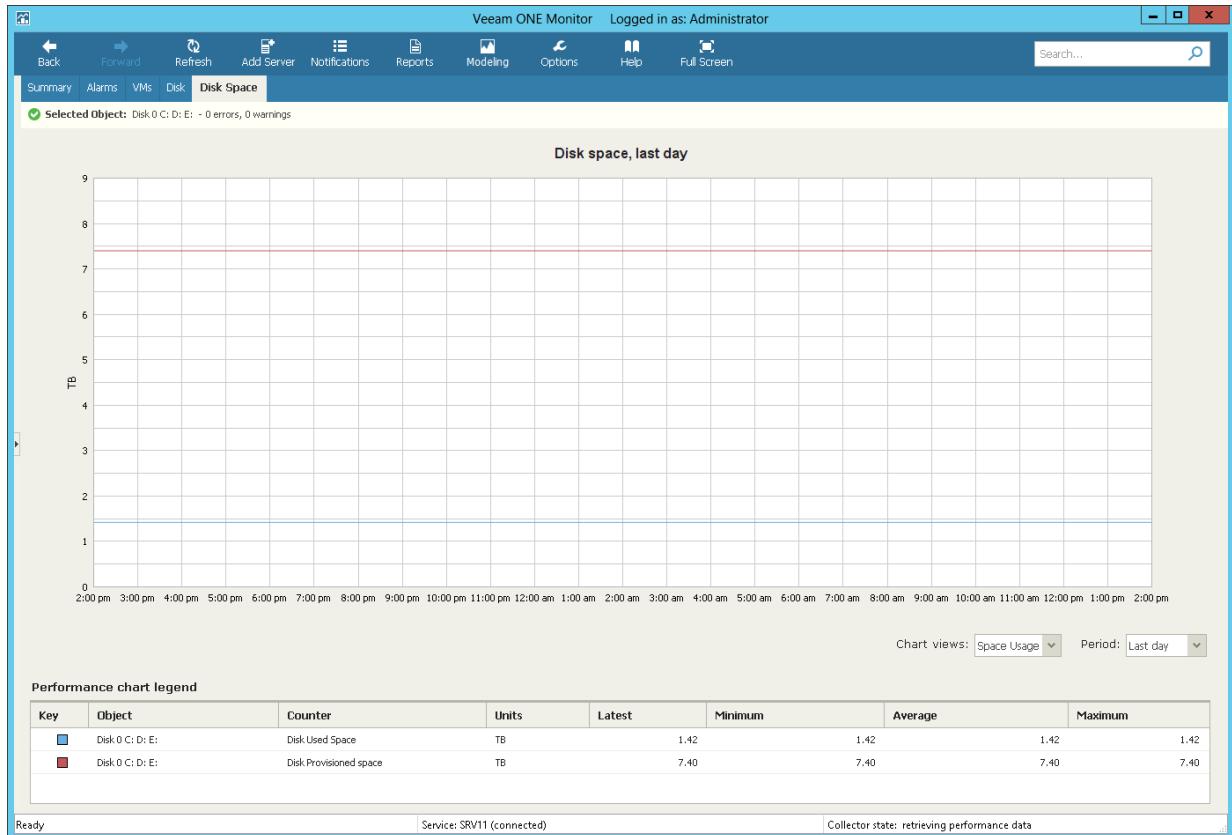
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Virtual Storage Issues	Errors/min	Number	Number of virtual storage errors per minute.
	Flushes/min	Number	Number of virtual storage flush operations per minute.
Virtual Storage Usage	Virtual Storage Read	KB/s	Total number of bytes that have been read per second on a virtual storage.
	Virtual Storage Write	KB/s	Total number of bytes that have been written per second on a virtual storage.
	Virtual Storage Usage	KB/s	Rate at which bytes have been read and written per second on a virtual storage.

Chart View	Counter	Measurement Unit	Description
Virtual Storage IOPS	IOPS	Number	Average number of read and write operations per second to a virtual storage.
	Reads/sec	Number	Total number of read operations issued per second to a virtual storage.
	Writes/sec	Number	Total number of write operations issued per second to a virtual storage.

Disk Space Chart

The **Disk Space** chart it displays historical statistics on disk space resources and usage for the selected disk.

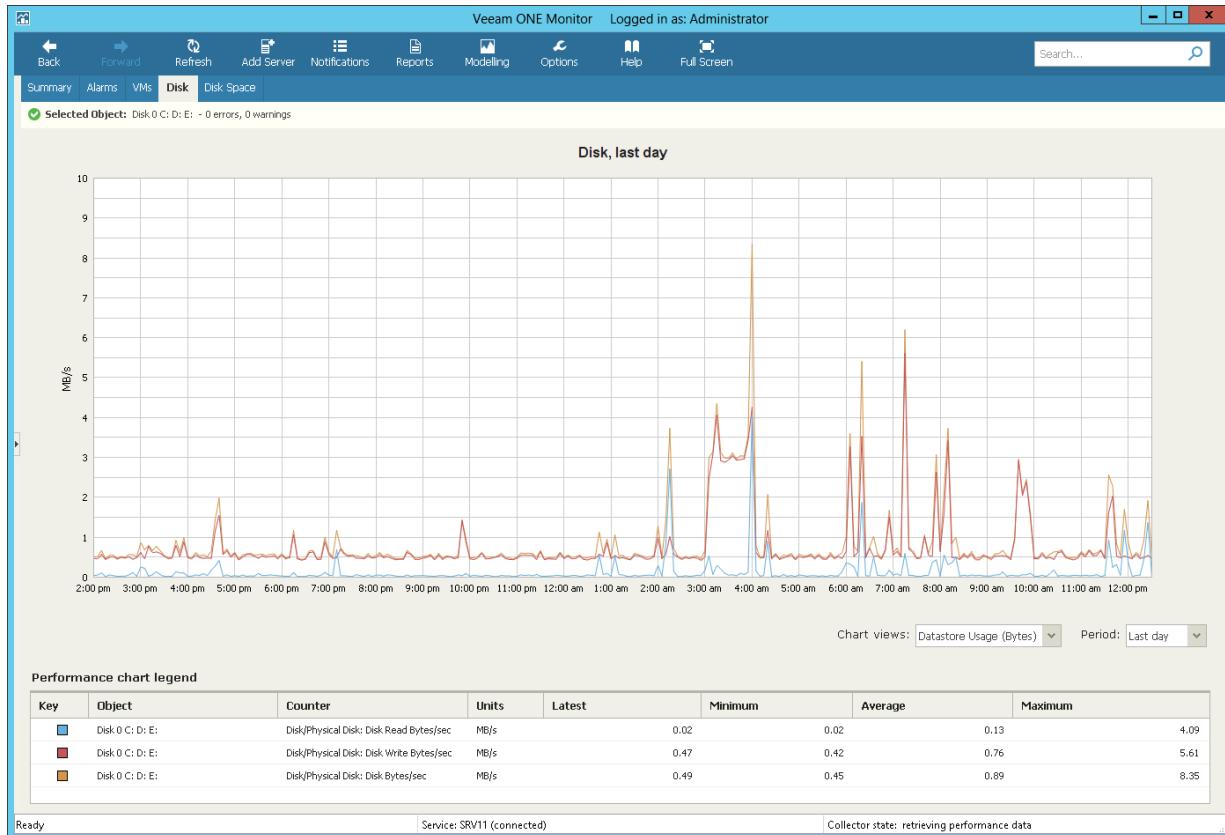


The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Space Usage	Disk Free Space	TB	Amount of free space on a disk.
	Disk Provisioned Space	TB	Amount of disk space provisioned to VMs.
	Disk Used Space	TB	Amount of used space on a disk.

Local Volume Performance Chart

The **Disk** chart displays historical statistics on disk usage for the selected local volume.



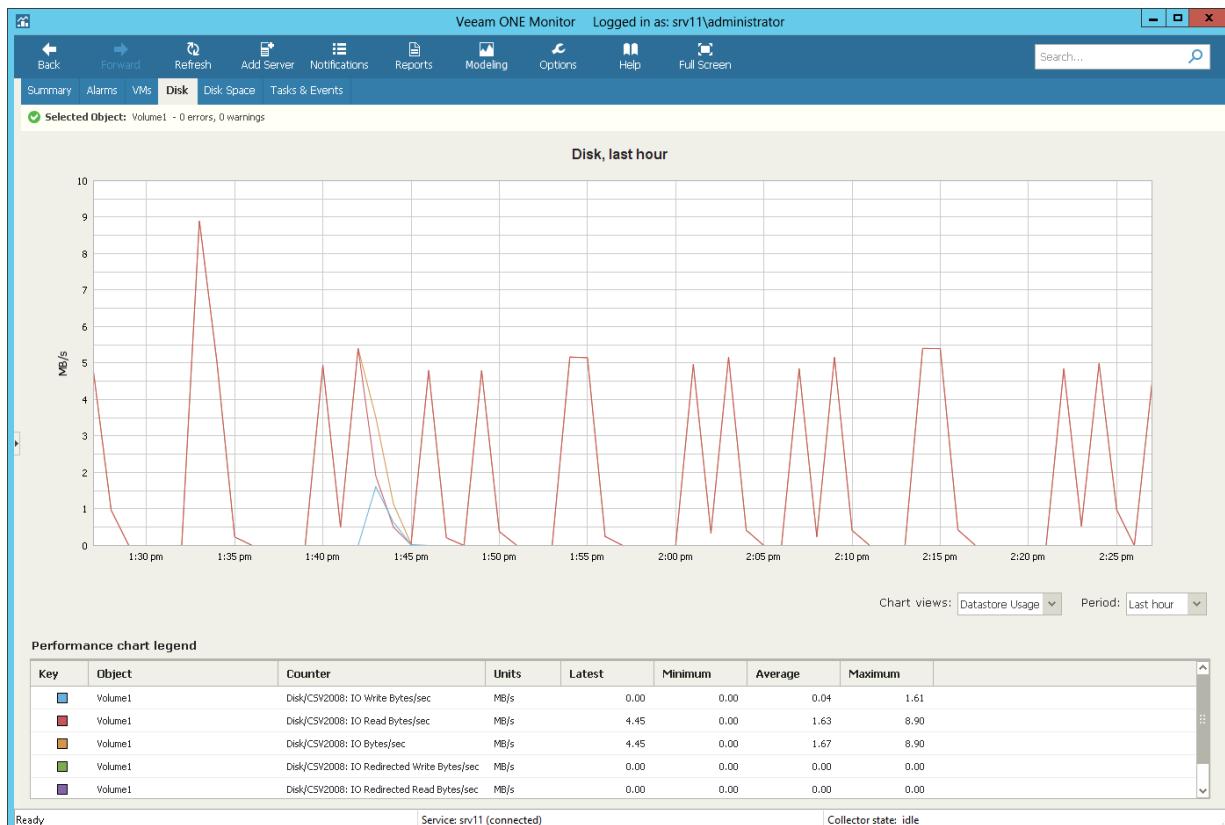
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Datastore Usage	Disk/Physical Disk: Disk Read	MB/s	Rate at which data is read from a volume.
	Disk/Physical Disk: Disk Write	MB/s	Rate at which data is written to a volume.
	Disk/Physical Disk: Disk	MB/s	Sum of read and write rates for a volume.
Datastore Queue Length	Disk/Physical Disk: Avg. Disk Queue Length	Number	Average number of read and write operations queued for a volume.

Chart View	Counter	Measurement Unit	Description
Datastore IOPS	Disk/Physical Disk: Disk Transfers/sec	Number	<p>Number of read and write operations completed per second, regardless of how much data they involve.</p> <p>This counter measures disk utilization. If the value exceeds 50, it can be an indicator of a bottleneck.</p>
Datastore Latency	Disk/Physical Disk: Avg Disk sec/Read	Millisecond	Average time that a read operation from a volume takes.
	Disk/Physical Disk: Avg Disk sec/Write	Millisecond	Average time that a write operation to a volume takes.

Cluster Shared Volume Performance Chart (Windows Server 2008)

The **Disk** chart displays historical statistics on disk usage for the selected Cluster Shared Volume on Windows Server 2008.



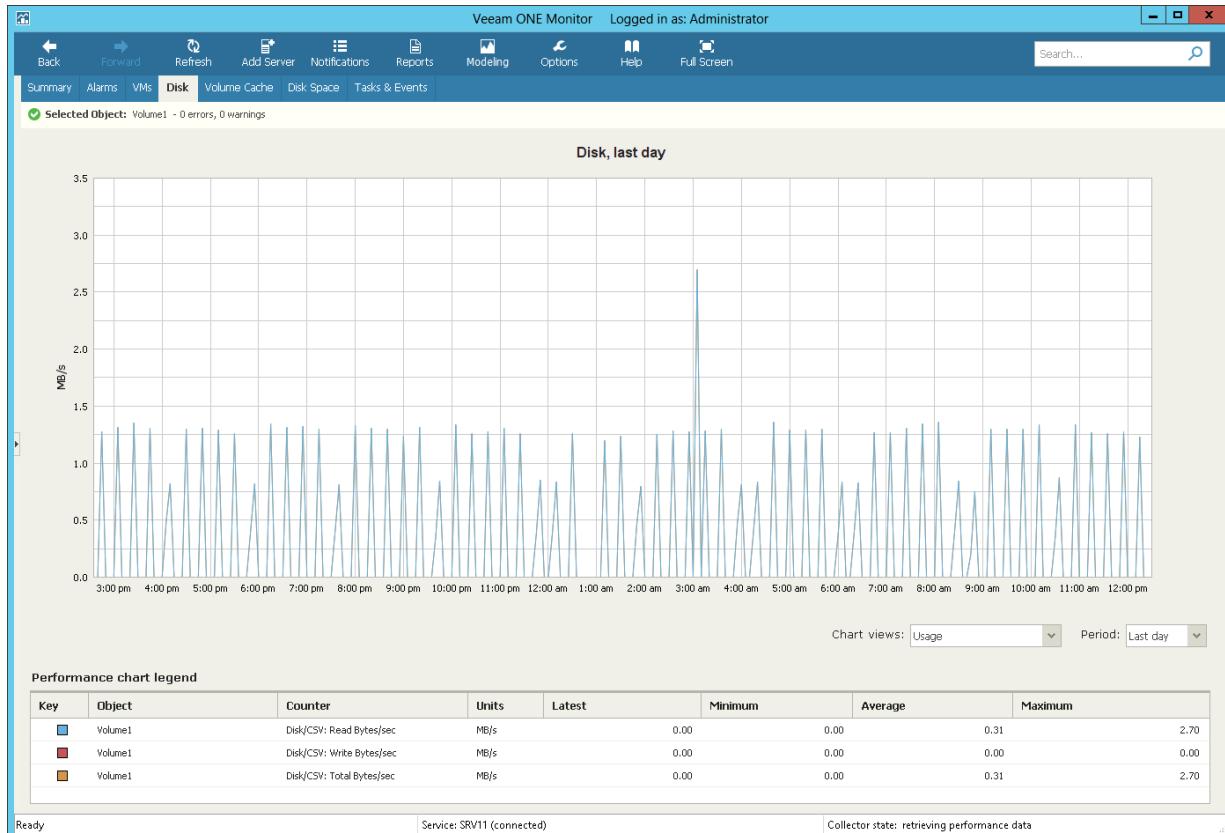
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Datastore Usage	Disk/CSV2008: IO Read	MB/s	Rate at which data is transferred from a disk during read operations.
	Disk/CSV2008: IO Write	MB/s	Rate at which data is transferred to a disk during write operations.
	Disk/CSV2008: IO	MB/s	Sum of read and write rates to a datastore.
	Disk/CSV2008: IO Redirected Read	MB/s	Rate at which data is transferred from the disk during read operations in the Redirected Access mode.

Chart View	Counter	Measurement Unit	Description
	Disk/CSV2008: IO Redirected Write	MB/s	Rate at which data is transferred to the disk during write operations in the Redirected Access mode.
	Disk/CSV2008: IO Redirected	MB/s	Rate at which data is transferred in the Redirected Access mode.
Datastore IOPS	Disk/CSV2008: Redirected Read IOPS	Number	Number of new read operations that were redirected to a volume through the network since the last data collection.
	Disk/CSV2008: Redirected Write IOPS	Number	Number of new write operations redirected to a volume through the network since the last data collection.
	Disk/CSV2008: Redirected IOPS	Number	Number of new read and write operations redirected to a volume through the network since the last data collection.
	Disk/CSV2008: CSV Read IOPS	Number	Number of new reads performed directly from a volume since the last data collection.
	Disk/CSV2008: CSV Write IOPS	Number	Number of new write operations performed directly to a volume since the last data collection.
	Disk/CSV2008: CSV IOPS	Number	Average number of read and write operations per second performed during the collection interval.

Cluster Shared Volume Performance Chart (Windows Server 2012/2012 R2/2016)

The **Disk** chart displays historical statistics on disk usage for the selected Cluster Shared Volume on Windows Server 2012, 2012 R2 and 2016.



The following table provides information on predefined views and counters.

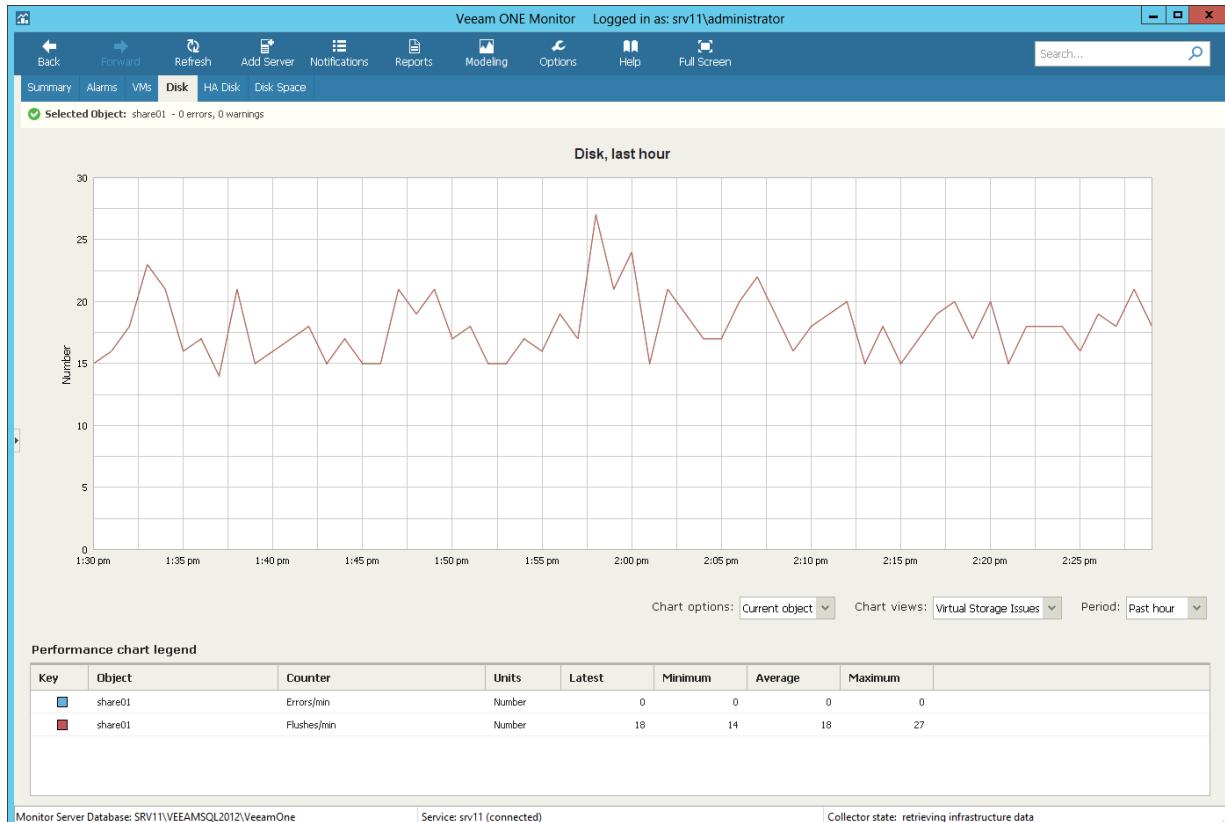
Chart View	Counter	Measurement Unit	Description
Usage	Disk/CSV2012: Read	MB/s	Rate at which data is read from the volume in the Direct Access or Redirected Access mode.
	Disk/CSV2012: Write	MB/s	Rate at which data is written to the volume in the Direct Access or Redirected Access mode.
	Disk/CSV2012: Total	MB/s	Rate at which data is read from and written to the volume in the Direct Access or Redirected Access mode.

Chart View	Counter	Measurement Unit	Description
IOPS	Disk/CSV2012: Reads/sec	Number	Rate at which read operations were performed directly on a volume.
	Disk/CSV2012: Writes/sec	Number	Rate at which write operations were performed directly on a volume.
	Disk/CSV2012: IOPS	Number	Rate at which read and write operations were performed directly on a volume.
Latency	Disk/CSV2012: Read Latency	Millisecond	Average latency between the time a read request arrived to a file system and the time when it was completed.
	Disk/CSV2012: Write Latency	Millisecond	Average latency between the time a write request arrived to a file system and the time when it was completed.
	Disk/CSV2012: Latency	Millisecond	Average latency required to complete read and write operations on a volume.
Datastore Queue Length	Disk/CSV2012: Read Queue Length	Number	Number of read operations queued for a volume.
	Disk/CSV2012: Write Queue Length	Number	Number of write operations queued for a volume.
	Disk/CSV2012: Queue Length	Number	Number of read and write operations that were queued for a volume during the sample interval.
Direct/Redirected Usage	Disk/CSV2012: Redirected	MB/s	Average amount of data transferred to or from a disk during write or read operations over the network stack.
	Disk/CSV2012: Direct	MB/s	Average amount of data transferred to or from a disk during write or read operations.
Direct/Redirected Latency	Disk/CSV2012: Direct Latency	Millisecond	Average latency required to for complete read and write operations on a volume in the Direct Access mode.

Chart View	Counter	Measurement Unit	Description
	Disk/CSV2012: Redirected Latency	Millisecond	Average latency required to complete read and write requests on a volume in the Redirected Access mode.
Direct/Redirected IOPS	Disk/CSV2012: Direct IOPS	Number	Rate at which read and write operations were performed directly on a disk.
	Disk/CSV2012: Redirected IOPS	Number	Rate at which read and write operations were redirected to a volume through the network.

SMB Share Performance Chart

The **Disk** chart displays historical statistics on disk usage for the selected SMB file share.



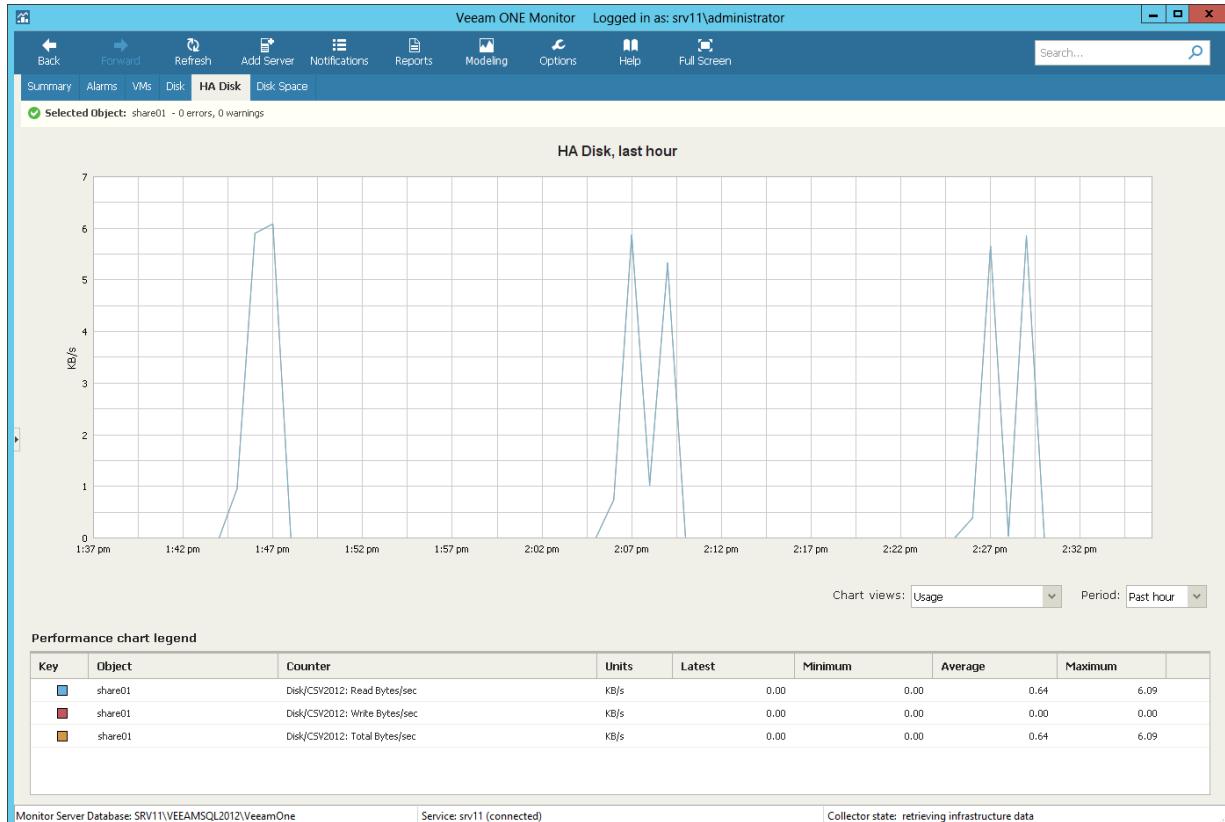
The following table provides information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Virtual Storage Issues	Errors/min	Number	Number of virtual storage errors per minute.
	Flushes/min	Number	Number of virtual storage flush operations per minute.
Virtual Storage Usage	Virtual Storage Read	KB/s	Total amount of data that have been read per second on the virtual storage.
	Virtual Storage Write	KB/s	Total amount of data that have been written per second on the virtual storage.
	Virtual Storage Usage	KB/s	Rate at which data is read and written per second on the virtual storage.

Chart View	Counter	Measurement Unit	Description
Virtual Storage IOPS	Reads/sec	Number	Total number of read operations that have occurred on the virtual storage.
	Writes/sec	Number	Total number of write operations that have occurred on the virtual storage.
	IOPS	Number	Average number of read and write operations per second during collection interval.

HA SMB Performance Chart

The **HA Disk** chart displays historical statistics on disk usage for the selected Highly Available SMB share (HA SMB shares can only be created on Cluster Shared Volumes).



The following table provides information on predefined views and counters.

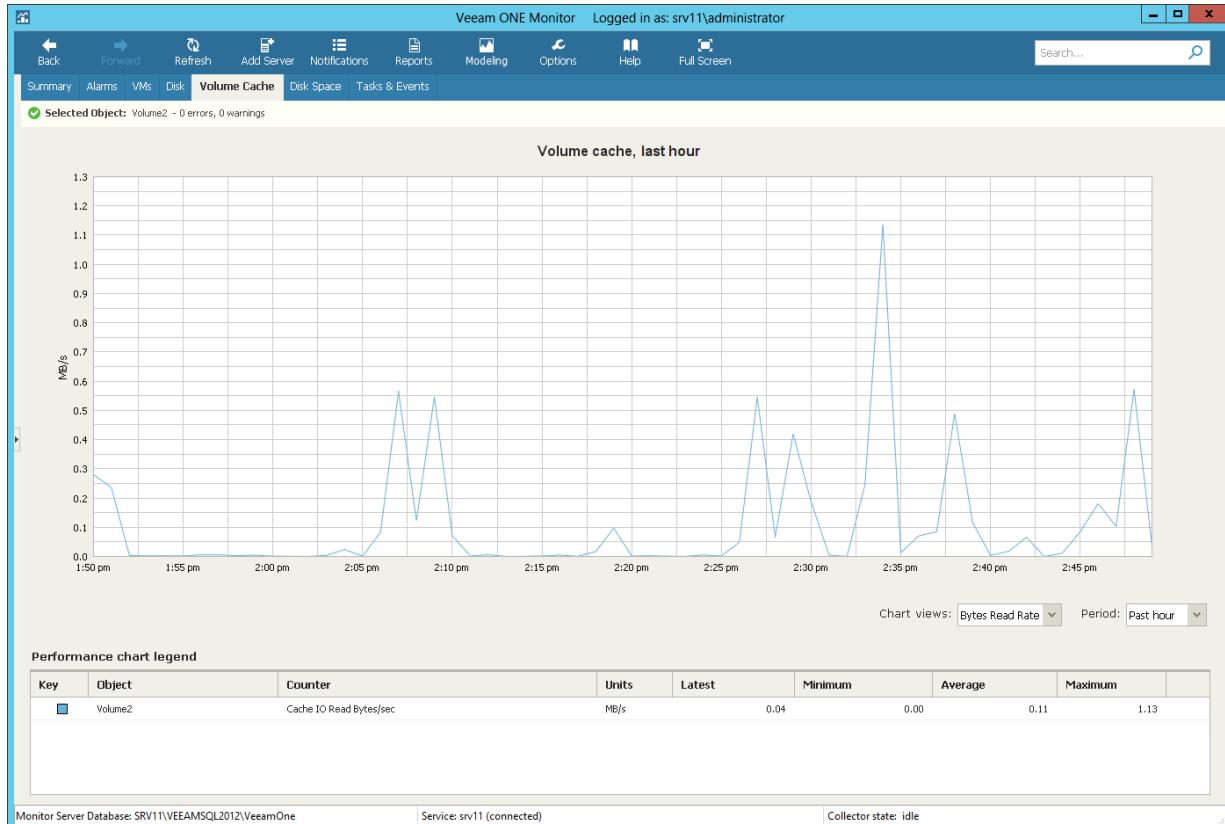
Chart View	Counter	Measurement Unit	Description
Usage	Disk/CSV2012: Read	KB/s	Rate at which data was read from a volume in the Direct Access or Redirected Access mode.
	Disk/CSV2012: Write	KB/s	Rate at which data was written to a volume in the Direct Access or Redirected Access mode.
	Disk/CSV2012: Total	KB/s	Rate at which data was read from and written to a volume in the Direct Access or Redirected Access mode.
IOPS	Disk/CSV2012: Read/sec	Number	Rate at which read operations were performed directly on a volume.

Chart View	Counter	Measurement Unit	Description
	Disk/CSV2012: Writes/sec	Number	Rate at which write operations were performed directly on a volume.
	Disk/CSV2012: IOPS	Number	Rate at which read and write operations were performed directly on a volume.
Latency	Disk/CSV2012: Read Latency	Millisecond	Average latency between the time a read request arrived to a file system and the time when it was completed.
	Disk/CSV2012: Write Latency	Millisecond	Average latency between the time a write request arrived to the file system and the time when it was completed.
	Disk/CSV2012: Latency	Millisecond	Average latency required to complete read and write operations on a volume.
Datastore Queue Length	Disk/CSV2012: Read Queue Length	Number	Number of read operations queued for a volume.
	Disk/CSV2012: Write Queue Length	Number	Number of write operations queued for a volume.
	Disk/CSV2012: Queue Length	Number	Total number of read and write operations queued for a volume during the sample interval.
Direct/Redirected Usage	Disk/CSV2012: Redirected Bytes/sec	KB/s	Average amount of data transferred to or from the disk during write or read operations over the network stack.
	Disk/CSV2012: Direct Bytes/sec	KB/s	Average amount of data transferred to or from the disk during write or read operations.
Direct/Redirected Latency	Disk/CSV2012: Direct Latency	Millisecond	Average latency required to complete read and write operations on a volume in the Direct Access mode.
	Disk/CSV2012: Redirected Latency	Millisecond	Average latency required to complete read and write operations on a volume in the Redirected Access mode.

Chart View	Counter	Measurement Unit	Description
Direct/Redirected IOPS	Disk/CSV2012: Direct IOPS	Number	Rate at which read and write operations were performed directly on a disk.
	Disk/CSV2012: Redirected IOPS	Number	Rate at which read and write operations were redirected to a volume through the network.

Volume Cache Performance Chart

The **Volume Cache** chart displays historical statistics on read requests from the cache for the selected Cluster Shared Volume with enabled CSV Cache.



The following table includes information on predefined views and counters.

Chart View	Counter	Measurement Unit	Description
Bytes Read Rate	Cache IO Read	MB/s	Rate at which data is transferred from the volume cache during read operations.
Total Read	Cache Reads/sec	Number	Number of read operations performed in the volume cache per second.

Customizing Microsoft Hyper-V Performance Charts

You can customize performance charts to select specific objects, time intervals or performance counters to display on the charts.

Selecting Objects to Chart

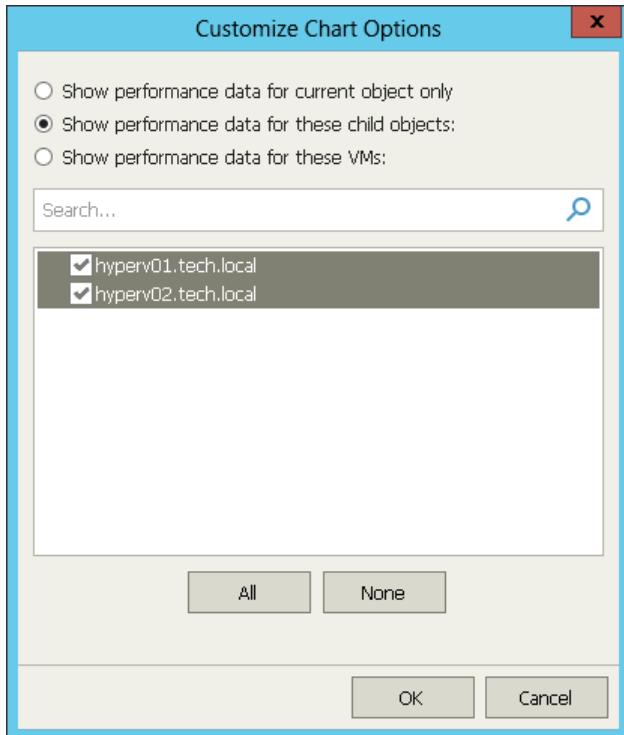
By default, all performance charts display data for an infrastructure object selected in the inventory pane. You can also choose to display performance data on charts for:

- Child components or objects of the selected virtual infrastructure object (for example, all hosts in the cluster)
- Child VMs for the selected virtual infrastructure object or segment

To display performance data for direct children of the selected virtual infrastructure object:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the necessary performance chart tab.
5. From the **Chart options** list, select *Custom*.
6. In the **Customize Chart Options** window, choose **Show performance data for these child objects**.
7. Select check boxes next to child objects that should be included in the chart scope.

8. Click **OK**.



To display performance data for a set of VMs in the selected virtual infrastructure segment:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. In the inventory pane, select the necessary infrastructure object.

3. Open the necessary performance chart tab.

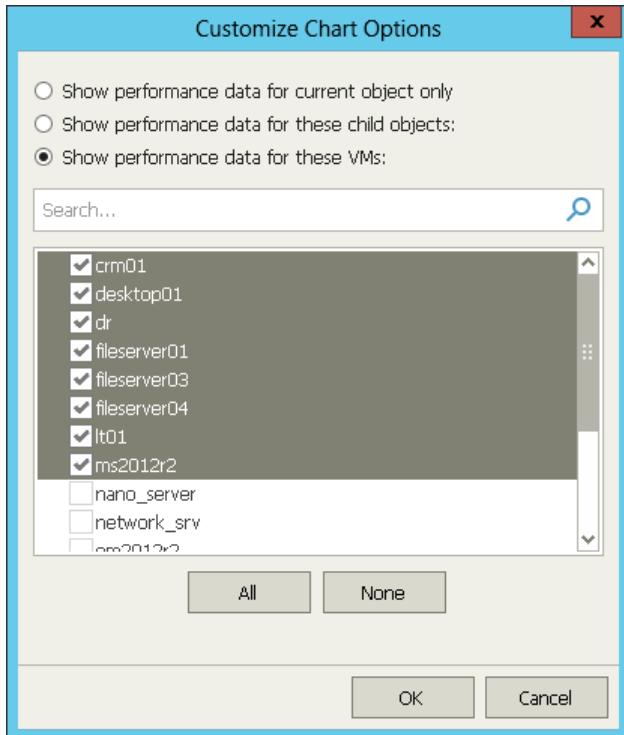
4. From the **Chart options** list, select *Custom*.

5. In the **Customize Chart Options** window, choose **Show performance data for these VMs**.

You can select both direct and indirect children (children of children) of the selected virtual infrastructure object.

6. Select check boxes next to VMs that should be included in the chart scope.

7. Click OK.



NOTE:

The legend pane displays objects for which data is available for the selected time interval.

Selecting Chart Views and Performance Counters

Performance charts come with a set of predefined chart views that logically group related performance counters. You can switch between chart views using the **Chart view** list at the top of the chart legend.

Instead of using predefined views, you can choose a custom set of performance counters to show on the chart:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the necessary performance chart.
5. In the **Chart views** list, select the *Custom* option to open the **Select Devices and Counters** window.
6. From the **Devices** list, select the necessary device(s).
Select *Total* to display all available devices on the chart.

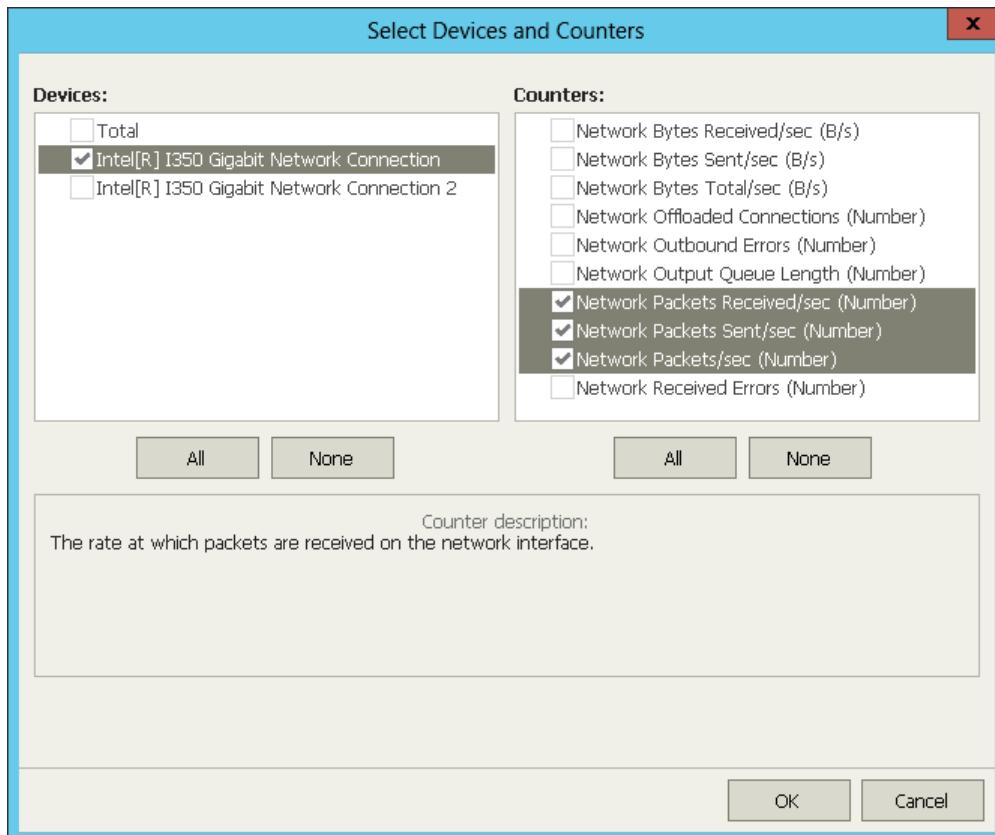
NOTE:

The list of devices is not available for some performance charts. For example, for the **CPU** or **Memory** performance chart, you can only choose counters to display.

- From the **Counters** list, select counters to display on the chart.

When you select a counter, its description appears in the **Counter description** section of the window.

- Click **OK**.



Selecting Time Interval

You can choose the time interval for which performance data on the chart will be displayed. Available options are:

- Real-time information (last hour)
- Last day
- Last week
- Last month
- Last year
- Custom time range (you can choose any time interval within the specified number of hours, days, or weeks, or specify any from/to period)

To specify a time interval for which performance data should be displayed:

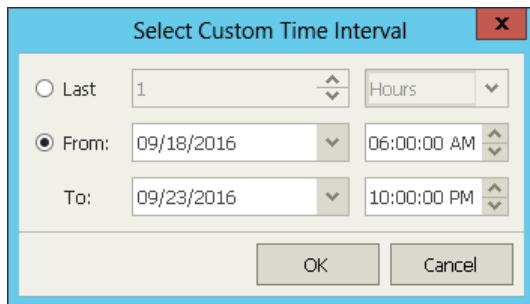
- Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
- At the bottom of the inventory pane, click **Infrastructure View**.
- In the inventory pane, select the necessary infrastructure object.

4. Open the necessary performance chart.

5. From the **Period** list, select *Last hour*, *Last day*, *Last week*, *Last month* or *Last year*.

To define a custom time range, select *Custom*. In the **Select Custom Time Interval** window, define the necessary interval and click **OK**.

When you change the time interval, the time scale (X-axis) of the performance chart and the chart will change respectively.



Microsoft Hyper-V Tasks & Events

You can view information about events that occur in your virtual environment within the selected time interval. Veeam ONE loads information about events through the Event Viewer.

To view the list of events:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Tasks & Events** tab.
5. The **Tasks & Events** list can display up to 1000 tasks and events at a time. To find the necessary task or event, you can use the following controls:
 - To display tasks or events for a specific period, select the necessary time interval from the **Events from** list.
 - To show or hide tasks or events, use filter buttons at the top of the list – *Show all events, Show errors, Show warnings, Show info messages, Show user events, Show tasks*.
 - To find the necessary tasks or events by description, use the **Search** field at the top of the list.
6. To view the detailed description of an event, click it in the list.

The event description will be shown in the **Event Details** pane at the bottom.

When you choose a virtual infrastructure container in the inventory pane, you can view events for the selected object and events for its child objects. To hide events related to child objects, clear the **Include events from child objects** check box at the bottom of the **Event Details** section.

7. To export displayed events to a CSV file, click the **Export** button at the top of the list and specify the location where the file will be saved.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor Logged in as: Administrator". The main menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, Full Screen, and a search bar. Below the menu is a navigation bar with tabs: Summary, Alarms, VMs, Hosts, Datastores, Overall, CPU, Memory, Network, Virtual Switch, Disk, Top VMs, Top Hosts, Lowest Load, and Tasks & Events (which is selected). On the left, there's an "Infrastructure View" pane with a tree structure showing "Virtual Infrastructure" with nodes like "cloudvc55.n.local", "vcenter01.tech.local", and "cluster01.tech.local". The main content area displays a table of events. The table has columns: Type, Description, Time, Target, and Initiated By. The events listed are all of type "Info" and describe account logon failures. The target for most events is "hyperv02.tech.local". The "Initiated By" column shows "n/a" or "Veeam ONE Monitor (SRV11)". At the bottom of the event list, there are navigation buttons for "Page 5 of 5 pages" and a "Event Details" panel on the right showing a single event from the list.

Type	Description	Time	Target	Initiated By
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:52 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:52 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:53 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:53 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:53 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:53 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:55 PM	hyperv02.tech.local	n/a
Info	An account failed to log on.; Subject: Security ID: S-1-5-21-4081262488-32462613...	9/22/2019 6:21:55 PM	hyperv02.tech.local	n/a
Error	Failed to collect performance data for object hyperv02.tech.local. Exception from HRE...	9/23/2019 12:46:39 AM	hyperv02.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv02.tech.local. Timeout has reach...	9/23/2019 12:40:38 PM	hyperv02.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv01.tech.local. Timeout has reach...	9/23/2019 12:40:38 PM	hyperv01.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv01.tech.local. Exception from HRE...	9/23/2019 12:47:45 AM	hyperv01.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv02.tech.local. Timeout has reach...	9/23/2019 12:45:49 PM	hyperv02.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv01.tech.local. Timeout has reach...	9/23/2019 12:45:49 PM	hyperv01.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv02.tech.local. Timeout has reach...	9/23/2019 12:50:58 PM	hyperv02.tech.local	Veeam ONE Monitor (SRV11)
Error	Failed to collect performance data for object hyperv01.tech.local. Timeout has reach...	9/23/2019 12:50:58 PM	hyperv01.tech.local	Veeam ONE Monitor (SRV11)
Info	Performance data for object hyperv01.tech.local has been collected successfully	9/23/2019 12:48:41 AM	hyperv01.tech.local	Veeam ONE Monitor (SRV11)
Info	Performance data for object hyperv02.tech.local has been collected successfully	9/23/2019 12:47:45 AM	hyperv02.tech.local	Veeam ONE Monitor (SRV11)

For every event in the list, the following details are available:

- Event type (*User, Info, Warning or Error*)
- Short event description
- Time of occurrence
- Event target
- Object that caused or initiated the event

Microsoft Hyper-V Virtual Machines

You can view the list of VMs within a virtual infrastructure container – on a host, on a volume, in a folder and so on.

To view the list of VMs:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **VMs** tab.
5. To find the necessary VM by name, use the **Search** field at the top of the list.
6. Click column names to sort VMs by a specific parameter.

For example, to view what VMs are consuming the greatest amount of memory, you can sort VMs in the list by **Memory Usage**.

State	Name	Status	Host	Provisioned Space	Used Space	CPU ...	Memory Usage	Memory Usage (GB)
Green	crm01	Healthy	This object (hyperv01.tech.local)	127.00 GB	0 GB			
Yellow	desktop01	Warning	This object (hyperv01.tech.local)	300.00 GB	158.11 GB			
Yellow	dr	Warning	This object (hyperv01.tech.local)	635.00 GB	64.25 GB			
Yellow	fileserver01	Warning	This object (hyperv01.tech.local)	762.00 GB	30.42 GB	100.00%	2.00 GB	
Yellow	fileserver03	Warning	This object (hyperv01.tech.local)	381.00 GB	42.51 GB	100.00%	1.00 GB	
Red	fileserver04	Error	This object (hyperv01.tech.local)	2048.00 GB	503.63 GB			
Yellow	lt01	Warning	This object (hyperv01.tech.local)	600.00 GB	59.31 GB	100.00%	5.00 GB	
Yellow	ms2012r2	Warning	This object (hyperv01.tech.local)	300.00 GB	28.18 GB			
Yellow	nano_server	Warning	This object (hyperv01.tech.local)	8.00 GB	0.71 GB	100.00%	1.00 GB	
Green	network_srv	Healthy	This object (hyperv01.tech.local)	Not available	Not available			
Red	om2012r2	Error	This object (hyperv01.tech.local)	1200.00 GB	84.11 GB			
Yellow	srv05	Warning	This object (hyperv01.tech.local)	240.00 GB	33.38 GB	100.00%	5.00 GB	
Green	srv06	Healthy	This object (hyperv01.tech.local)	Not available	Not available			
Yellow	srv41	Warning	This object (hyperv01.tech.local)	210.00 GB	73.33 GB			
Yellow	starfish	Warning	This object (hyperv01.tech.local)	254.00 GB	22.95 GB			
Red	ubuntu01	Error	This object (hyperv01.tech.local)	60.00 GB	21.19 GB	100.00%	4.00 GB	
Yellow	whale	Warning	This object (hyperv01.tech.local)	254.00 GB	28.01 GB			

For every virtual machine in the list, the following details are available:

- **State** – state of the virtual machine (*powered on, powered off, saved, paused*)
- **Name** – name of the virtual machine
- **Status** – current status of the virtual machine in terms of alarms (*healthy, warning or error*)
- **Host** – name of the host where the virtual machine resides

- **Provisioned Space** – amount of storage space provisioned for the virtual machine
- **Used Space** – amount of storage space actually used for storing virtual machine files (for VMs with thin provisioned disks, this value is normally less than Provisioned Space)
- **CPU Usage** – amount of actively used virtual CPU as a percentage of total available CPU resources
- **Memory Usage** – amount of actively used memory resources as a percentage of configured VM memory
- **Memory Usage (GB)** – amount of actively used memory resources in GB
- **IP V4 Address** – IP V4 address assigned to the virtual machine
- **IP V6 Address** – IP V6 address assigned to the virtual machine
- **DNS Name** – DNS name of the virtual machine
- **vCPU** – number of virtual CPUs configured for the virtual machine
- **Assigned Memory** – amount of virtual memory allocated for the virtual machine
- **Guest OS** – guest operating system installed in the virtual machine
- **Integration Services** – number and state of Hyper-V Integration Services installed in the guest OS

You can choose what columns to show or hide in the **VMs** table:

- To hide one or more columns, right-click the table header and clear check boxes for corresponding data fields.
- To make hidden columns visible, right-click the table header and select check boxes for corresponding data fields.

Microsoft Hyper-V Hosts

You can view the list of Microsoft Hyper-V hosts in your virtual infrastructure – on System Center Virtual Machine Manager or in a cluster.

To view the list of hosts:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **Hosts** tab.
5. To find the necessary host by name, use the **Search** field at the top of the list.
6. Click column names to sort hosts by a specific parameter.

For example, to view hosts with the greatest number of VMs, you can sort VMs in the list by **VM Count**.

State	Object	Parent Object	CPU Count	CPU Frequency	Memory Size	VM Count
Up	hyperv01.tech.local	cluster01.tech.local	0	0.00 GHz	0.00 GB	28
Up	hyperv02.tech.local	cluster01.tech.local	0	0.00 GHz	0.00 GB	36

For every host in the list, the following details are available:

- **State** – state of the host (*powered on, powered off, suspended*)
- **Object** – name of the host
- **Parent Object** – name of the parent object in the infrastructure
- **CPU Count** – number of CPU cores on a host
- **CPU Frequency** – frequency of a host CPU core in GHz
- **Memory Size** – amount of physical memory available on a host
- **VM Count** – number of VMs that reside on a host

You can choose what columns to show or hide in the **Hosts** table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

Microsoft Hyper-V Datastores

You can view the list of datastores in your Microsoft Hyper-V infrastructure – on System Center Virtual Machine Manager or in a cluster.

To view the list of datastores:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the **Datastores** tab.
5. To find the necessary datastore by name, use the **Search** field at the top of the list.
6. Click column names to sort datastores by a specific parameter.

For example, to view what datastores have the greatest amount of free space, you can sort datastores in the list by **Free Space, GB**.

State	Object	Parent Object	File System	Capacity	Free Space	VM Count
Up	Disk 0 C: D: E:	Local storage	NTFS	4654.48 GB	1422.33 GB	25
Up	Disk 1 F: G:	Local storage	NTFS	200.00 GB	19.94 GB	0
Up	Disk 0 C: D: E:	Local storage	NTFS	4654.48 GB	1609.54 GB	31
Up	Disk 1 F: G:	Local storage	NTFS	127.00 GB	115.77 GB	0
Up	Disk 2 H: I:	Local storage	NTFS	827.00 GB	820.11 GB	0
Up	Disk 3 J:	Local storage	NTFS	30.00 GB	29.92 GB	0

For every datastore in the list, the following details are available:

- **State** – state of the host (*powered on, powered off, suspended*)
- **Object** – name of a datastore
- **Parent Object** – name of the parent object in the infrastructure
- **File System** – type of the file system on the datastore
- **Capacity** – total capacity of a datastore
- **Free Space** – amount of available free space on a datastore
- **VM Count** – number of VMs that reside on a datastore

You can choose what columns to show or hide in the **Datastores** table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

Microsoft Hyper-V Top and Lowest Load

The top and lowest load dashboards help you detect VMs and hosts consuming the greatest or the smallest amount of resources in the selected virtual infrastructure segment.

- **Top VMs** dashboard displays top VM consumers in terms of CPU, memory, storage, network usage, snapshot age and size.
- **Top Hosts** dashboard displays top hosts in terms of CPU, memory, disk and network usage.
- **Lowest Load** dashboard displays least loaded hosts in terms of CPU, memory, disk and network resource usage.

You can use this dashboard to choose hosts where you can deploy new VMs or to which you can move existing VMs.

To detect the most or least loaded hosts or VMs:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure container.
4. Open the necessary dashboard – **Top VMs**, **Top Hosts** or **Lowest Load**.
5. Click the **Change Options** link in the top left corner of the dashboard.
 - In the **Interval** field, set the time interval for which resource utilization statistics must be analyzed.
 - In the **VMs to display/Hosts to display** field, define the number of objects to display on the dashboard.
6. Click the **Select counters** link in the top left right corner of the dashboard.
 - a. In the **Select counters** window, choose metrics that must be included in the dashboard. Press and hold the **[SHIFT]** or **[CTRL]** key on the keyboard to select multiple counters.

b. Click OK.

The screenshot shows the Veeam ONE Monitor interface with the 'Top VMs' tab selected. The left sidebar displays the 'Infrastructure View' tree, which includes 'Virtual Infrastructure' with nodes like 'cloudvcs5.n.local', 'vcenter01.tech.local', 'cluster01.tech.local' (selected), and 'SMB shares'. Below this are 'Resources' and 'Cluster Shared Volumes'. A bottom navigation bar includes links for 'Infrastructure View', 'vCloud Director View', 'Business View', 'Data Protection View', and 'Alarm Management', with 'Infrastructure View' being the active tab. The main content area features several tables under the heading 'Last 5 min stats':

- By Guest Run Time:**

Virtual Machine	Guest Run Time
whale	7.00%
lt01	5.60%
starfish	2.40%
- By Current Pressure:**

Virtual Machine	Current Pressure
whale	83.00%
starfish	83.00%
fileserver04	81.60%
- By Guest Visible Physical Memory:**

Virtual Machine	Guest Visible Physical Memory
whale	6.37 GB
fileserver04	6.00 GB
lt01	5.00 GB
- By Virtual Storage Usage Bytes/sec:**

Virtual Machine	Virtual Storage Usage Bytes/sec
lt01	197.91 kB/s
dr	95.58 kB/s
om2012r2	74.76 kB/s
- By Virtual Network Bytes/sec:**

Virtual Machine	Virtual Network Bytes/sec
dr	79.16 kB/s
fileserver04	8.49 kB/s
om2012r2	1022.40 kB/s
- By Active Checkpoint Size:**

Virtual Machine	Active Checkpoint Size
fileserver04	468.81 GB
om2012r2	74.86 GB
lt01	51.18 GB
- By Active Checkpoint Age:**

Virtual Machine	Active Checkpoint Age
ms2012r2	409.13 day(s)
fileserver04	406.25 day(s)
om2012r2	401.13 day(s)
- By Existing Checkpoints:**

Virtual Machine	Existing Checkpoints
om2012r2	9
lt01	4
dr	4

At the bottom, status bars indicate 'Ready', 'Service: SRV11 (connected)', and 'Collector state: idle'.

Microsoft Hyper-V VM Console

From within the VM console, you can easily isolate the root cause of VM performance problems and execute management tasks – for example, restart an unresponsive VM.

This option requires no additional software installed on the Veeam ONE server and is available for both Windows-based and Linux-based OS's.

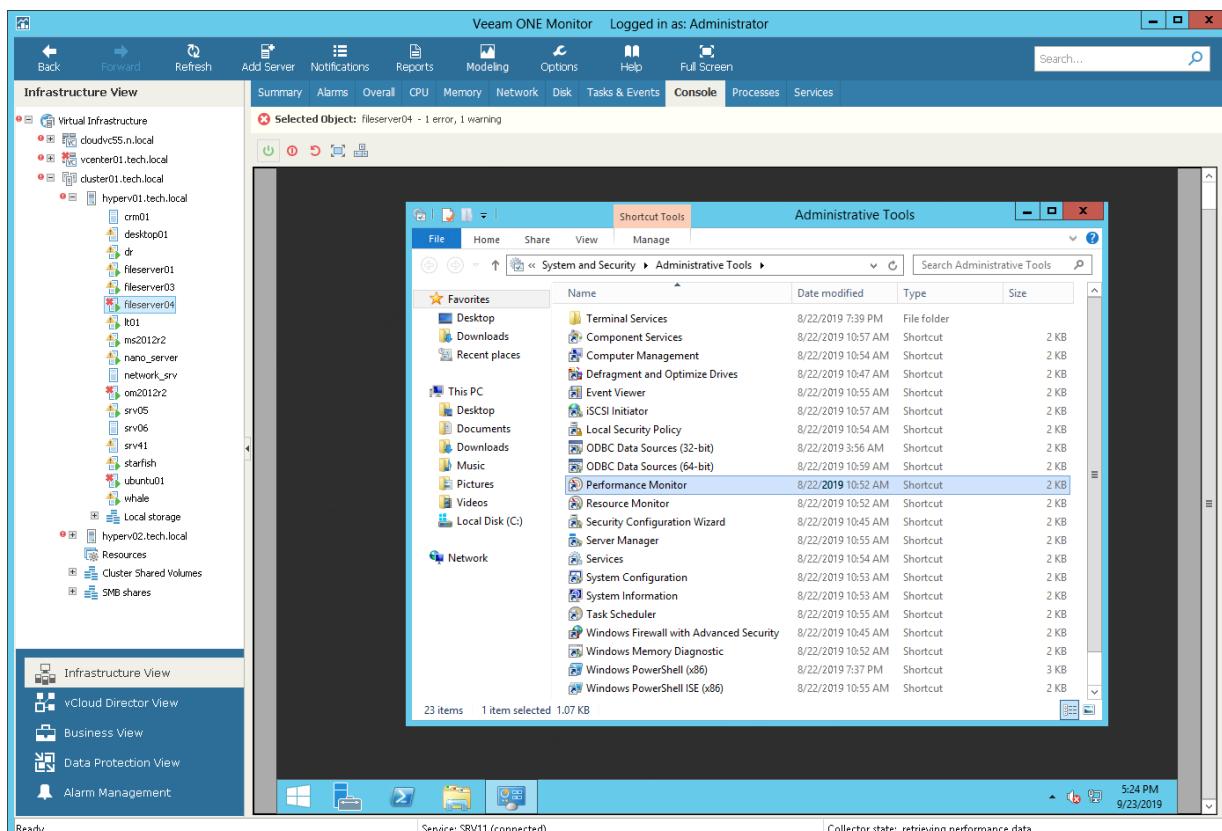
Prerequisites

To access the console of a Linux-based VM, you must download PuTTY.exe and provide path to it in [Veeam ONE Monitor client settings](#).

Accessing VM Console

You can access the VM console right from the Veeam ONE Monitor interface:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary VM.
4. Open the **Console** tab.



You can use buttons at the top of the **Console** tab to change the VM power state:

- **Power on** – powers on a VM if it is powered off. Resumes a VM if it is paused.

- **Power off** – shuts down the guest OS and powers off a VM.
- **Hard reset** – resets a VM without waiting for the guest OS and VM processes to stop. It is recommended to use this option only if you want to reboot a stuck or unresponsive VM.
- **Full screen** – switches between the full screen mode and a separate window running the VM console.
- **Send Ctrl+Alt+Del** – sends the **[Ctrl+Alt+Del]** command to a VM.

To access the VM console or change the VM power state, you can also right-click the VM in the inventory pane and use one of the following shortcut menu commands:

- To access the VM using Windows Remote Desktop Connection, choose **Remote Management > Connect to VM**.
- To change the VM power state, choose **Remote Management** and click the necessary command.
- To send the **[Ctrl+Alt+Del]** command to the VM, choose **Send Ctrl+Alt+Del**. Note that this command is only available if the **VM Console** tab is active.

Microsoft Hyper-V In-Guest Processes

You can view and control processes that are currently running inside a virtual machine or host.

- On Windows-based machines, you can view, end or restart processes.
- On Linux-based machines, you can view or end daemons.

Prerequisites

Before viewing in-guest processes, check the following prerequisites:

- For Windows-based machines, make sure that the Remote Registry Service is started.
- For Linux-based machines, make sure that the SSH Server is started.

Viewing In-Guest Processes

To view the list of processes:

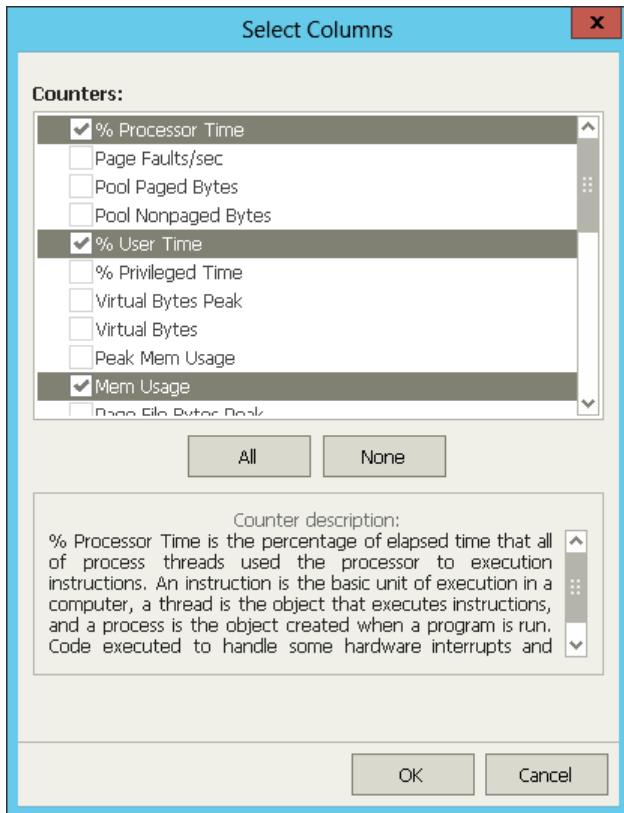
1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Processes** tab.
5. Provide OS authentication credentials (user name and password) to access the list of running processes.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, Full Screen, and a search bar. Below the navigation bar is the "Infrastructure View" pane, which displays a tree structure of infrastructure objects. Under "Virtual Infrastructure", nodes include "cloudvcs5.n.local", "vccenter01.tech.local", and "cluster01.tech.local", with "hyperv01.tech.local" expanded to show "crm01", "desktop01", "dr", "fleserver01", "fleserver03", "fleserver04", "lt01", "ms2012r2", "nano_server", "network_srv", "omc2012r2", "srv05", "srv06", "srv07", "srv41", "starfish", "ubuntu01", and "whale". Other collapsed nodes include "Local storage", "hyperv02.tech.local", "Resources", "Cluster Shared Volumes", and "SMB shares". To the right of the tree is a table titled "Selected Object: fleserver04 - 1 error, 1 warning". The table has columns: Image Name, % Process..., % User Time, Mem Usage, Thread Co..., Elapsed Time, ID Process, and Creating P... . The "svchost" process is highlighted in blue. The bottom left of the interface features a sidebar with links to "Infrastructure View", "vCloud Director View", "Business View", "Data Protection View", and "Alarm Management". The bottom status bar indicates "Ready", "Service: SRV11 (connected)", and "Collector state: retrieving performance data".

Image Name	% Process...	% User Time	Mem Usage	Thread Co...	Elapsed Time	ID Process	Creating P...
MsMpEng	0%	0%	169900 K	25	550:22:46	800	588
svchost	0%	0%	44384 K	38	550:22:43	956	588
javaw	0%	0%	44368 K	26	550:08:29	1968	428
LogonUI	0%	0%	24768 K	11	550:22:45	832	524
explorer	0%	0%	19916 K	33	550:08:46	428	3164
vmm	0%	0%	17128 K	14	550:22:05	2280	588
sqlservr	0%	0%	15104 K	45	550:22:29	1500	588
WmiPrvSE	0%	0%	13880 K	13	550:22:07	2180	704
vmoolsd	0%	0%	13536 K	9	550:22:18	1920	588
svchost	0%	0%	13420 K	30	550:22:01	2576	588
msecces	0%	0%	11208 K	7	550:08:26	2720	428
lsass	0%	0%	11052 K	9	550:23:12	596	496
dlhost	0%	0%	10480 K	11	550:22:01	2644	588
VeeamAgent	0%	0%	10252 K	7	28:18:29	784	3360
VeeamAgent	0%	0%	10020 K	7	26:35:09	400	3360
svchost	0%	0%	9472 K	18	550:20:43	1148	588
VeeamDeploymentSvc	0%	0%	8936 K	5	357:55:22	4024	588
services	0%	0%	8732 K	7	550:21:19	588	496
svchost	0%	0%	8284 K	18	550:20:49	232	588
svchost	0%	0%	7928 K	14	550:20:50	924	588
msdtc	0%	0%	7416 K	10	550:20:05	2892	588
VeeamTapeSvc	0%	0%	6924 K	3	336:23:16	2196	588
vmoolsd	0%	0%	6044 K	4	550:06:32	1468	428
crss	0%	0%	5072 K	9	550:06:58	4052	3304
VeeamTransportSvc	0%	0%	4944 K	8	336:22:18	3380	588
svchost	0%	0%	4940 K	15	550:20:23	1980	588

Every process is described with a set of counters that are presented as column headings. You can add or remove counters to monitor running processes:

1. In the upper right corner of the **Processes** dashboard, click the **Select columns** link.
2. In the **Select Columns** window, select check boxes next to counters you want to display.
3. To view a detailed description of a counter, click it in the **Counters** list, and the description will be displayed in the lower pane of the window.



You can end unwanted processes running on the VM or create an alarm based on the process state or object performance:

- [For Windows-based machines] To end a process, select it in the list and click the **Kill Process** button, or right-click a necessary process and select **Kill Process** from the shortcut menu.
- [For Linux-based machines] To end a daemon, select it in the list and click the **Kill Process** button and choose one of the following options:
 - **Hangup** – to send the `SIGHUP` signal
 - **Kill** – to send the `SIGKILL` signal
 - **Terminate** – to send the `SIGTERM` signal

You can also right-click a necessary process and select **Kill Process** and choose the necessary option from the shortcut menu.

- [For Windows-based machines] To create an alarm, select one or more processes in the list, click the **Create Alarm** button, and select the type of rule on which the alarm must be based. For more information on alarm rules, see section [Alarm Rules](#) of the Veeam ONE Working with Alarms Guide.

Microsoft Hyper-V In-Guest Services

You can view and control services currently running inside a VM.

- For Windows-based machines, you can view, start, stop and restart services, and create alarms based on retrieved services.
- For Linux-based machines, you can view, start, stop and restart services.

Prerequisites

Before viewing in-guest services, check the following prerequisites:

- For Windows-based machines, make sure that the Remote Registry Service is started.
- For Linux-based machines, make sure that the SSH Server is started.

Viewing In-Guest Services

To view the list of services:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Infrastructure View**.
3. In the inventory pane, select the necessary infrastructure object.
4. Open the **Services** tab.
5. Provide OS authentication credentials (user name and password) to access the list of running services.

The screenshot shows the Veeam ONE Monitor interface with the 'Services' tab selected. The left sidebar displays a tree view of virtual infrastructure objects, including 'Virtual Infrastructure' and several hosts like 'vcenter01.tech.local', 'cluster01.tech.local', and 'hyperv01.tech.local'. Under 'hyperv01.tech.local', a specific VM named 'desktop01' is selected. The main pane shows a table of services with columns: Service Name, Description, Proce..., Status, Startup Type, and Log On As. The table lists numerous services such as AeLookupSvc, ALG, AppIDSvc, Appinfo, AppPfMgr, AppReadiness, AppSvc, AudioEndpointBuilder, Audiosrv, BFE, BITS, BrokerInfrastructure, Browser, CertPropSvc, COMSysApp, CryptSvc, DcomLaunch, defragsvc, and DeviceAssociationService. Most services are listed as stopped, while some like BFE and BITS are running. The status bar at the bottom indicates 'Service SRV11 (connected)' and 'Collector state: idle'.

Service Name	Description	Proce...	Status	Startup Type	Log On As
AeLookupSvc	Processes application compatibility cache requests for...		Stopped	Manual (Trigger Start)	Local System
ALG	Provides support for 3rd party protocol plug-ins for In...		Stopped	Manual	Local Service
AppIDSvc	Determines and verifies the identity of an application....		Stopped	Manual (Trigger Start)	Local Service
Appinfo	Facilitates the running of interactive applications with ...		Stopped	Manual (Trigger Start)	Local System
AppPfMgr	Processes installation, removal, and enumeration requ...		Stopped	Manual	Local System
AppReadiness	Gets apps ready for use the first time a user signs in ...		Stopped	Manual	Local System
AppSvc	Provides infrastructure support for deploying Store ap...		Stopped	Manual	Local System
AudioEndpointBuilder	Manages audio devices for the Windows Audio serv...		Stopped	Manual	Local System
Audiosrv	Manages audio for Windows-based programs. If this s...		Stopped	Manual	Local Service
BFE	The Base Filtering Engine (BFE) is a service that mana... 1028		Running	Automatic	Local Service
BITS	Transfers files in the background using idle network b... 904		Running	Automatic (Delayed Start)	Local System
BrokerInfrastructure	Windows infrastructure service that controls which ba...	644	Running	Automatic	Local System
Browser	Maintains an updated list of computers on the netw...		Stopped	Disabled	Local System
CertPropSvc	Copies user certificates and root certificates from sm... 904		Running	Manual	Local System
COMSysApp	Manages the configuration and tracking of Compon...		Stopped	Manual	Local System
CryptSvc	Provides three management services: Catalog Datab... 320		Running	Automatic	Network Service
DcomLaunch	The DCOMLAUNCH service launches COM and DCOM ... 644		Running	Automatic	Local System
defragsvc	Helps the computer run more efficiently by optimizing ...		Stopped	Manual	Local System
DeviceAssociationService	Enables pairing between the system and wired or wire...		Stopped	Manual (Trigger Start)	Local System

You can start, stop and restart a running service, or create an alarm based on the service state or object performance:

- To restart a service, click the **Restart** button, or right-click a necessary service and select **Restart** from the shortcut menu.
- To disconnect from guest OS, click the **Disconnect** button.
- [For Windows-based machines] To create an alarm, select one or more services in the list, click the **Create Alarm** button, and select the type of rule on which the alarm must be based. For more information on alarm rules, see section [Alarm Rules](#) of the Veeam ONE Working with Alarms Guide.

Business View

Veeam ONE Monitor can present your virtual infrastructure from the technical perspective (in terms of VMware vSphere or Microsoft Hyper-V inventory), and from the business perspective (based on your company needs and priorities). Veeam ONE Monitor presents infrastructure objects from the business perspective using categorization capabilities provided by the embedded Business View component.

Business View allows you categorize virtual and backup infrastructure objects – VMs, hosts, clusters, datastores, and computers protected with Veeam Backup Agent for Windows and Veeam Backup Agent for Linux – according to constructs of your business. You can categorize virtual infrastructure objects by such criteria as business unit, department, purpose, SLA and others. Categorization data is continuously synchronized with Veeam ONE Monitor and Veeam ONE Reporter, and enables you to monitor, troubleshoot, resolve issues and report on business groups of infrastructure objects. For more information on creating categories and groups for the objects in your infrastructure, see [Configuring Business View Categorization](#).

To work with the business view of your infrastructure in Veeam ONE Monitor, click **Business View** at the bottom of the inventory pane. In this view, you can use monitoring capabilities for business groups created for your virtual environment. For more information on monitoring capabilities for Business View groups, see [Business View Monitoring](#).

The screenshot displays the Veeam ONE Monitor interface with two main panes: **Infrastructure View** on the left and **Business View** on the right.

Infrastructure View:

- Virtual Infrastructure:**
 - cloudvc55.n.local
 - vcenter01.tech.local
 - Atlanta
 - esx01.tech.local
 - Resources
 - Cloud
 - CRM
 - Fileservers
 - srv01
 - srv02
 - srv04
 - srv06
 - srv07
 - srv08
 - srv34
 - Replicas
 - Sandbox
 - Shell
 - SP Resources
 - VAO
 - vLabs
 - Webservers
 - Webservices
 - esx02.tech.local
 - Datastores
 - Gold Coast
 - cluster01.tech.local

Business View:

 - Business View:**
 - Virtual Machines:**
 - VM VMware:**
 - Datastore
 - Department
 - Administration
 - Customer Care
 - IT**
 - crm_db
 - dc01
 - prod
 - sandbox
 - shell
 - srv01
 - srv06
 - srv08
 - vcenter01
 - Marketing
 - Support
 - Last Backup Date
 - Sample Business View Category
 - SLA
 - VM Network
 - VMs with Snapshots
 - Hyper-V
 - Hosts
 - Datastores
 - Clusters
 - Backup Agents

Bottom Navigation Bar:

 - Infrastructure View
 - vCloud Director View
 - Business View
 - Data Protection View
 - Alarm Management

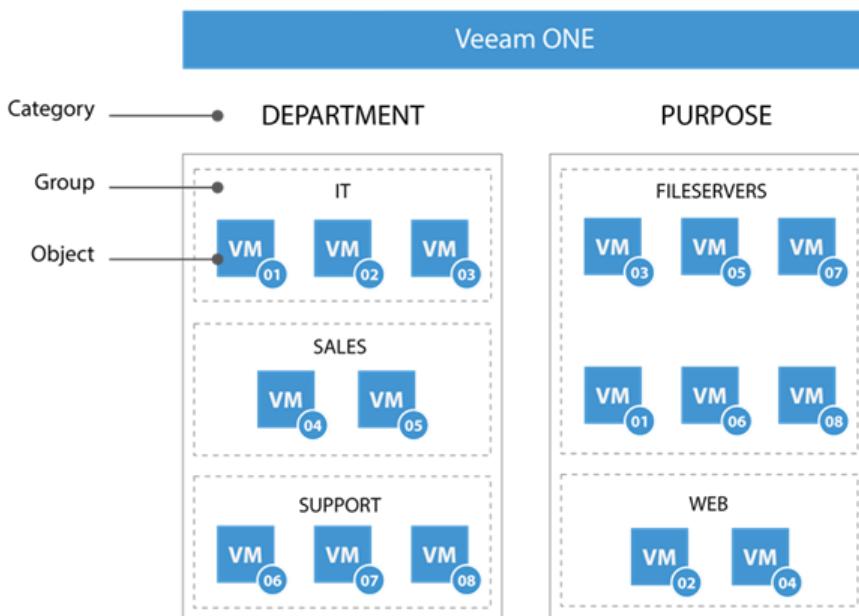
Configuring Categorization Model

To present the virtual infrastructure, Veeam ONE Monitor uses the model that includes categories, groups and objects:

- **Category** is a logical division or a sector of the infrastructure. Each category includes one or more groups.
Categories can be static or dynamic:
 - **Static** categories include a user-defined number of groups. You can manually create groups that Veeam ONE Monitor will populate each time data collection runs.
 - **Dynamic** categories can include one or more groups that Veeam ONE Monitor creates and populates automatically each time data collection runs.
- **Group** is a collection of infrastructure objects that share same characteristics, or match same criteria. You can think of a group as a tag assigned to an object.
Each group includes one or more objects.
- **Objects** are categorized elements of the infrastructure.

In Veeam ONE Monitor you can categorize the following types of objects: clusters, hosts, storage objects, VMs, and computers protected with Veeam Backup Agent for Windows and Veeam Backup Agent for Linux. You can include an object into one or more groups within a category.

The following picture illustrates an example of Veeam ONE Monitor categorization model.



In the example above, the categorization model includes categories *Department* and *Purpose*.

- *Department* category includes groups *IT*, *Sales* and *Support*
- *Purpose* category includes groups *Fileservers* and *Web*

Virtual machines numbered 1-8 are included in groups within both categories.

Predefined Categories

Out of the box, Veeam ONE Monitor comes with a number of predefined categories:

- **Datastore** – dynamically groups VMs by datastore where VM files reside.
- **Location** – dynamically groups by location computers managed by Veeam Backup & Replication.
- **Last Backup Date** – dynamically groups VMs by the age of the latest backup or replica restore point created with Veeam Backup & Replication.
- **SLA** – category with static groups for all types of virtual infrastructure objects. Includes two predefined groups: *Mission Critical* and *Other*.
- **Storage Type** – dynamically groups storage objects by type.
- **VM Location** – dynamically groups by location VMs protected with Veeam Backup & Replication.
- **VMs with Snapshots** – dynamically groups VMs with snapshots by the snapshot age.

You can use predefined categories for your categorization model. If predefined categories are not enough, you can create custom categories and edit predefined categories or import an existing categorization model.

Creating Business View Categories and Groups

To categorize objects into groups automatically, you can use the following methods:

- **Single-Parameter Categorization** – the method that allows you to configure dynamic categories. Veeam ONE Monitor will create groups automatically based on the values of a single property of an object.
- **Multiple-Condition Categorization** – the method that allows you to configure static categories and create groups manually by combining multiple object properties and logical operators.
- **Grouping Expressions** – the method that allows you to configure dynamic categories. Veeam ONE Monitor will create groups automatically based on object properties, operators and methods included into expression.

Configuring Single-Parameter Categorization

Single-parameter categorization is based on object properties specified within a hypervisor and Veeam Backup & Replication server. When you select a property as a categorization condition, Veeam ONE Monitor automatically creates a group for each unique value of the selected property. All objects with the same property value will fall into one group.

Groups created using the single property method have dynamic membership. If the property value changes, the object can be moved into another group or excluded from categorization when the next data collection runs.

For example, you can categorize VMs based on their power state. After data collection, Veeam ONE Monitor will create three groups: **Powered On**, **Powered Off** and **Suspended**. If a VM power state changes, this VM will be moved into another group next time data collection runs.

To categorize objects using a single property:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. In the inventory pane, navigate to the **Business View** node.
3. Launch the **Categorization Wizard**:
 - a. In the information pane, switch to the **Categories** tab.

b. In the Actions pane, click Add Category.

Alternatively, in the Business View tree, right-click the main node and select Add Category.

The screenshot shows the Veeam ONE Monitor interface. The title bar reads "Veeam ONE Monitor Logged in as: Administrator". The main area is titled "Business View" and contains a tree view with nodes like "Business View settings...", "Refresh", "Add Server", "Notifications", "Reports", "Modeling", "Options", "Help", and "Full Screen". A context menu is open over the "Business View" node, with "Add Category..." highlighted. To the right is a table titled "Categorized Objects" showing various categories and their details. On the left, there's a sidebar with icons for Infrastructure View, vCloud Director View, Business View (selected), Data Protection View, and Alarm Management. The bottom status bar says "Ready" and "Service: SRV11 (connected)".

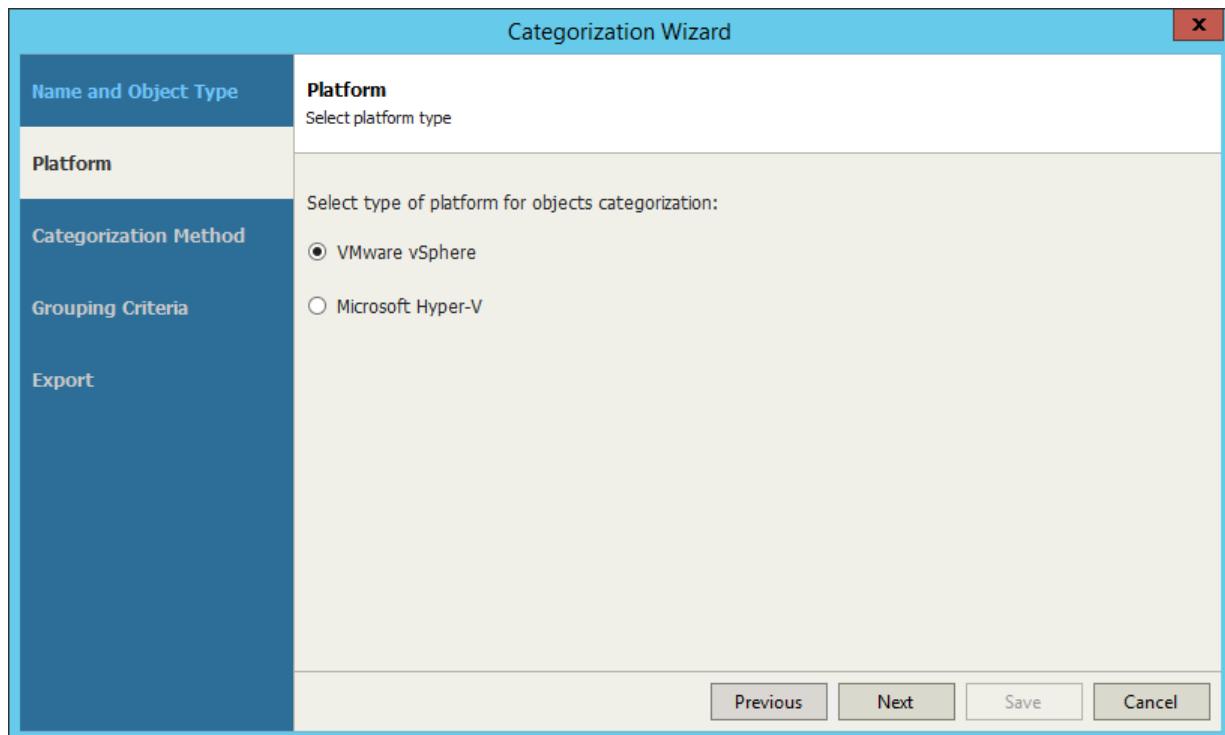
4. At the **Name and Object Type** step of the wizard, enter a category name and select an object type.

You can select the following types of objects: *Virtual Machine, Host, Cluster, Storage, Computer*.

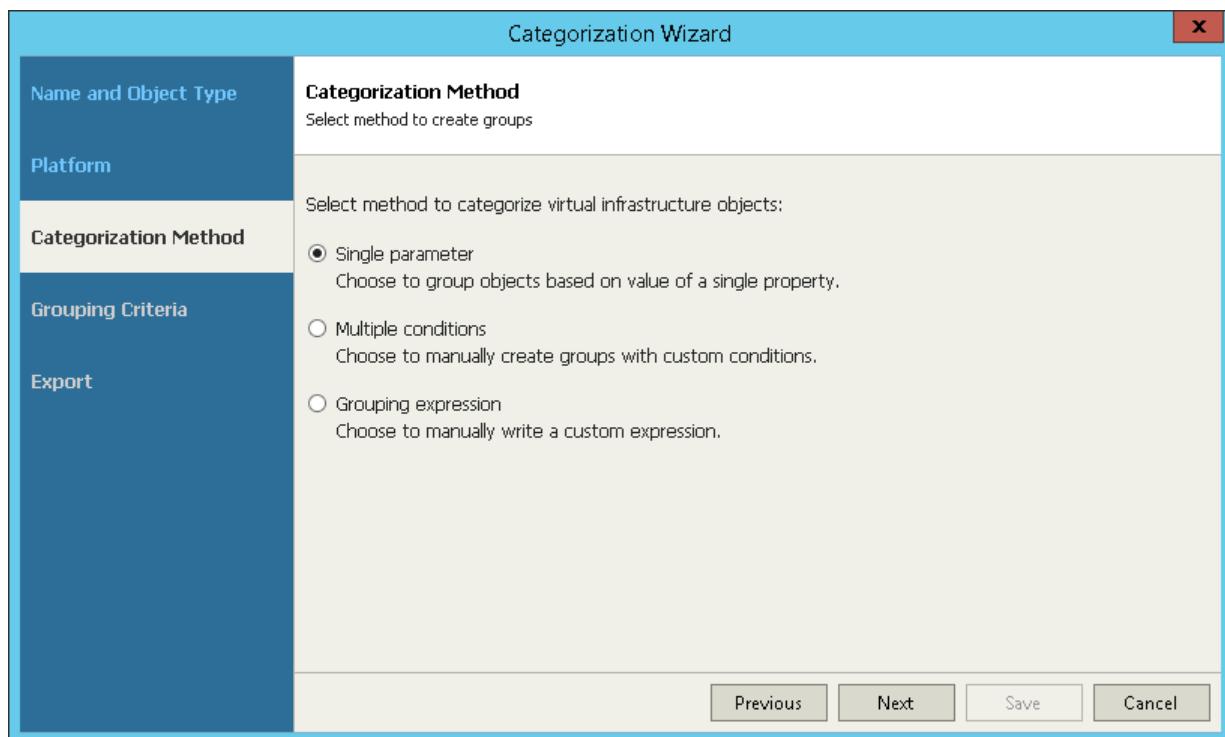
If you select the *Computer* object type, continue with step 6 of this procedure.

The screenshot shows the "Categorization Wizard" window. The left sidebar has sections for "Name and Object Type", "Platform", "Categorization Method", "Grouping Criteria", and "Export". The main panel is titled "Name and Object Type" with the sub-instruction "Provide category name and type of objects to categorize". It contains two input fields: "Name:" with the value "New Category" and "Type:" with a dropdown menu set to "Virtual Machine". At the bottom are buttons for "Previous", "Next", "Save", and "Cancel".

5. At the **Platform** step of the wizard, select the platform for which you want to categorize objects.

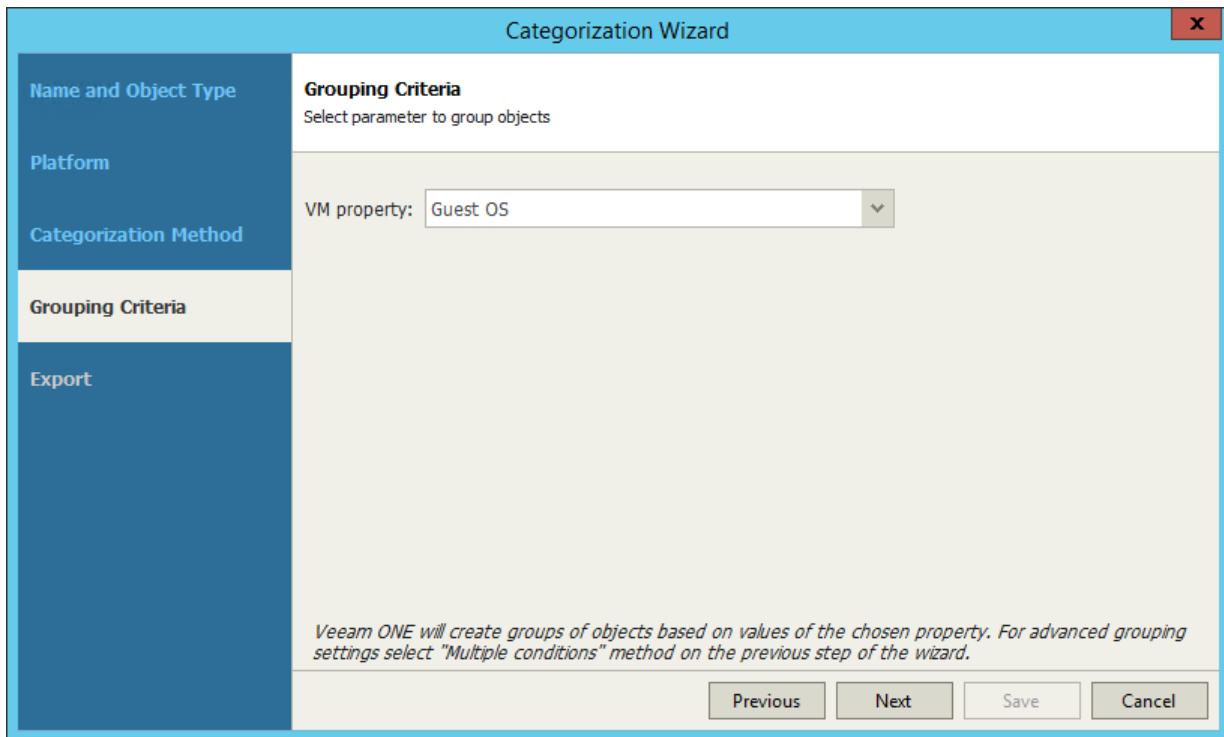


6. At the **Categorization Method** step of the Categorization Wizard, select **Single parameter**.



7. At the **Grouping Criteria** step of the **Categorization Wizard**, select an object property.

If you selected the *Computer* object type, click **Save** to finish working with the wizard.



8. At the **Export** step of the wizard, choose whether you want to export Business View categorization data:

- [For VMware vSphere objects] Select **Create vSphere tags** if you want to display Business View categories and groups in vCenter Server.

Veeam ONE Monitor will export categories as tag categories and groups as tags.

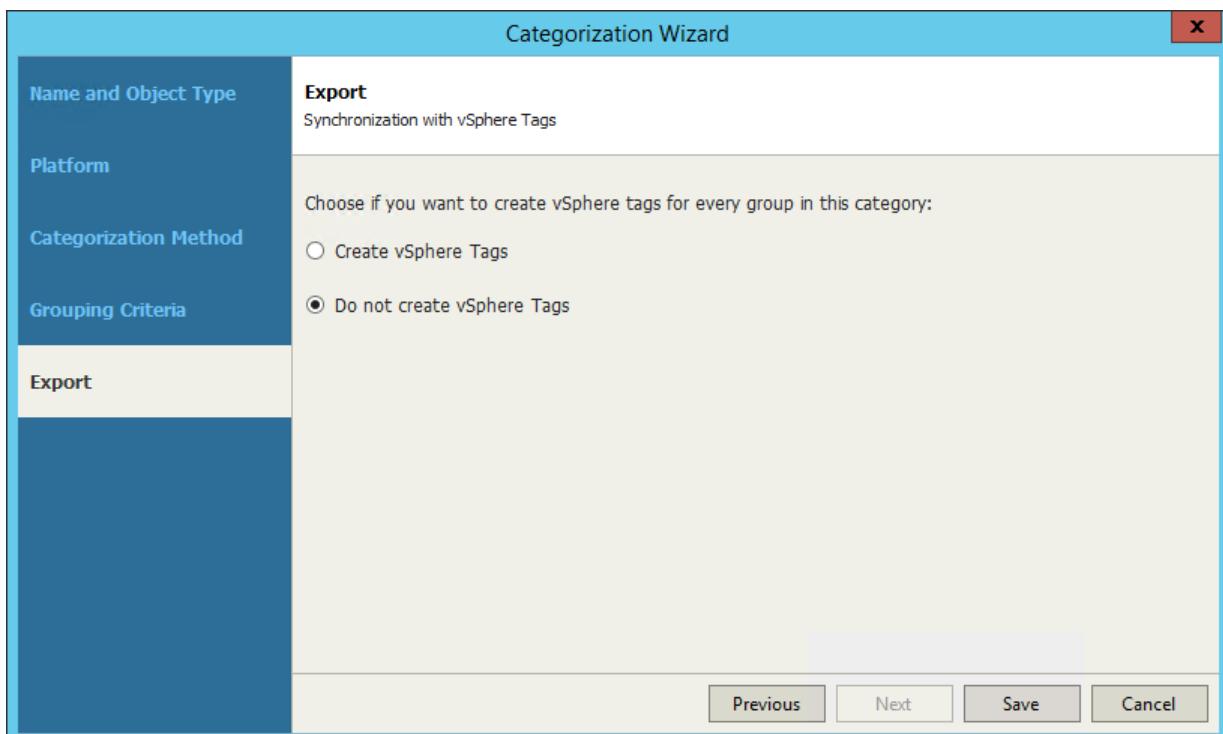
- [For Microsoft Hyper-V objects] Select **Create Hyper-V custom properties** if you want to display Business View categories and groups in System Center Virtual Machine Manager.

Veeam ONE Monitor will export categories as custom properties and groups as property values.

Veeam ONE Monitor will periodically overwrite created tags and custom properties to keep categorization data in synchronization with vCenter Server and System Center Virtual Machine Manager.

NOTE:

This step is not available if you enable import of categorization data from vCenter Server, System Center Virtual Machine Manager. For more information on importing categorization model, see [Selecting Categorization Model](#).



9. Click **Save**.

Veeam ONE Monitor will create an individual group for each unique value of the selected property.

Configuring Multiple-Condition Categorization

Multiple-condition categorization allows you to combine multiple conditions that evaluate object properties for creating groups. This method makes categories highly customizable, as each group within a category can have its own condition. Conditions can be based on different object properties and logical operators. For one group, you can specify one or more conditions and link them with the **AND** and **OR** operators.

Groups created with the multiple-condition method have dynamic membership. If the property value changes, the object can be moved into another group or excluded from categorization after the next data collection.

For example, you can categorize VMs based on their power state, datacenter name and guest OS at the same time. If any of these properties change, the VM will be moved into another group or excluded from categorization.

To create groups using multiple conditions:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. In the inventory pane, navigate to the **Business View** node.
3. Launch the **Categorization Wizard**:
 - a. In the information pane, switch to the **Categories** tab.

b. In the Actions pane, click Add Category.

Alternatively, in the Business View tree, right-click the main node and select *Add Category*.

The screenshot shows the Veeam ONE Monitor interface. The title bar reads "Veeam ONE Monitor Logged in as: Administrator". The main area displays a "Business View" tree on the left with nodes like "Business View settings...", "Refresh", "Add Server", "Notifications", "Reports", "Modeling", "Options", "Help", and "Full Screen". A context menu is open over the "Business View" node, with "Add Category..." highlighted. On the right, there's a "Categories" tab showing a table of categorized objects:

Category Name	Object Type	Platform	Number of Groups	Categorized Objects	Last Modification Date	Modified By
Location	Virtual Machine	VMware	45	608		
	Datastore	Hyper-V	2	8		
	Cluster	VMware	2	0		
	Computer	—	0	0		
Last Backup Date	Virtual Machine	Hyper-V	1	64		
Last Backup Date	Virtual Machine	VMware	2	541		
VMs with Snapshots	Virtual Machine	Hyper-V	4	64		
VMs with Snapshots	Virtual Machine	VMware	5	541		
Datastore	Virtual Machine	Hyper-V	2	64		
SLA	Virtual Machine	Hyper-V	2	0		
SLA	Datastore	VMware	2	0		
SLA	Virtual Machine	VMware	2	0		
VM Location	Virtual Machine	Hyper-V	0	0		
VM Location	Virtual Machine	VMware	0	0		
SLA	Host	Hyper-V	2	0		
SLA	Host	VMware	2	0		
Storage Type	Datastore	Hyper-V	1	4		
Storage Type	Datastore	VMware	2	44		
SLA	Cluster	Hyper-V	2	0		

On the far right, under "Actions", there are links for "Add Category...", "Edit Category...", and "Delete Category".

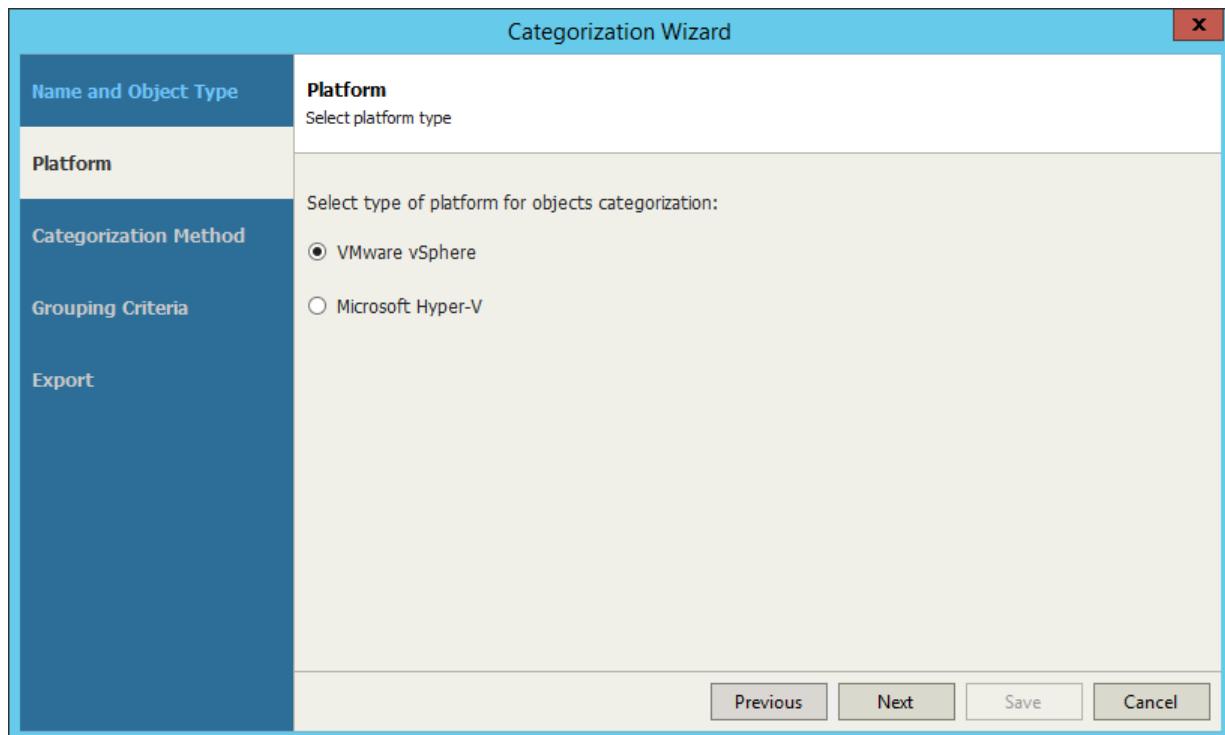
4. At the **Name and Object Type** step of the wizard, enter a category name and select an object type.

You can select the following types of objects: *Virtual Machine, Host, Cluster, Storage, Computer*.

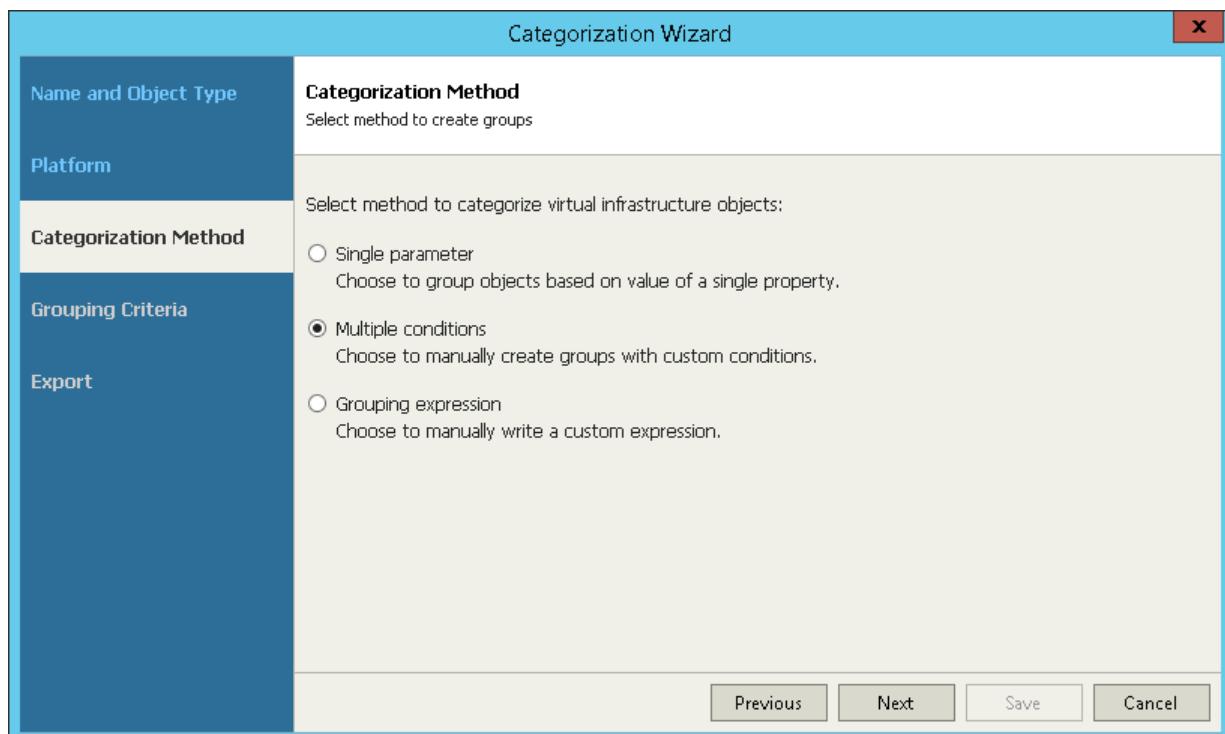
If you select the *Computer* object type, continue with step 6 of this procedure.

The screenshot shows the "Categorization Wizard" window. The left sidebar has sections for "Name and Object Type", "Platform", "Categorization Method", "Grouping Criteria", and "Export". The main panel is titled "Name and Object Type" with the sub-instruction "Provide category name and type of objects to categorize". It contains two input fields: "Name:" with the value "New Category" and "Type:" with a dropdown menu set to "Virtual Machine". At the bottom are buttons for "Previous", "Next", "Save", and "Cancel".

5. At the **Platform** step of the wizard, select the platform for which you want to categorize objects.



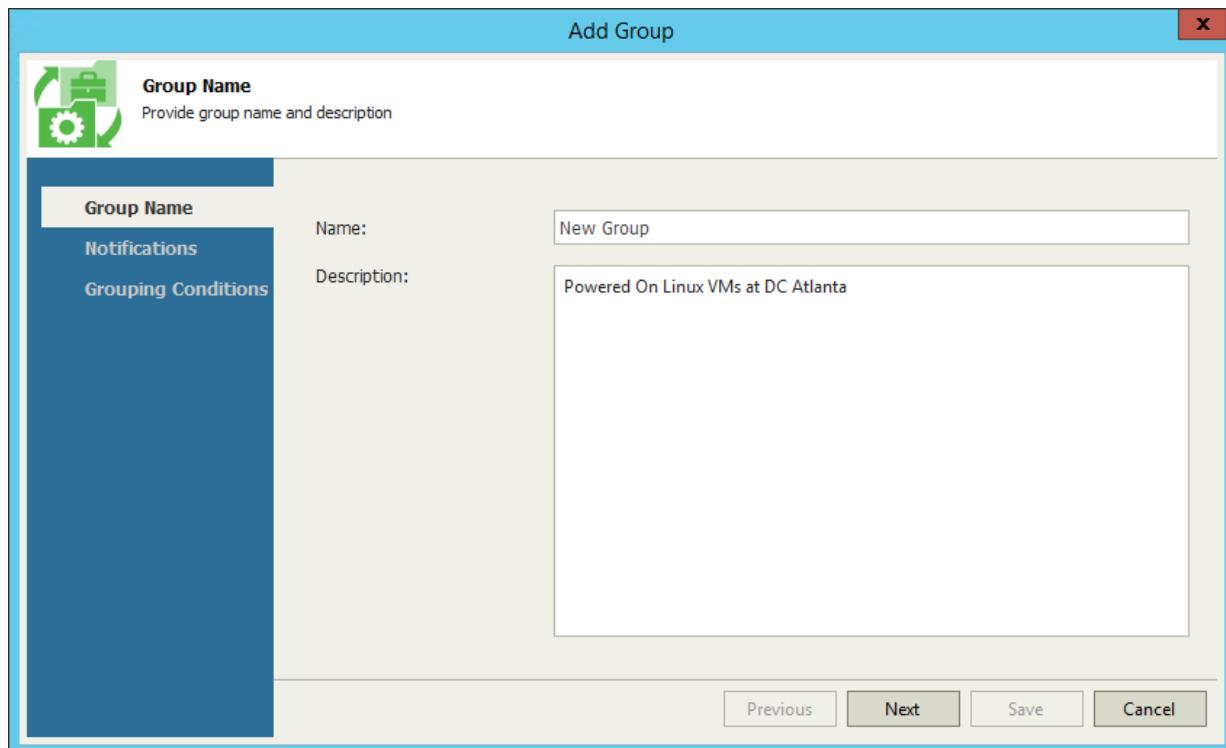
6. At the **Categorization Method** step of the wizard, select **Multiple conditions**.



7. At the **Grouping Criteria** step of the wizard, click **Add** to create groups based on multiple conditions.

The **Add Group** wizard will open.

8. At the **Group Name** step of the wizard, enter a group name and description.



9. At the **Grouping Conditions** step of the Add Group wizard, set up categorization conditions:

- From the **Property** drop-down list, select an object property.

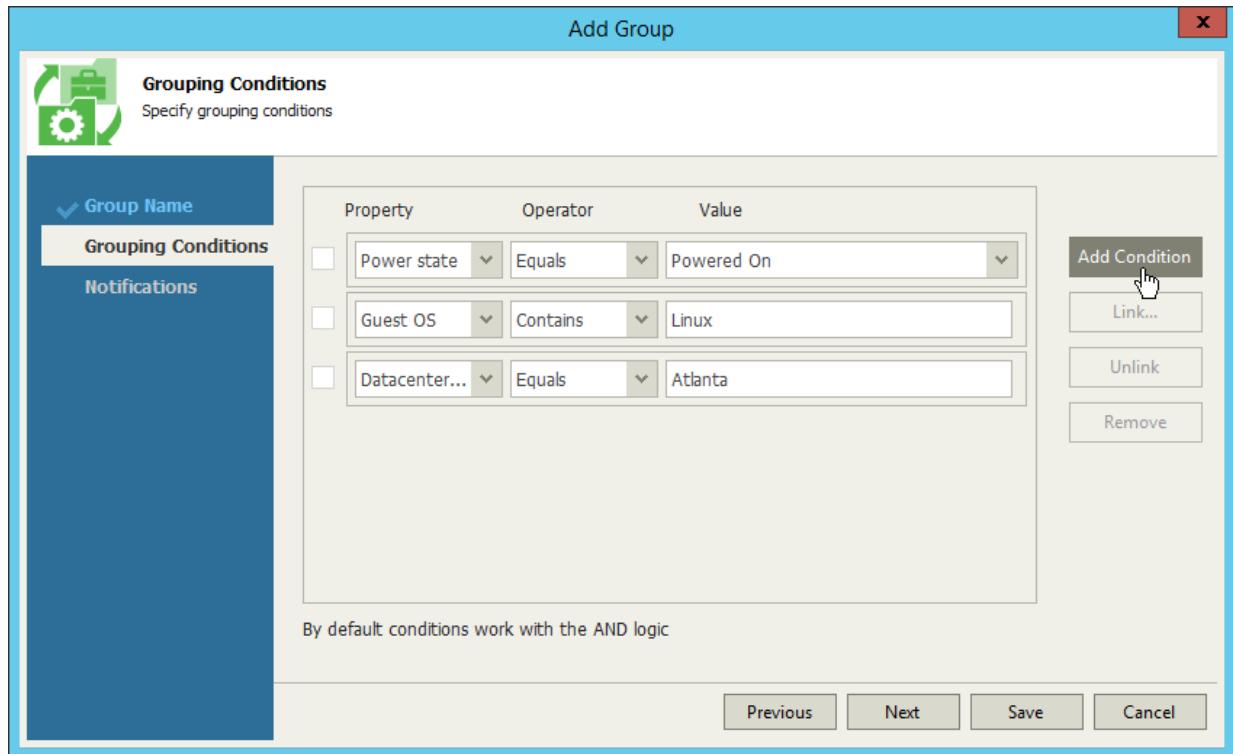
The list contains all object properties that Veeam ONE collects from a hypervisor and Veeam Backup & Replication servers.

- From the **Operator** drop-down list, select a conditional operator.

The list contains the following operators: *Equals*, *Does not equal*, *Starts with*, *Contains*, *Does not contain*.

- In the **Value** field, specify a value that will be checked in the condition.

The condition will be evaluated against discovered objects. To add another condition, click **Add Condition**.



By default, conditions are linked by the **AND** operator. That is, an object falls into a group when all specified conditions are met. You can change this behavior by linking conditions with the **OR** operator. In this case, an object will fall into a group when a condition for any of the linked rules is met.

For example, you can create a group which will include VMs based on their power state, datacenter name and guest OS. If you want the group to include all powered on VMs that reside in datacenter Atlanta or run Linux as their guest OS, you must link these conditions. The second and the third conditions will be linked to each other with the **OR** operator. The first condition will be linked to them with the **AND** operator.

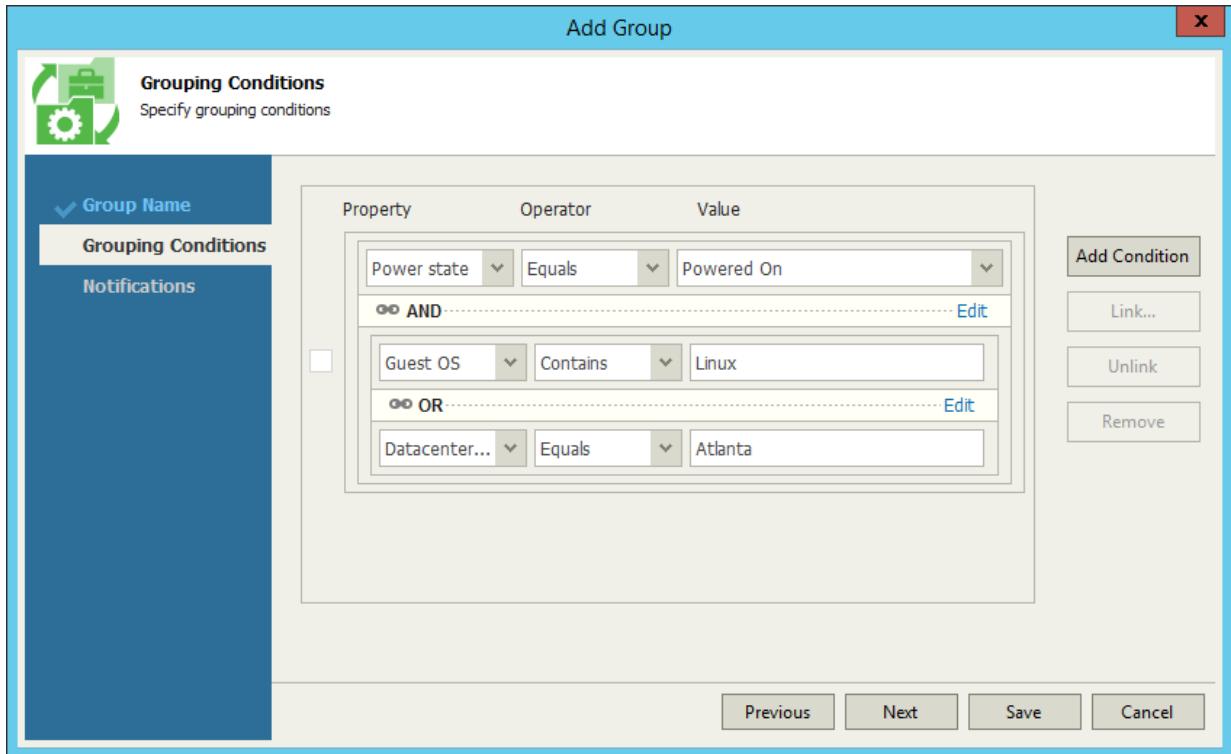
NOTE:

Linking supports 3 levels of nesting.

To link conditions:

- Select check boxes next to the necessary conditions and click **Link**.

- b. In the **Rule condition** window, select a link operator and click **OK**.



10. [Optional] At the **Notifications** step of the wizard, specify notification settings:

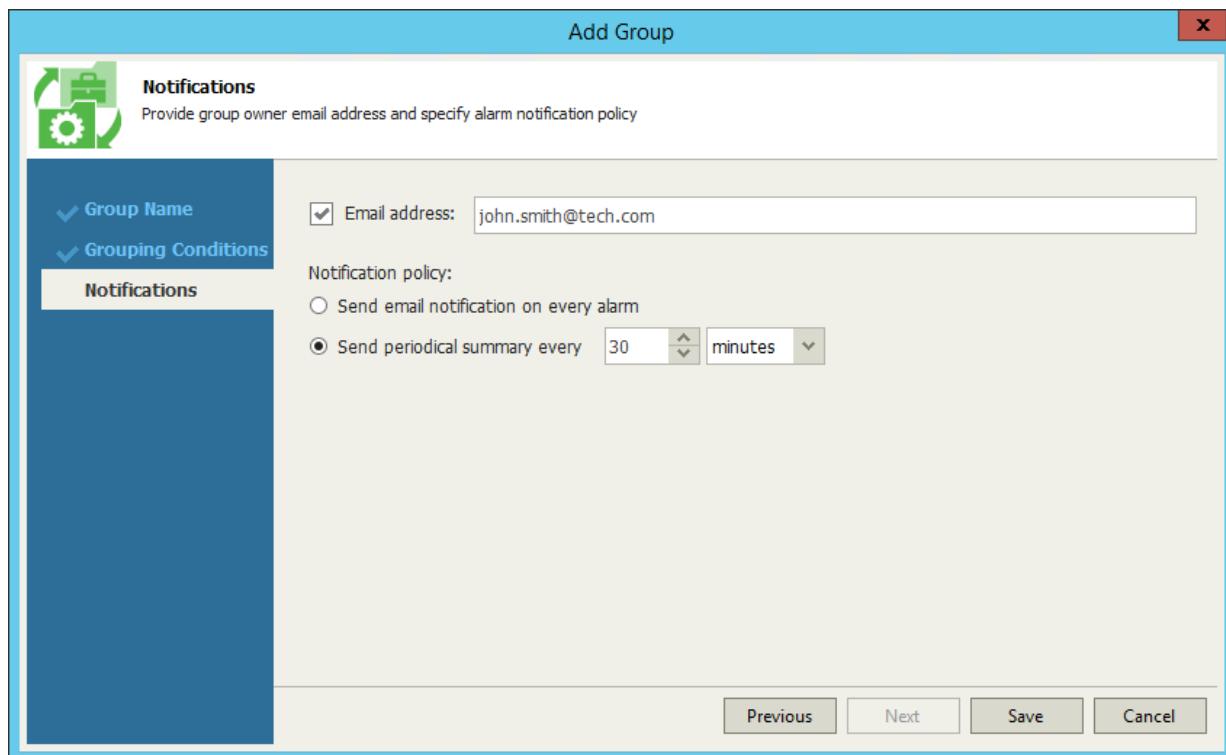
- a. Select the **Email address** check box and specify an email address of a person who will receive notifications about alarms triggered for the objects in a group (group owner).

To receive alarm notifications, enable the **Send email to Business View group owner** option in alarm settings. For more information on configuring alarm notification settings, see section [Specify Alarm Notification Options](#) of the Veeam ONE Working with Alarms Guide.

- b. Choose the notification policy:

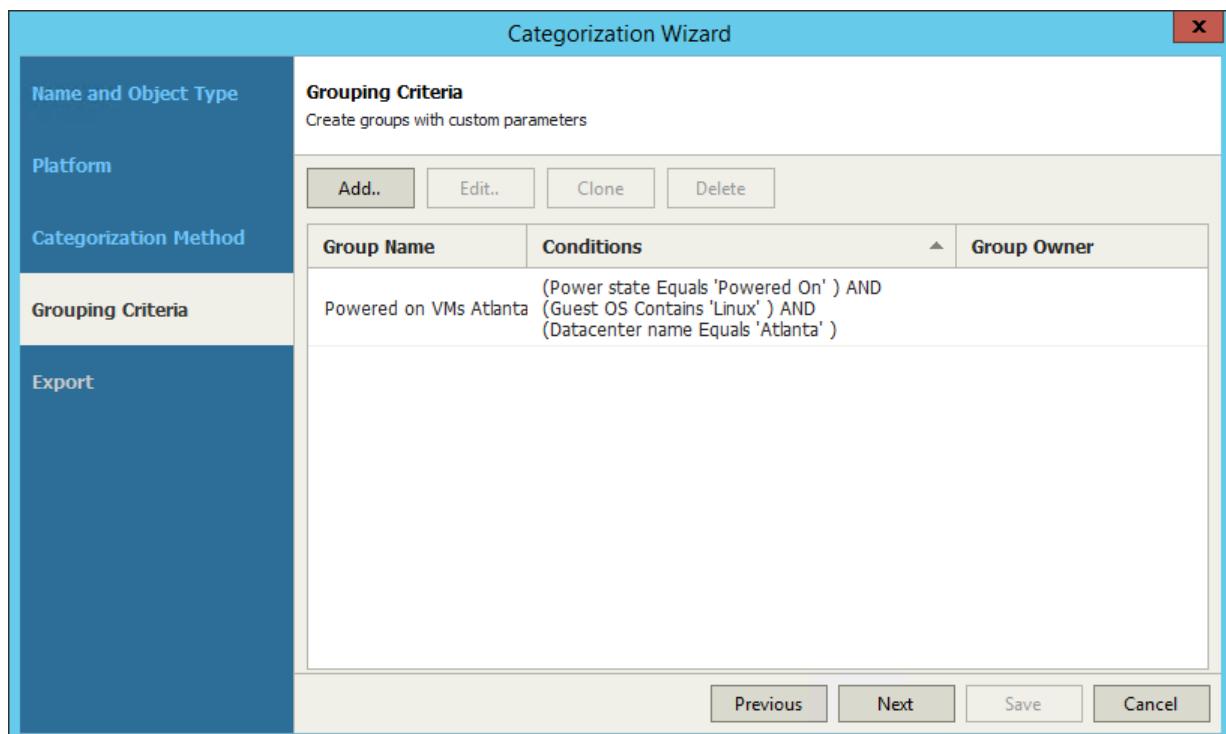
- **Send email notification on every alarm** – select this option if you want to send an email notification every time a new alarm is triggered or the status of an existing alarm changes.

- **Send periodical summary every** – select this option and if you want to accumulate information about alarms and send an email notification once within a specific time interval. You can specify the time interval in minutes or hours.



11. Click **Save** to save a group configuration and close the **Add Group** wizard.

Group settings will appear in the **Categorization Wizard**.



12. Repeat steps **6-10** for each group you want to configure in the category.

If you selected the *Computer* object type, click **Save** to finish working with the wizard.

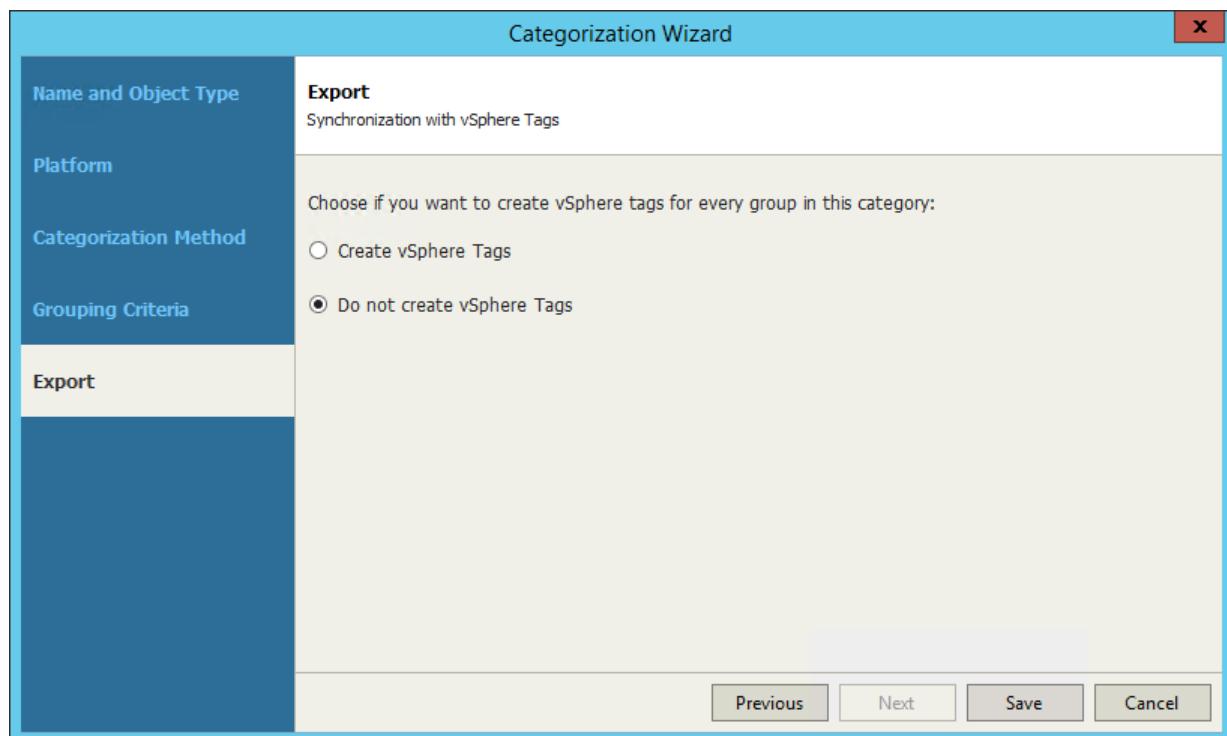
13. At the **Export** step of the wizard, choose whether you want to export Business View categorization data:

- [For VMware vSphere objects] Select **Create vSphere tags** if you want to display Business View categories and groups in vCenter Server.
Veeam ONE Monitor will export categories as tag categories and groups as tags.
- [For Microsoft Hyper-V objects] Select **Create Hyper-V custom properties** if you want to display Business View categories and groups in System Center Virtual Machine Manager.
Veeam ONE Monitor will export categories as custom properties and groups as property values.

Veeam ONE Monitor will periodically overwrite created tags and custom properties to keep categorization data in synchronization with vCenter Server and System Center Virtual Machine Manager.

NOTE:

This step is not available if you enable import of categorization data from vCenter Server, System Center Virtual Machine Manager. For more information on importing categorization model, see [Selecting Categorization Model](#).



14. Click **Save**.

Configuring Categorization Using Grouping Expressions

Grouping expressions are used to find objects that share common properties. When you configure categorization with grouping expression, Veeam ONE Monitor creates a set of groups, and includes objects with matching attributes into these groups.

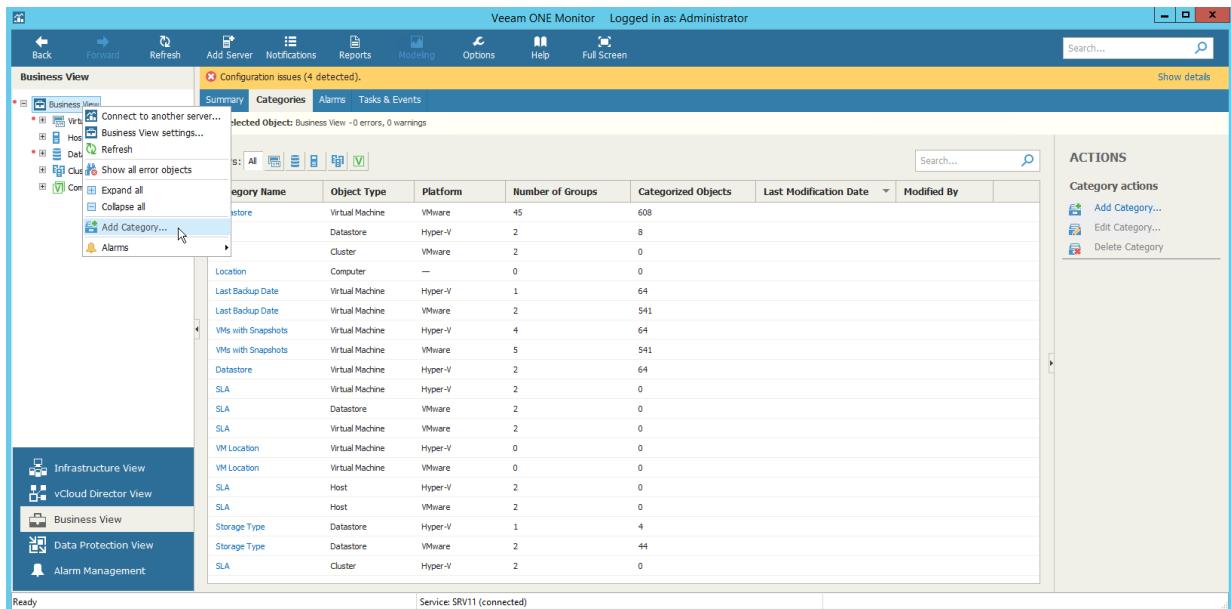
Groups created with grouping expressions have dynamic membership. If the property value changes, the object can be moved into another group or excluded from categorization after the next data collection.

For example, you can create an expression that will divide VMs into groups by the guest OS name. Veeam ONE Monitor will create groups with the names of guest OSes that VMs in your infrastructure run. Each group will include VMs with the same guest OS.

To create groups using expressions:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. In the inventory pane, navigate to the **Business View** node.
3. Launch the **Categorization Wizard**:
 - a. In the information pane, switch to the **Categories** tab.
 - b. In the **Actions** pane, click **Add Category**.

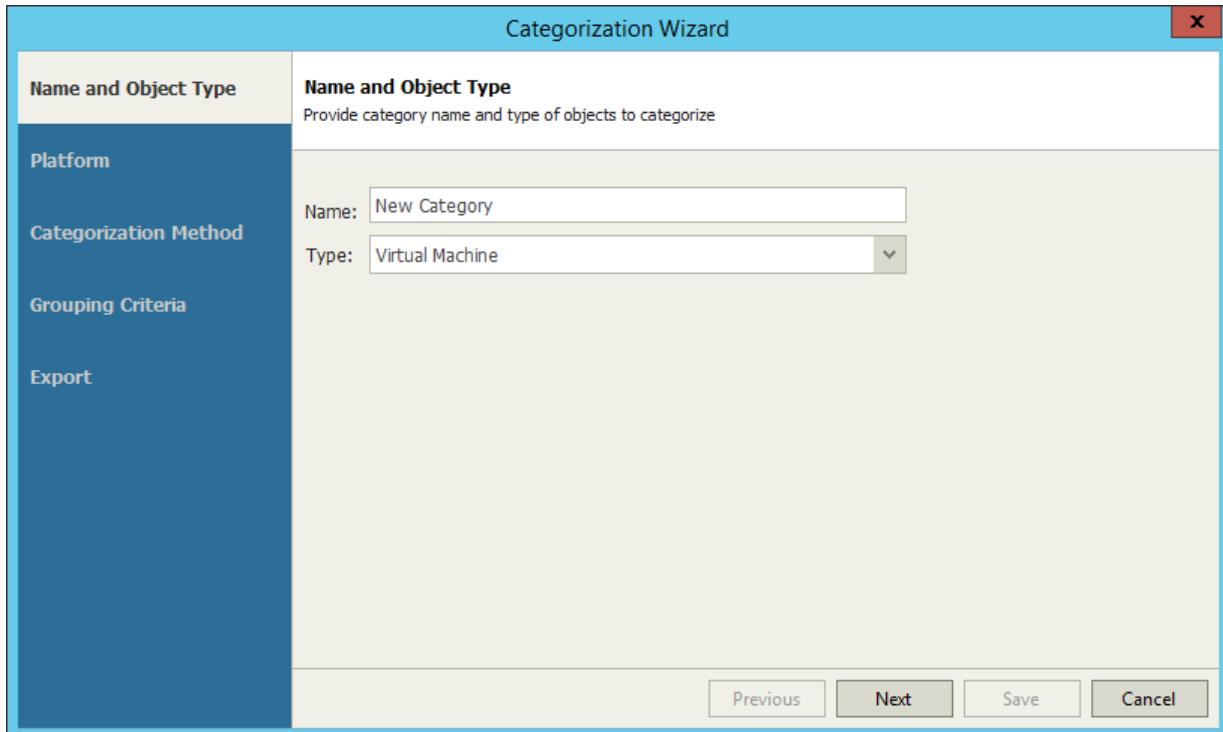
Alternatively, in the **Business View** tree, right-click the main node and select *Add Category*.



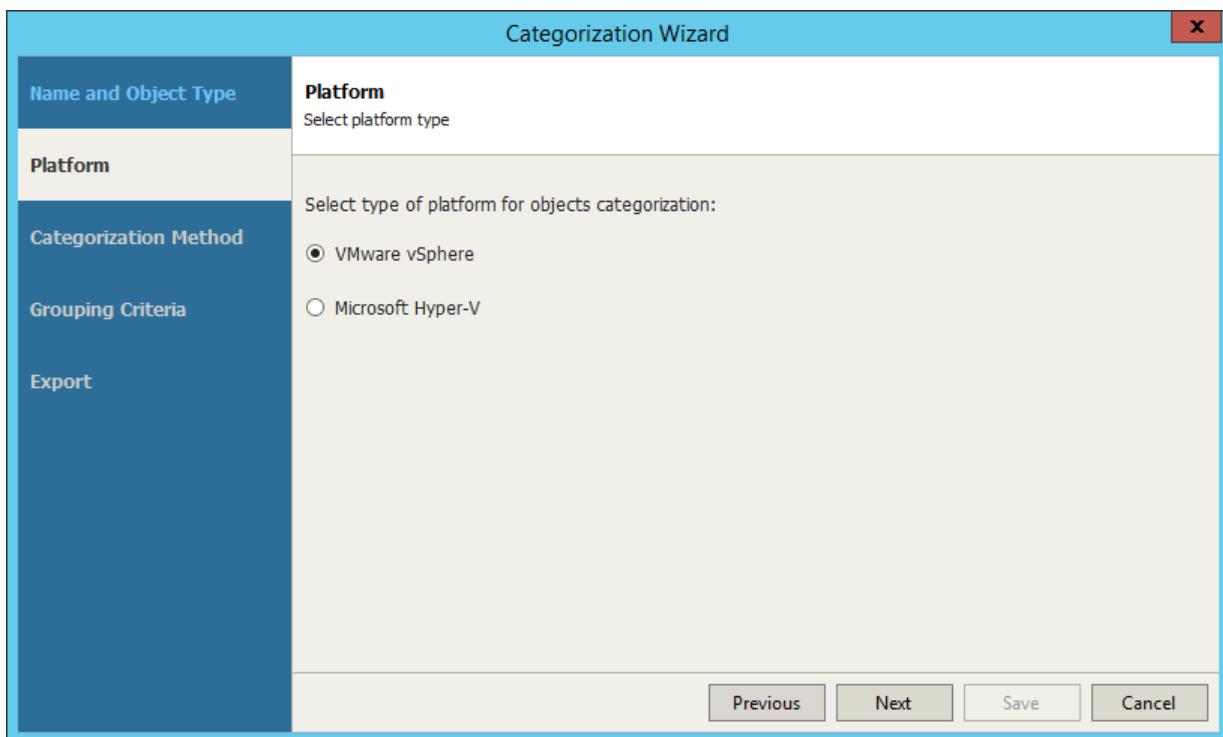
4. At the **Name and Object Type** step, enter category name, select object type and click **Next**.

You can select the following types of objects: *Virtual Machine, Host, Cluster, Storage, Computer*.

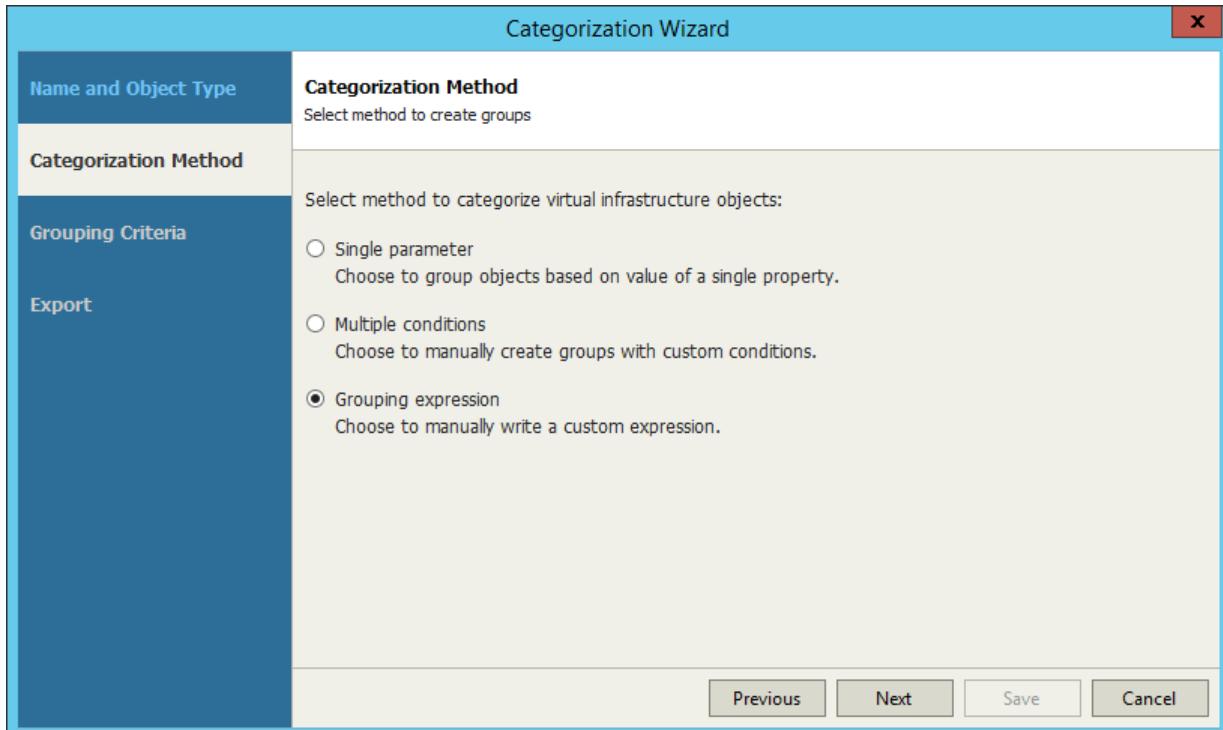
If you select the *Computer* object type, continue with step 6 of this procedure.



5. At the **Platform** step of the wizard, select the platform for which you want to categorize objects.

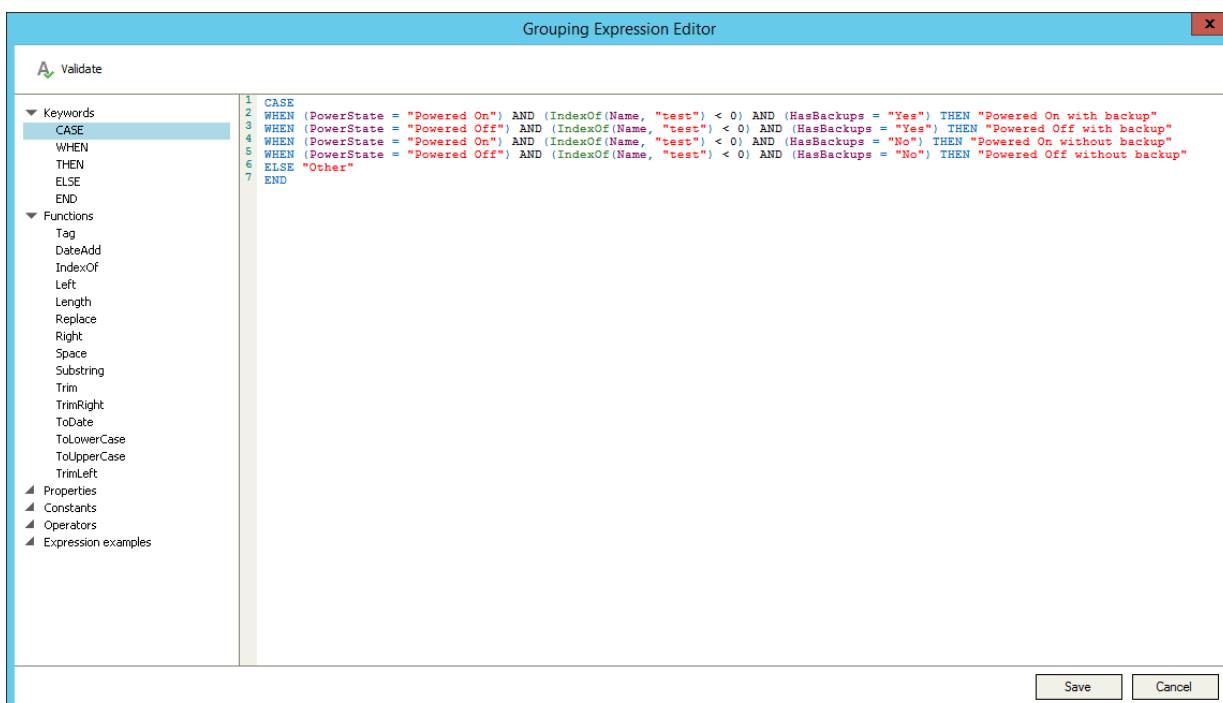


6. At the **Categorization Method** step of the wizard, select **Use grouping expression**.

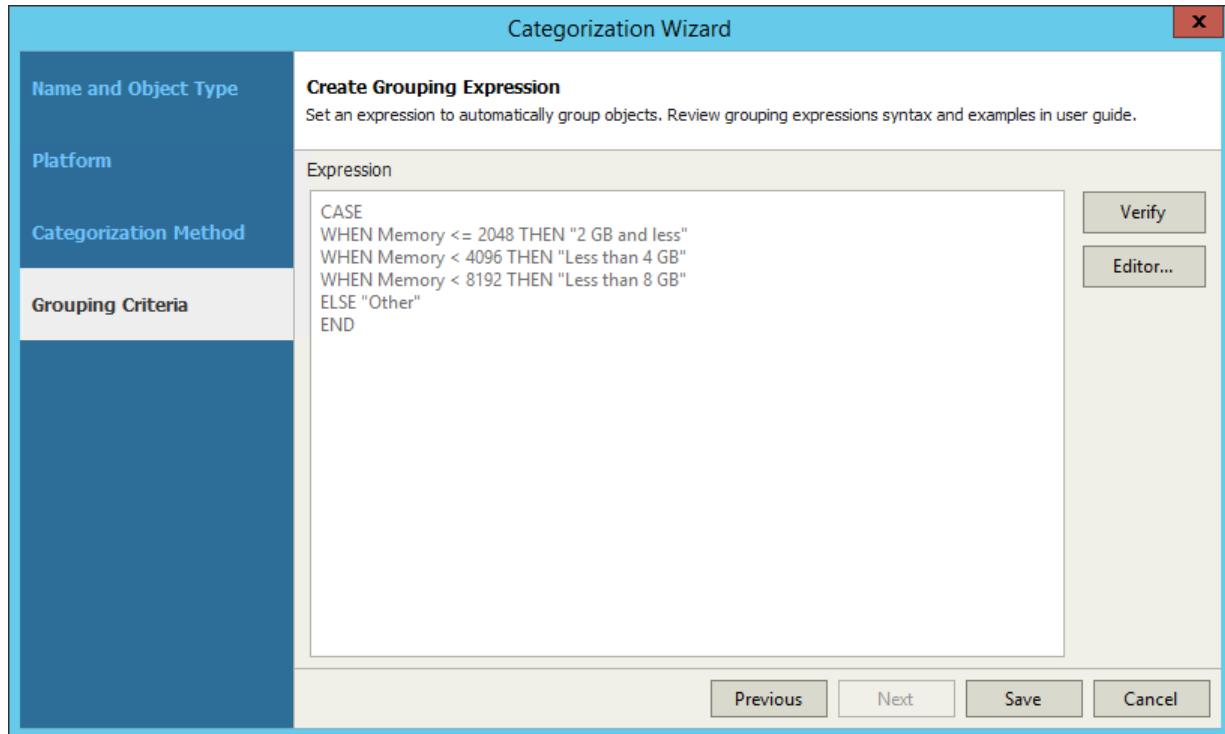


7. At the **Grouping Criteria** step of the wizard, specify an expression that Veeam ONE must use to create groups and distribute infrastructure objects in these groups:

- Click the **Editor** button to open the **Grouping Expression Editor**.
- In the menu on the left, double click an item to add it to the **Expression** field.
- Click **Save** to save the expression and exit the editor.



To check the created script, click the **Verify** button.



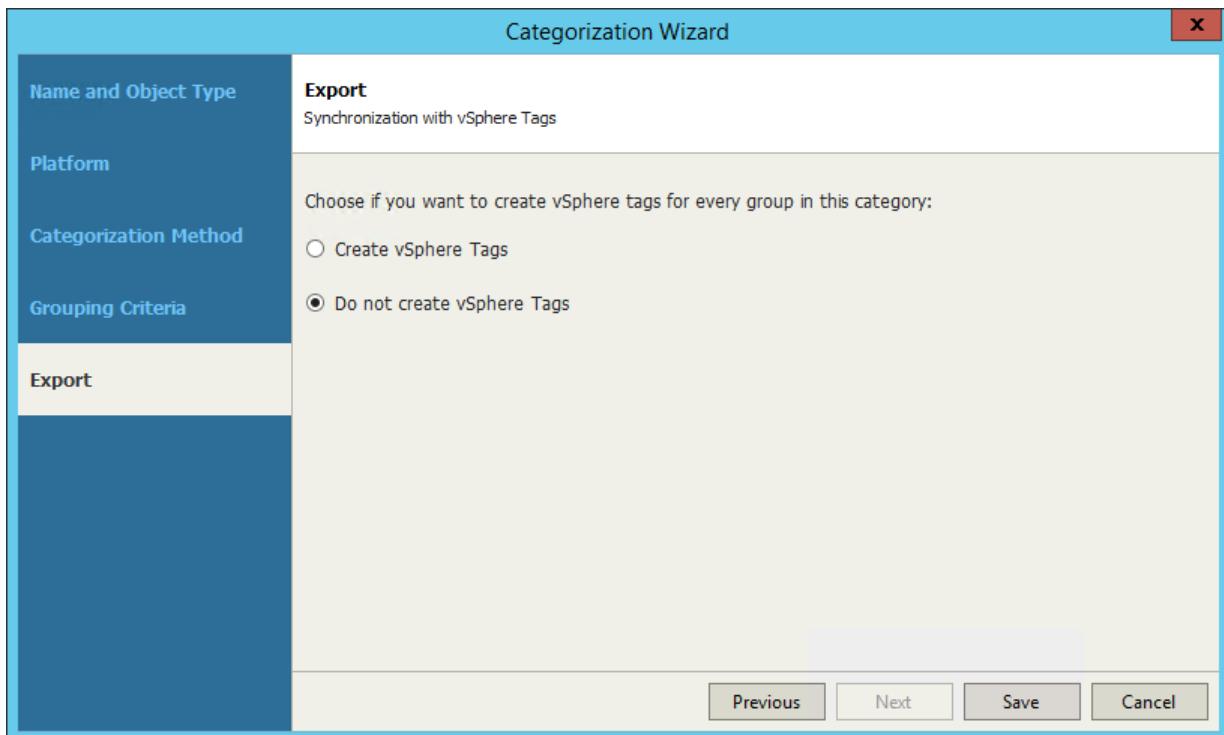
For more information on the syntax of grouping expressions, see [Appendix B. Grouping Expressions Syntax](#).

If you selected the *Computer* object type, click **Save** to finish working with the wizard.

8. At the **Export** step of the wizard, choose whether you want to export Business View categorization data:
 - [For VMware vSphere objects] Select **Create vSphere tags** if you want to display Business View categories and groups in vCenter Server.
Veeam ONE Monitor will export categories as tag categories and groups as tags.
 - [For Microsoft Hyper-V objects] Select **Create Hyper-V custom properties** if you want to display Business View categories and groups in System Center Virtual Machine Manager.
Veeam ONE Monitor will export categories as custom properties and groups as property values.

NOTE:

This step is not available if you enable import of categorization data from vCenter Server, System Center Virtual Machine Manager or a 3rd party application. For more information on importing categorization model, see [Selecting Categorization Model](#).



9. Click **Save**.

Adding Objects to Groups Manually

You can manually add objects to groups in static categories – categories created with multiple-condition method and imported manually from a CSV file. When you map an object to a group, Veeam ONE Monitor adds the **Manual selection** condition to the group configuration. The name of an object acts as condition value. Mapped objects have static group membership, that is, they remain in the group until you manually reset categorization values. For more information on resetting, see [Resetting Categorization Values](#).

TIP:

To add objects to groups within multiple categories in a batch, you can describe these objects and groups in a CSV file and import this file to Veeam ONE Monitor. For more information on importing categorization data from a CSV file, see [Importing and Exporting Using CSV File](#).

Mapping Objects to Groups

To add objects to a group:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. In the inventory pane, navigate to the **Business View** node.
3. In the **Business View** tree, select the necessary object type – Virtual Machines, Hosts, Datastores, Clusters or Computers.
4. Open the tab with the name of the object: *Virtual Machines, Hosts, Datastores, Clusters, Computers*.
5. Select objects that you want to add to a group.

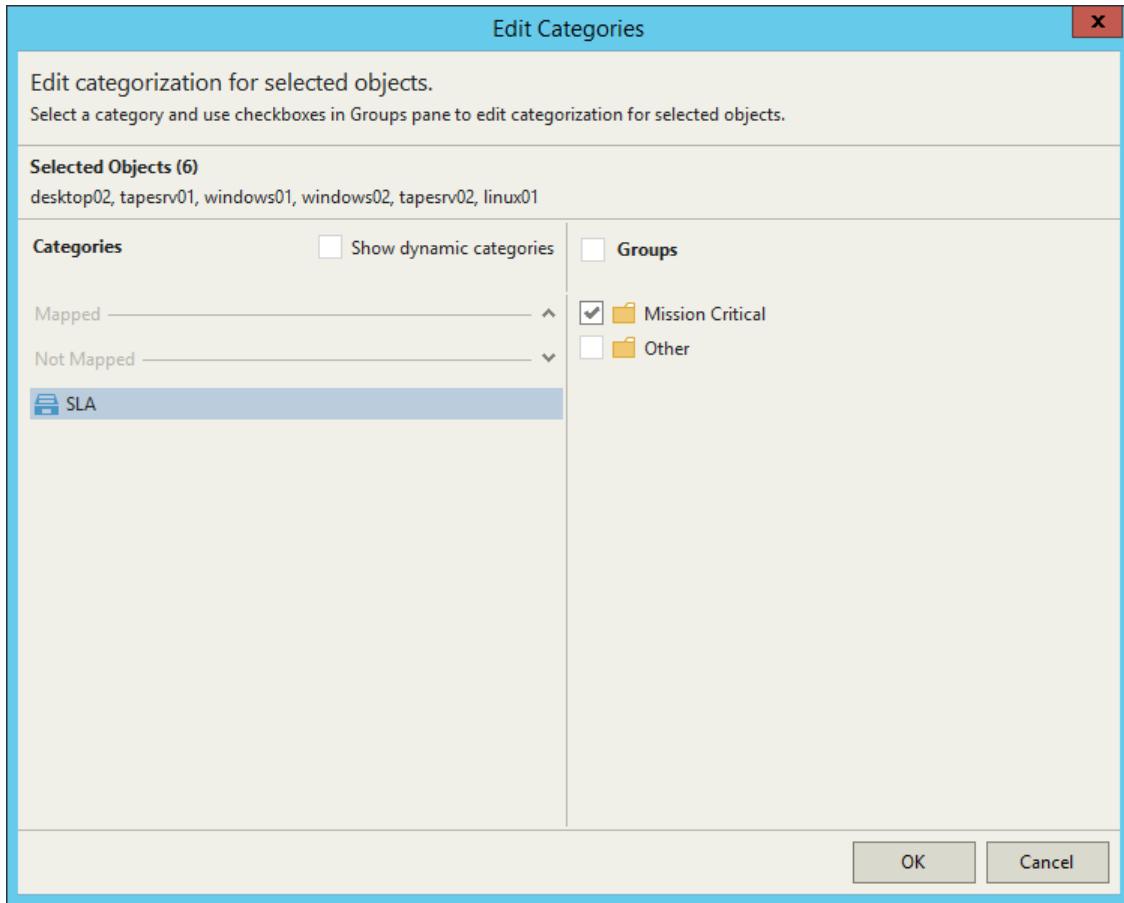
To quickly find necessary objects, use the scope drop-down list and search field at the top of the **Objects** list.

Press and hold the [CTRL] or [SHIFT] key on the keyboard to select multiple objects.

6. In the **Actions** pane, click **Manual categorization**.
Alternatively, right-click the category and select **Manual categorization** from the shortcut menu.
7. In the **Edit Categories** window, select a category and groups to which you want to add objects.

The **Categories** section lists static categories to which you can add objects. To display all categories for the selected object type, select the **Show Dynamic Categories** check box.

8. Click **OK** to save the settings.



Resetting Categorization Values

You can remove objects from categories and groups to which you manually added these objects.

To remove objects from groups:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. In the inventory pane, navigate to the **Business View** node.
3. In the **Business View** tree, select the necessary object type – *Virtual Machines, Hosts, Datastores, Clusters or Computers*.
4. Open the tab with the name of the object: *Virtual Machines, Hosts, Datastores, Clusters, Computers*.
5. Select objects that you want to add to a group.

To quickly find necessary objects, use the scope drop-down list and search field at the top of the **Objects** list.

Press and hold the **[CTRL]** or **[SHIFT]** key on the keyboard to select multiple objects.

6. In the **Actions** pane, click **Reset categorization**.
Alternatively, right-click the category and select **Reset categorization** from the shortcut menu.
7. In the **Reset Manual Categorization** window, click **OK** to confirm object removal.

Importing and Exporting Categorization Data

You can import and export categorization data and synchronize it with other applications. Veeam ONE Monitor offers the following synchronization possibilities:

- [Importing Categorization Model from vCenter Server and System Center Virtual Machine Manager](#)

If you use vCenter Server tags and System Center Virtual Machine Manager custom properties to categorize virtual infrastructure objects on the vCenter Server or Microsoft Hyper-V side, you can import these tags and properties to create Business View groups in Veeam ONE Monitor. Each time data collection runs, tag categories and custom properties are imported as Business View categories, tags and property values are assigned to groups within these categories.

- [Importing and Exporting Using CSV File](#)

You can synchronize Business View categorization data with categorization data from 3rd party software. In Veeam ONE Monitor, you can import categorization data from and export categorization data to a CSV file that acts as a medium between the two systems.

Importing Categorization Model from vCenter Server and System Center Virtual Machine Manager

You can import categorization model from vCenter Server and System Center Virtual Machine Manager.

When you enable synchronization of categorization data from virtual infrastructure servers, Veeam ONE Monitor imports tags and custom properties and creates categories and groups according to the values of imported tags and properties. Every time data collection runs, Veeam ONE Monitor overwrites created categories and groups to keep categorization data in synchronization with vCenter Server and System Center Virtual Machine Manager.

NOTE:

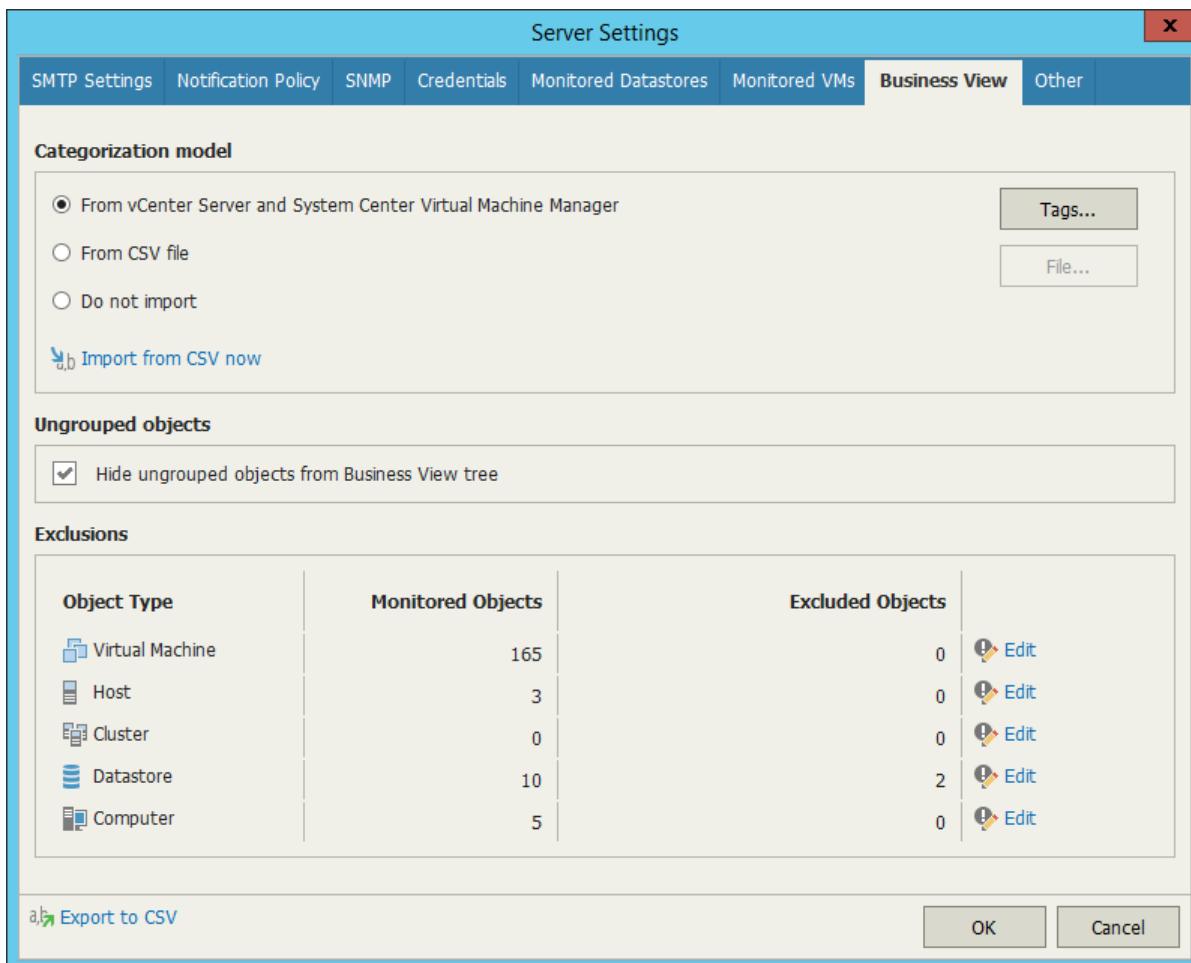
Consider the following:

- Categories imported from vCenter Server and System Center Virtual Machine Manager are read-only, you cannot edit or delete them. To remove such categories from Business View tree, disable the option in Server Settings. For more information on Business View Server Settings, see [Business View](#).
- If Veeam ONE Monitor detects tags and custom properties with names that are already assigned to categories in Business View, it will exclude such tags and properties from synchronization.
- While in categorization model imported from vCenter Server and System Center Virtual Machine Manager, if you create a new category, you will not be able to export it to tags.

To import tags and custom properties:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.

4. In the **Categorization model** section, select **From vCenter Server and System Center Virtual Machine Manager**.

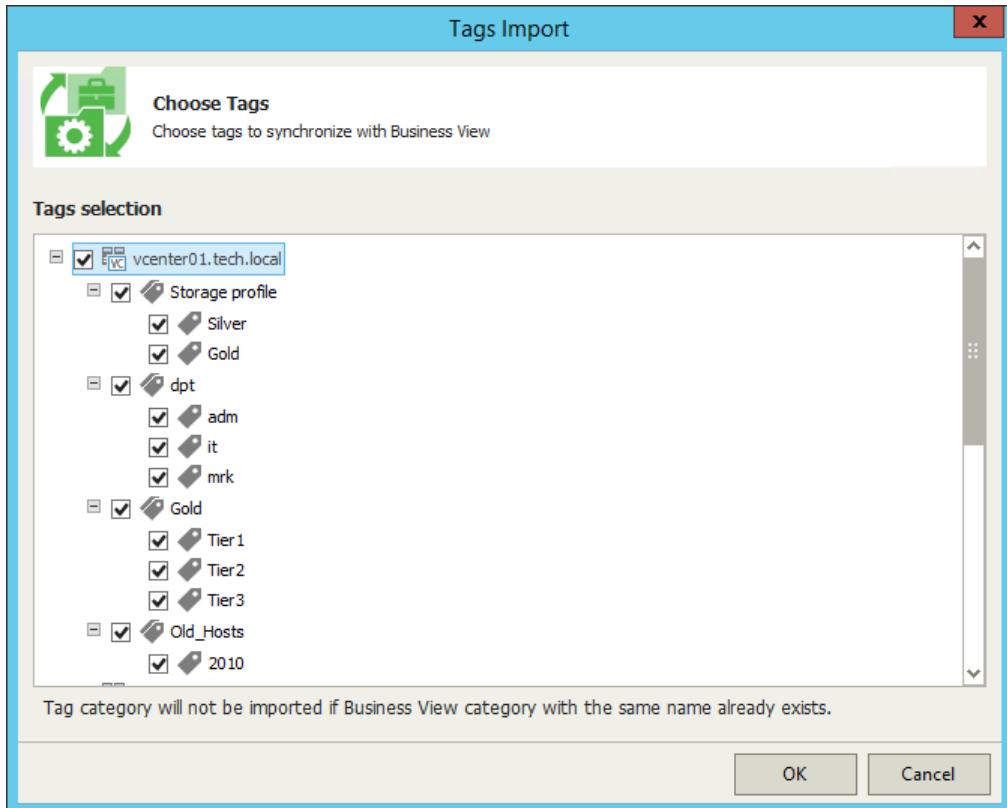


By default, Veeam ONE Monitor imports all tags and custom properties available on the vCenter Server and System Center Virtual Machine Manager side.

To select which tags and properties to import:

- In the **Categorization model** section, click the **Tags** button.

- b. Clear the check boxes next to tags that you want to exclude from import.



- c. Click **OK** to save settings.

5. Click **OK** to close the **Server Settings** window.

Veeam ONE Monitor will import selected vCenter Server tags and System Center Virtual Machine Manager properties to create Business View categories and groups.

Importing and Exporting Using CSV File

In Veeam ONE Monitor, you can import and export categorization model using a CSV file.

Importing Categorization Data Manually

If you already categorized the virtual infrastructure objects outside Veeam ONE Monitor, you can describe categorization model using a CSV file and then import this file to Veeam ONE Monitor.

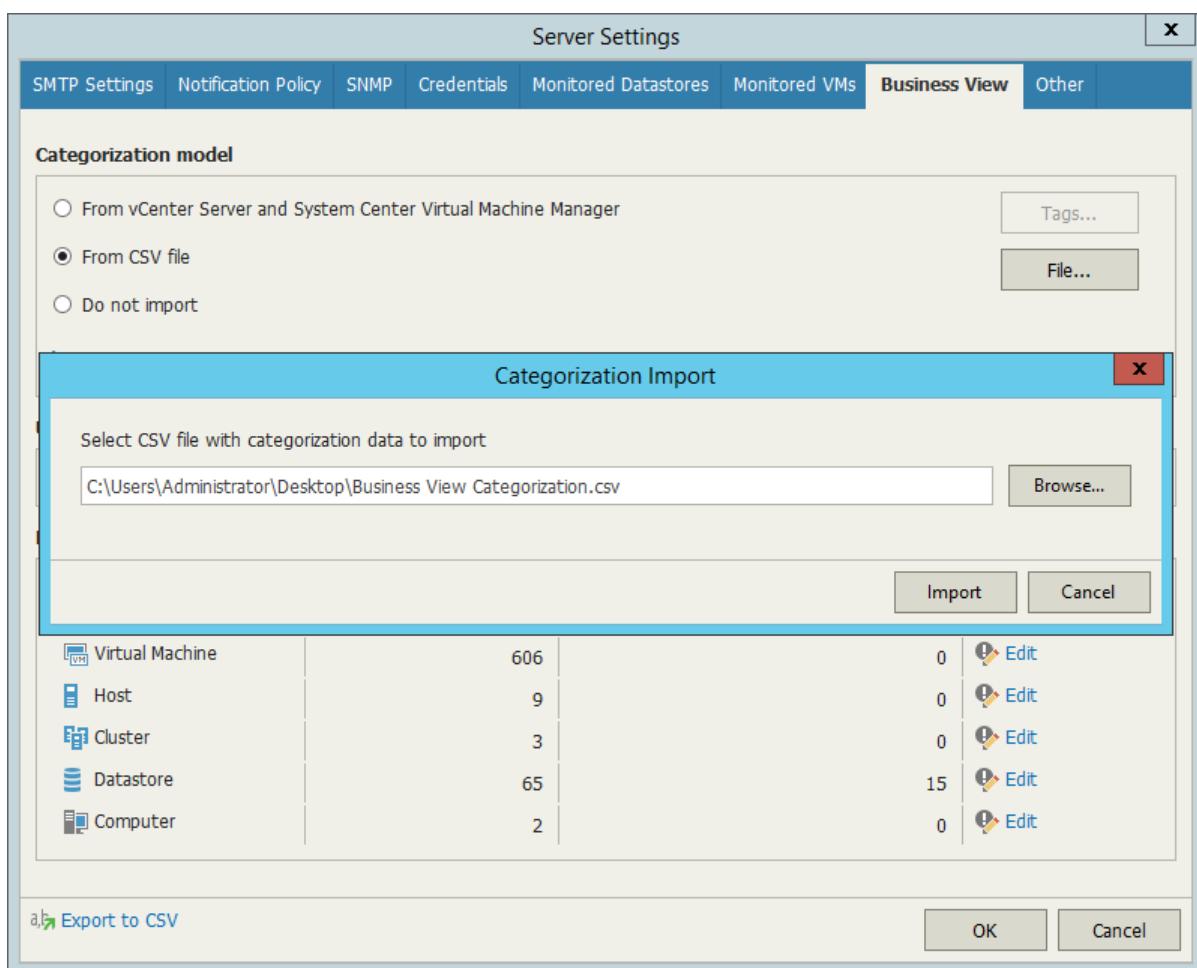
When you import a CSV file manually, Veeam ONE Monitor creates categories and groups specified in the file and maps objects to these groups. If Veeam ONE Monitor detects in the imported CSV file categories and groups that already exist in Business View, it will map objects specified in the CSV file to existing groups. Imported objects have static membership, that is, they remain in the group until you manually reset categorization values. For more information on manual mapping and resetting categorization values, see [Adding Objects to Groups Manually](#).

NOTE:

To make sure that Veeam ONE Monitor will process the CSV file without errors, check the file structure. For more information on CSV file structure, see [CSV File Structure](#).

To import categorization data from a CSV file:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. In the **Categorization model** section, click the **Import form CSV now** link.
5. In the **Categorization File** window, specify the path to the CSV file with the categorization data you want to import.
6. Click **Import**.



Importing Categorization Data Automatically

You can synchronize categorization data between Veeam ONE Monitor and a 3rd party application every time data collection runs. To do this, you can specify a path to a CSV file with the categorization data exported from a 3rd party application. Veeam ONE Monitor will import data from this file during every data collection session.

Additionally, you can specify a path to a script that must be triggered before data from the CSV file is imported. This can be a script that creates the CSV file based on data from a 3rd party application, or updates the file. For more information on structuring the file, see [CSV File Structure](#).

NOTE:

If Veeam ONE Monitor detects in the specified CSV file categories that already exist in Business View, it will exclude such categories from synchronization.

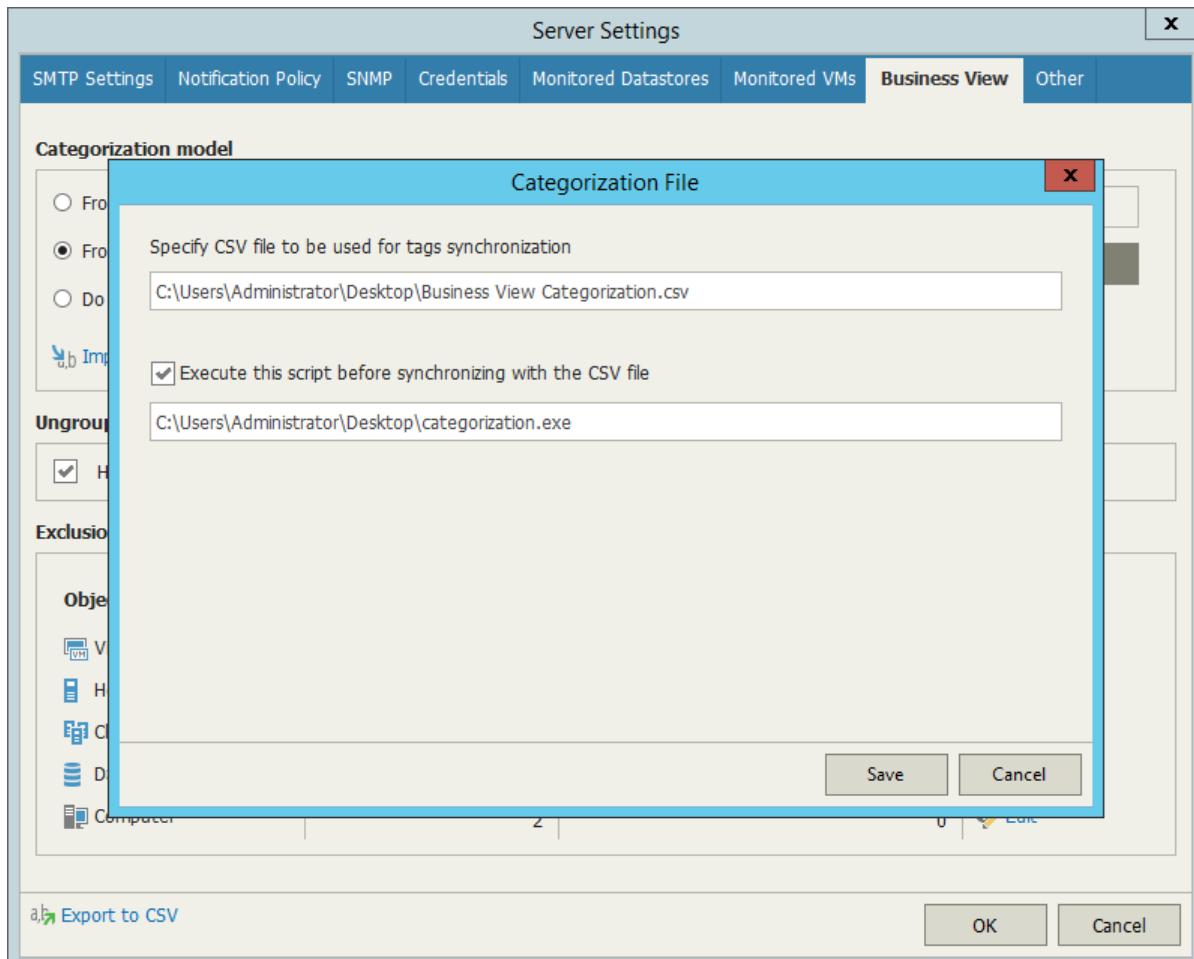
To configure periodic synchronization of categorization data between Veeam ONE Monitor and a 3rd party application:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. In the **Categorization model** section, select **From CSV file** and click the **File** button.
5. In the **Categorization File** window, specify the path to the CSV file with the categorization data you want to synchronize.
6. If you want to trigger a custom script before data synchronization, select the **Execute this script before synchronizing with a CSV file** check box and specify a path to the script file.

NOTE:

The CSV and script files must reside in a folder that is accessible by *Veeam ONE Reporter Server* service. The account under which the service runs must have read permissions on the files.

7. Click **Save**.

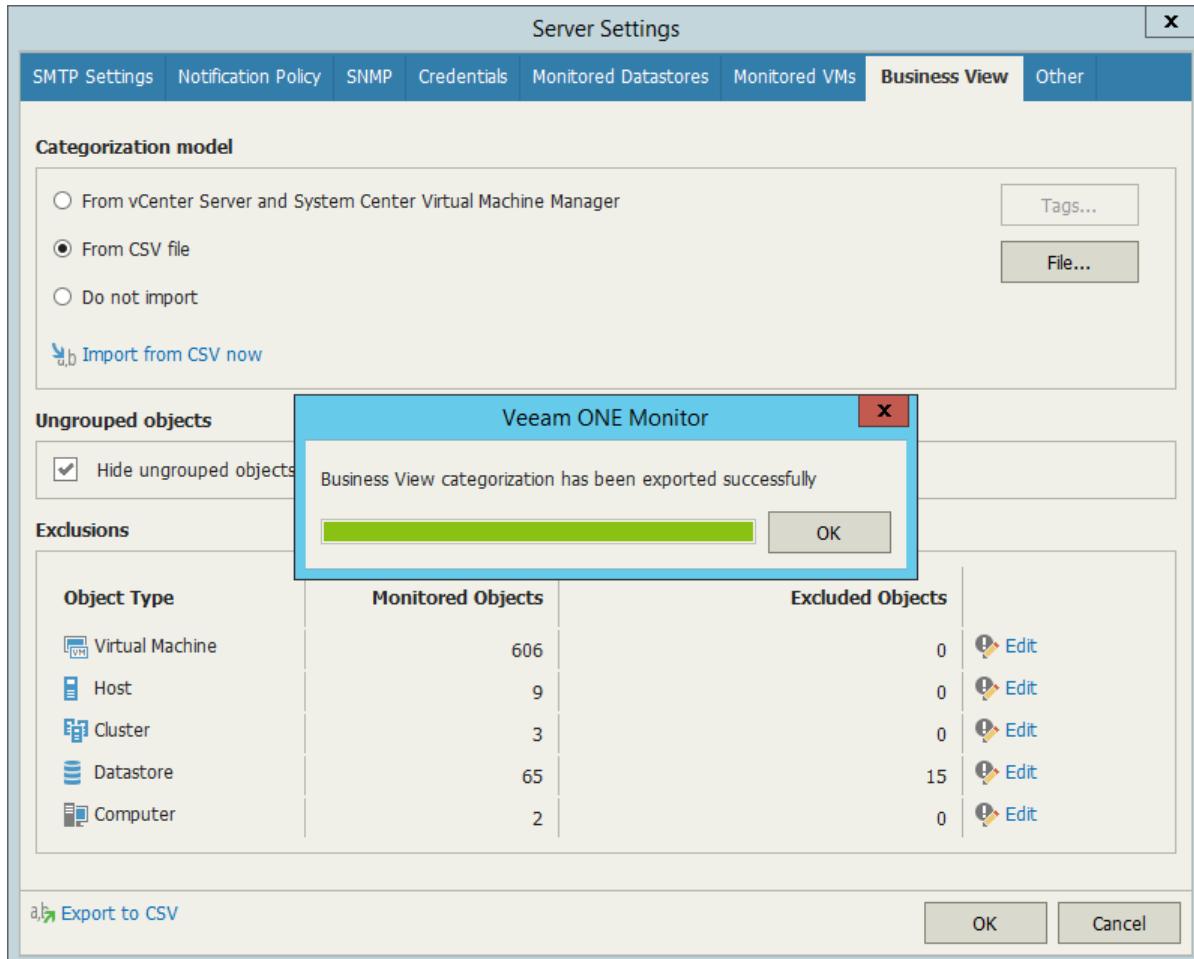


Exporting Categorization Data

To export Business View categorization data to a CSV file:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. On the toolbar, click **Options > Server Settings**.
Alternatively, press [CTRL + S] on the keyboard.
3. In the **Server Settings** window, open the **Business View** tab.
4. At the bottom of the window, click the **Export to CSV** link, specify the location where the file must be saved and click **Save**.

- In the **Veeam ONE Monitor** window, click **OK** to acknowledge export results.



CSV File Structure

You can create a CSV file with categorization data from scratch. Every new record (row) in the file must describe an infrastructure object and its categorization data.

The following columns are mandatory for every record:

- Server** – name of the managed virtual infrastructure or backup server to which object belongs.
- ObjectType** – type of object (possible values are *VirtualMachine*, *HostSystem*, *Storage*, *ClusterComputerResource*, *HvCluster*, *HvCsvDisk*, *HvHost*, *HvPhysicalDisk*, *HvVirtualMachine*, *VeeamBpAgent*, *SMBShare*).
- MoRef** – reference number of the object (for VMware vSphere), UUID or ID of the object (for Microsoft Hyper-V).

Other columns in the CSV file must be named as Business View categories. Category fields accept the following types of values:

- Name of a group within the category to which an infrastructure object belongs
- Empty field, if the object does not belong to any group within the category
- Excluded*, if the object must be excluded from categorization

The following table shown as example of a CSV file for VMware vSphere VMs.

Server	ObjectType	MoRef	Category1
server.local	VirtualMachine	vm-01	Group1
server.local	VirtualMachine	vm-02	Excluded

Editing Business View Categories

You can edit Business View categories created in Veeam ONE Monitor as well as predefined categories and categories imported manually from a CSV file.

To edit a category:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. In the inventory pane, navigate to the **Business View** node.

3. Open the **Categories** tab.

4. Select a category that you want to edit.

To quickly find the necessary category, use filters and the search field at the top of the **Categories** list.

5. In the **Actions** pane, click **Edit Category**.

Alternatively, right-click the category and select **Edit Category** from the shortcut menu.

6. Change the required category settings.

For more information on category settings, see [Creating Business View Categories](#).

Deleting Business View Categories

You can delete Business View categories created in Veeam ONE Monitor as well as predefined categories and categories imported manually from a CSV file. When you delete a category, objects from this category remain in your infrastructure.

To delete a category:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

2. In the inventory pane, navigate to the **Business View** node.

3. Open the **Categories** tab.

4. Select a category that you want to delete.

To quickly find the necessary category, use filters and the search field at the top of the **Categories** list.

5. In the **Actions** pane, click **Delete Category**.

Alternatively, right-click the category and select **Delete Category** from the shortcut menu.

Business View Monitoring

Veeam ONE Monitor allows you to monitor infrastructure presented from the business perspective – that is, based on Business View categories and groups of VMs, hosts, datastores, clusters and computers.

With Veeam ONE Monitor, you can:

- Monitor the overall state of the categorized infrastructure
- View triggered alarms
- View objects included in categories and groups
- Work with performance charts
- View the list of events

Business View Summary Dashboards

Veeam ONE Monitor comes with a set of summary dashboards for business view groups that include infrastructure objects. These dashboards allow you to:

- Review the summary details for all VMs, hosts, datastores, clusters, and computers in custom groups
- View latest alarms
- Troubleshoot issues by drilling down to specific objects in groups

To access a summary dashboard for a virtual infrastructure object or virtual infrastructure segment:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Business View**.
3. In the inventory pane, select the necessary node.
4. Open the **Summary** tab.

Business View Summary

The Business View summary dashboard presents the health status overview for objects in all available Business View groups.

Status	Time	Source	Name
Warning	6:07:10 PM	srv02	Latest snapshot age
Warning	6:07:10 PM	srv02	Too many snapshots on the VM
Error	6:07:10 PM	srv02	Latest snapshot size
Warning	6:07:10 PM	srv02	VM with no backups
Warning	6:07:10 PM	srv06	Latest snapshot age
Warning	6:07:10 PM	srv06	VM with no backups
Warning	6:07:10 PM	srv34	VM with no backups
Warning	6:07:10 PM	srv34	Guest disk space
Warning	6:07:10 PM	srv36	Latest snapshot age
Warning	6:07:10 PM	gateway02	Latest snapshot age
Error	6:07:10 PM	gateway02	Latest snapshot size
Warning	6:07:10 PM	srv04	Latest snapshot age
Warning	6:07:10 PM	srv04	VM with no backups
Warning	6:07:10 PM	srv07	Latest snapshot age
Warning	6:07:10 PM	srv07	Latest snapshot size

Type	Source	Alarms
File	pearl	2 / 1
File	srv31	2 / 1
File	srv02	1 / 3
File	backup03	1 / 1
File	ubuntu01	1 / 1
File	srv12	1 / 1
File	gateway02	1 / 1
File	srv14	1 / 1
File	srv04	1 / 1
File	vd001	1 / 1
File	starfish	1 / 1
File	pred	1 / 1
File	vmbp01	1 / 1
File	backup01	1 / 1
File	fileserver04	1 / 1

Host and Clusters State, Datastores State, Virtual Machines State

The charts reflect the health status of virtual infrastructure objects in Business View groups.

Every chart segment represents the number of objects in a certain state – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click a chart segment or a legend label to drill down to the list of alarms for the selected type of virtual infrastructure objects.

Latest Alarms

The list displays the latest 15 alarms for objects in available Business View groups. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

Alarms by Object

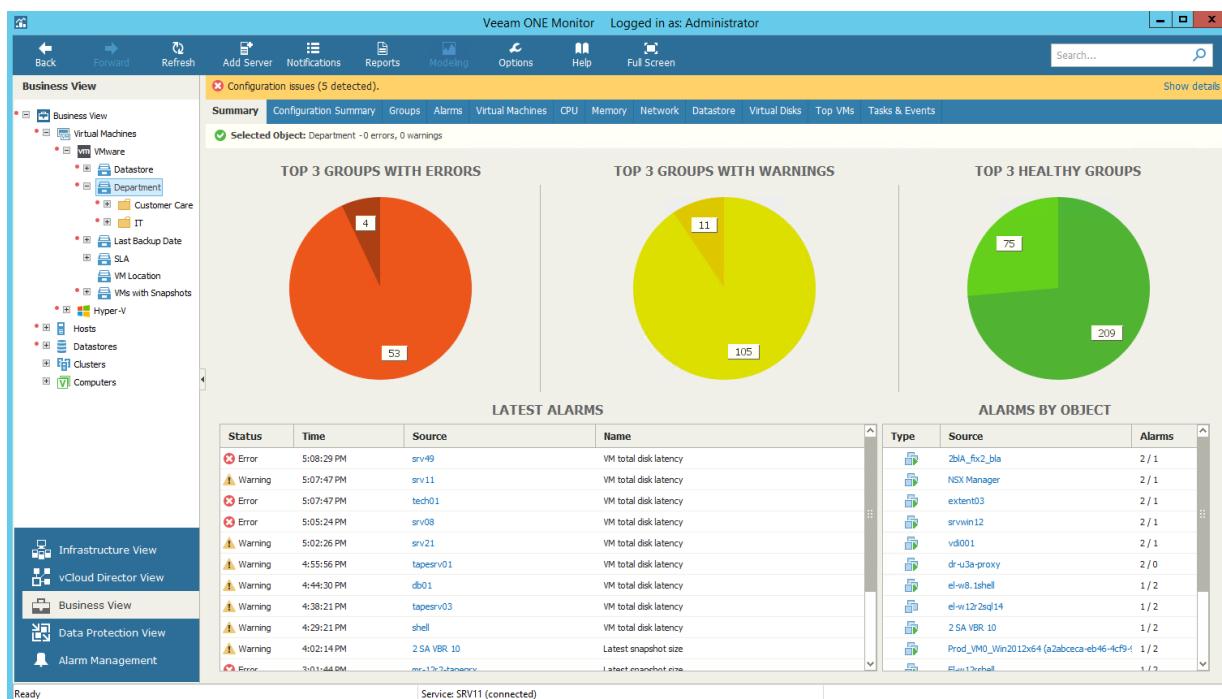
The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 errors and 1 warning triggered for the object. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Category Summary

The category summary dashboard provides an overview of the health status and performance for categorized infrastructure objects.



Top 3 Groups with Errors, Top 3 Groups with Warnings, Top 3 Healthy Groups

The charts reflect the health status of all groups within the chosen category.

Every chart segment represents groups in a certain state – groups with the greatest number of infrastructure objects with errors (red), groups with the greatest number of infrastructure objects with warnings (yellow) and groups with healthy infrastructure objects (green).

Click a chart segment or a legend label to drill down to the list of alarms with the corresponding status for the selected Business View group.

Latest Alarms

The list displays the latest 15 alarms for the selected category. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific infrastructure object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 errors and 1 warning triggered for the object. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Category Configuration Summary

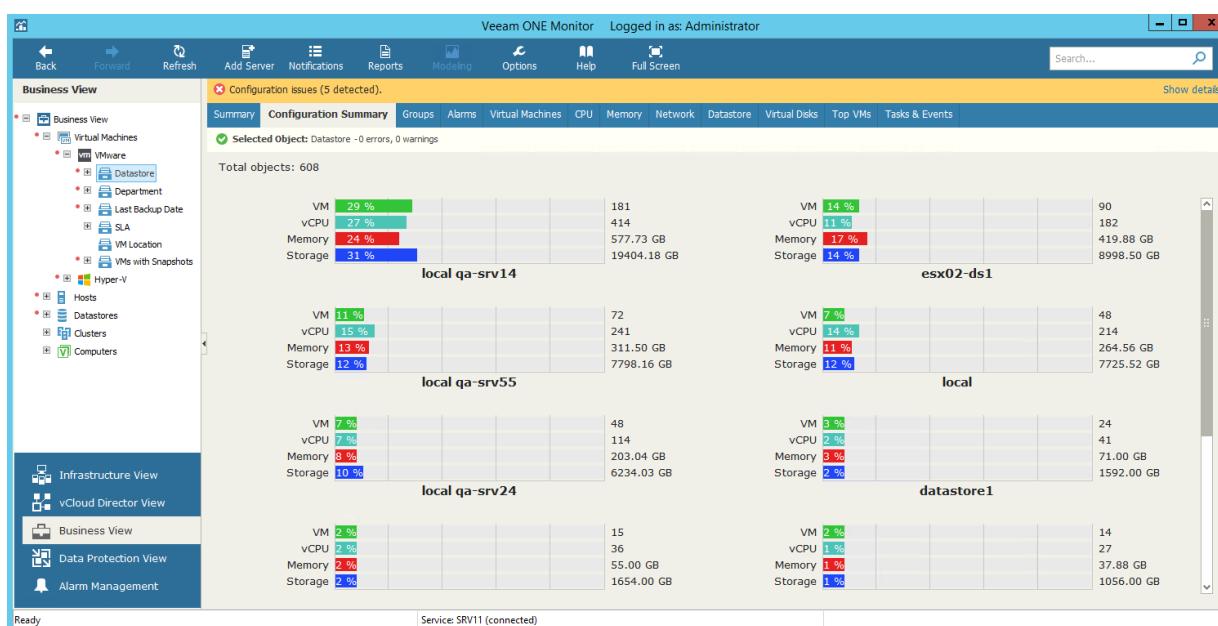
The **Configuration Summary** dashboard displays categorization details for different types of virtual infrastructure objects.

The dashboard acts as detailed monitoring panel: it presents virtual infrastructure objects from the perspective of business view categories. For each category, **Configuration Summary** provides information on the groups included in the category, shows how many objects belong to these groups, and provides information on the total number of objects in a group of their vCPU, memory and storage resources.

At the top of the dashboard, Veeam ONE Monitor displays information on the total number of objects included in a category.

NOTE:

This dashboard is not available for the *Computers* categories.



Group Summary

The group summary dashboard provides an overview of the health status and performance for the virtual infrastructure objects that belong to the chosen group.

The screenshot shows the Veeam ONE Monitor interface with the 'Group Summary' dashboard selected. The top navigation bar includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen buttons. The status bar indicates 'Veeam ONE Monitor' and 'Logged in as: Administrator'. A search bar is at the top right. The main content area has a header 'Business View' with a note about configuration issues (5 detected). Below this are tabs for Summary, Alarms, Virtual Machines, Overall, CPU, Memory, Network, Datastore, Virtual Disks, Top VMs, and Tasks & Events. The 'Summary' tab is selected, showing a message 'Selected Object: IT -0 errors, 0 warnings'. The dashboard is divided into three sections: 'ERROR OBJECTS' (red circle with an X, 4 objects), 'WARNING OBJECTS' (yellow triangle, 11 objects), and 'HEALTHY OBJECTS' (green checkmark, 75 objects). Below these are two tables: 'LATEST ALARMS' and 'ALARMS BY OBJECT'. The 'LATEST ALARMS' table lists 15 entries with columns for Status, Time, Source, and Name. The 'ALARMS BY OBJECT' table lists 10 objects with columns for Type, Source, and Alarms. A sidebar on the left contains links for Infrastructure View, vCloud Director View, Business View, Data Protection View, and Alarm Management. The bottom status bar shows 'Ready' and 'Service: SRV11 (connected)'.

Error Objects, Warning Objects, Healthy Objects

The charts reflect the health status of virtual infrastructure objects in the group – objects with errors (red), objects with warnings (yellow) and healthy objects (green). Click the problematic chart to drill down to the list of alarms for objects with the chosen health status.

Latest Alarms

The list displays the latest 15 alarms for virtual infrastructure objects in the selected group. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

Alarms by Object

The list displays 15 objects with the greatest number of alarms.

The value in the **Alarms** column shows the number of errors and warnings for an object. For example, 3/1 means that there are 3 errors and 1 warning triggered for the object. Click a link in the **Source** column to drill down to the list of alarms triggered for a specific virtual infrastructure object.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

Virtual Infrastructure Objects Summary

Veeam ONE Monitor allows you not only to view category and group summary, but also to monitor the summary state of categorized virtual infrastructure objects – VMs, hosts, clusters and datastores. To view a summary dashboard for a specific virtual infrastructure object:

1. Open Veeam ONE Monitor.

For details, see [Accessing Veeam ONE Monitor](#).

1. At the bottom of the inventory pane, click **Business View**.
2. In the inventory pane, select the necessary categorized object.
3. Open the **Summary** tab.

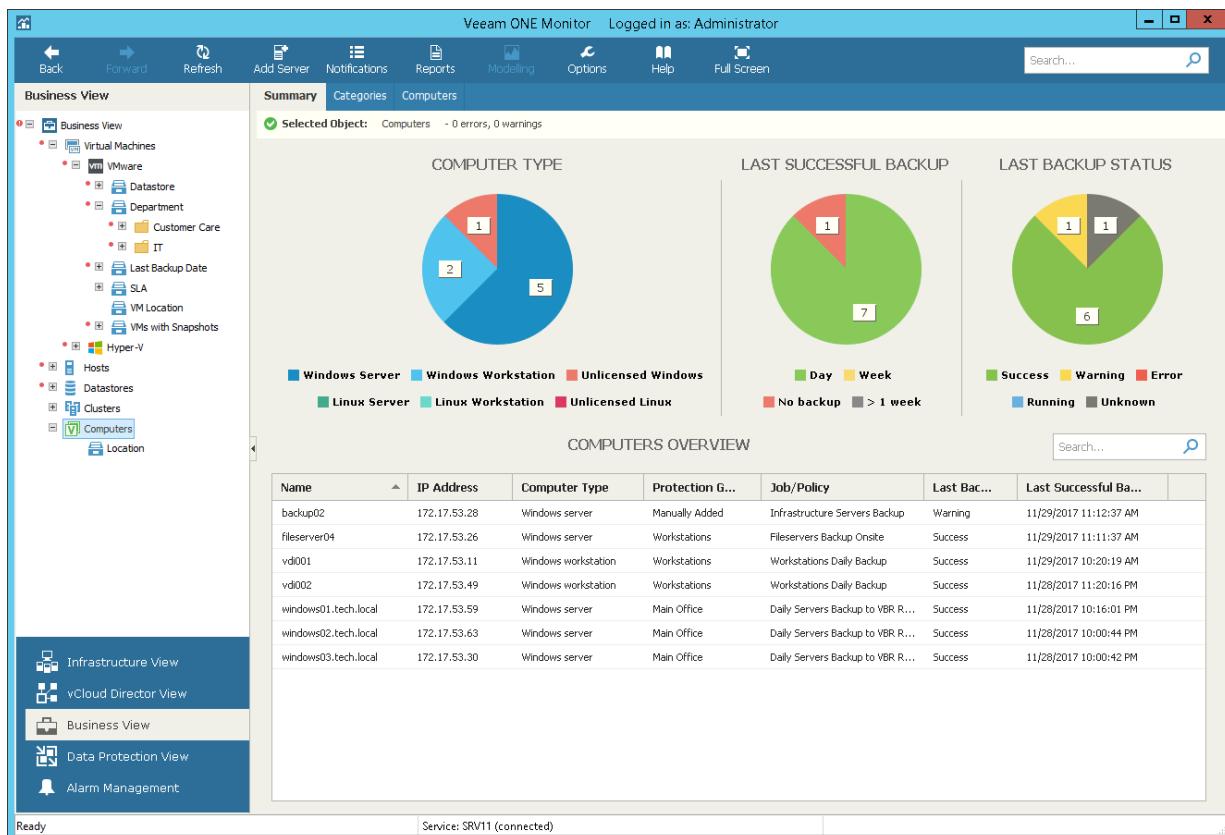
For more information on virtual infrastructure summary dashboards, see [VMware vSphere Summary Dashboards](#) and [Microsoft Hyper-V Summary Dashboards](#).

Computers Summary

The **Computers** summary dashboard presents the health status overview for computers protected with Veeam Backup Agent for Windows and Veeam Backup Agent for Linux. The dashboard scope includes computers whose backups are managed by Veeam Backup & Replication servers that you monitor in Veeam ONE.

The dashboard is available for different levels of the categorization model:

- For the **Computers** node, the dashboard presents all computers from the monitored infrastructure
- For the category node, the dashboard to presents computers included in groups within the selected category



Computer Type

The chart displays types of computers protected with Veeam Backup Agent for Windows and Veeam Backup Agent for Linux.

Every chart segment shows the number of computers of a specific platform and type – the number of managed Windows servers (dark blue), the number of managed Windows workstations (blue), the number of unlicensed Windows computers (red), the number of managed Linux servers (green), the number of managed Linux workstations (light green), and the number of unlicensed Linux computers (magenta).

Last Successful Backup

The chart displays the time interval when the latest successful backup was created for computers running Veeam Backup Agent for Windows and Veeam Backup Agent for Linux.

Every chart segment shows the number of computers with last successful backups created within a specific interval – the number of computers with backups created not older than a day ago (green), computers with backups created not older than a week ago (yellow), computers with backups older than a week (gray), and computers with no backups (red).

Last Backup Status

The chart displays the latest status of backup jobs for computers running Veeam Backup Agent for Windows and Veeam Backup Agent for Linux.

Every chart segment shows how many jobs ended with a specific status – failed jobs (red), jobs that ended with warnings (yellow), successfully performed jobs (green), jobs that are currently running (blue), and jobs whose status is unknown (gray).

Computers Overview

The table provides details on computers running Veeam Backup Agent for Windows and Veeam Backup Agent for Linux:

- **Name** – computer name
- **IP address** – computer IP address
- **Computer Type** – operation mode of a backup agent on a computer (*Windows server, Windows workstation, Unlicensed Windows, Linux Server, Linux Workstation, Unlicensed Linux*)
- **Protection Group** – name of a protection group in which a computer is included
- **Last Backup State** – the latest status of a backup job (*Success, Warning, Failed, Running, No Info*)
- **Last Successful Backup** – date and time when the latest successful backup was created for a computer

Computer Details

The **Summary** dashboard for a single computer node presents an overview and protection status details for computers running Veeam Backup Agent for Linux and Veeam Backup Agent for Windows.

The screenshot shows the Veeam ONE Monitor interface with the 'Summary' tab selected. In the top left, there's a 'Business View' sidebar with options like Business View, Virtual Machines, Hosts, Datastores, Clusters, Computers, and a Backup Server section listing backup01.tech.local, tech01.tech.local, and backup02.tech.local. The main panel displays 'AGENT OVERVIEW' with details: IP Address - 172.17.53.55, OS type - Windows, Licensed as - Server, Protection group - Protection Group Beta, and Location - No Location. Below this is the 'PROTECTION STATUS' section, which includes: Backup job/policy - Agent Backup Atlanta, Backup target - Default Backup Repository, Last backup state - Warning, and Last successful backup - 12/25/2018 10:00:27 PM. The bottom of the screen shows a footer with 'Ready' and 'Service: SRV11 (connected)'.

Agent Overview

The section provides the following details:

- IP address of a computer running Veeam Backup Agent for Windows or Veeam Backup Agent for Linux
- Type of an OS installed on a computer (*Windows, Linux*)
- Operation mode in which a computer is licensed
- Name of a protection group in which a computer is included
- Location of a computer, as specified in Veeam Backup & Replication

Protection Status

The section provides the following details:

- Name of a backup policy applied to a computer, or a backup job in which a computer is included
- Target location on which computer backups are stored
- The latest status of the backup job session (*Success, Warning, Failed, Running, No Info*)
- Date and time when the latest successful backup was created for a computer

Business View Alarms

You can create and manage alarms for virtual infrastructure objects organized into Business View groups. For example, you can group your virtual infrastructure objects by a department to which these objects belong. For each group, you can configure alarms with severity levels and thresholds corresponding to requirements of a specific department.

For Business View, Veeam ONE Monitor supports all alarms that apply to categorized objects – VMs, hosts, clusters and datastores.

To view the list of alarms for categorized objects:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Business View**.
3. In the inventory pane, select the necessary category, group or object.
4. Open the **Alarms** tab.

For more information on working with triggered alarms, see section [Working with Triggered Alarms](#) of the Veeam ONE Working with Alarms Guide.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The main area displays a list of alarms under the "Business View" category. The "Alarms" tab is selected. The left sidebar shows navigation options like "Infrastructure View", "vCloud Director View", "Business View" (which is selected), "Data Protection View", and "Alarm Management". The right sidebar contains sections for "Actions" (with links for Show history, Resolve, etc.), "Remediate" (Approve action, Approve all actions), "Edit alarm...", "Defined alarms...", and "Navigation" (Performance, Open console, In-guest processes). The central pane shows a table of alarms with columns: Status, Time, Source, Type, Name, Repeat Count, and Remediation. One row is highlighted in blue, showing an Error type alarm for "Prod_VM_B3_Win8.1" with the message "Heartbeat is missing". Below the table is a "Description" section explaining what a heartbeat is and why it might fail. A "Cause" section lists potential reasons for the alarm.

Status	Time	Source	Type	Name	Repeat Count	Remediation
Error	5:30:19 PM	Prod_VM_B3_Win8.1 (7a170935-476a-)	Heartbeat is missing	2		
Warning	5:23:34 PM	srvv49	VM total disk latency	51		
Warning	5:23:34 PM	shell	VM total disk latency	83		
Warning	5:23:34 PM	ontap93.vol6	Datastore write late	30		
Warning	5:23:34 PM	ontap93.vol7	Datastore write late	34		
Warning	5:23:34 PM	ontap93.nfs.support	Datastore write late	30		
Warning	5:23:34 PM	ai.netapp(21.103)_nfs_source.vol1	Datastore write late	32		
Warning	5:17:21 PM	tech01	VM total disk latency	37		

Business View Objects

You can view the list of infrastructure objects within the Business View node – object type, platform, category and group.

To view the list of objects:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Business View**.
3. In the inventory pane, select the necessary node.
4. Open the tab with the name of the object: *Virtual Machines, Hosts, Datastores, Clusters, Computers*.
5. To find the necessary object by name, use the **Search** field at the top of the list.
To display objects of a specific virtual infrastructure node, select the necessary node in the **Scope** field at the top of the list.
6. Click column names to sort objects by a specific parameter.

The screenshot shows the Veeam ONE Monitor application window. The title bar reads "Veeam ONE Monitor" and "Logged in as: Administrator". The main menu includes Back, Forward, Refresh, Add Server, Notifications, Reports, Modeling, Options, Help, and Full Screen. A search bar is at the top right. The left sidebar has a tree view under "Business View" with nodes like Virtual Machines, Hosts, Datastores, Clusters, and Computers. Below this is an "Infrastructure View" section. The central pane is titled "Virtual Machines" and shows a table of VMs. The table columns are: S..., Virtual Machines, Parent Object, vCPU, Memory Size, Guest OS. The table contains 19 rows of VM data. An "ACTIONS" panel on the right lists "Categorization actions" with "Manual categorization..." and "Reset categorization". The status bar at the bottom says "Ready" and "Service: SRV11 (connected)".

For every object in the list, the following details are available.

Virtual Machines

- **State** – state of the VM (*powered on, powered off, suspended*)
- **Virtual Machines** – name of the VM
- **Parent Object** – name of the parent object for the VM
Click a link in this column to switch to the **Infrastructure View** for the parent object.
- **vCPU** – number of virtual CPUs configured for the virtual machine
- **Memory Size** – amount of memory resources allocated to the VM

- **Guest OS** – guest operating system installed on the VM
- **Virtual Disk Size** – size of the VM virtual disk
- **Categories** – number of categories to which the VM is included
Click a link in this column to see all categories and groups for the VM.

Hosts

- **Type** – type of the infrastructure object
- **Hosts** – name of the host
- **Parent Object** – name of the parent object for the host
Click a link in this column to switch to the **Infrastructure View** for the parent object.
- **CPU Count** – number of CPU cores on the host
- **CPU Frequency** – frequency of CPU cores on the host
- **Memory Size** – total capacity of the host
- **VM Count** – number of VMs residing on the host
- **Categories** – number of categories to which the host is included
Click a link in this column to see all categories and groups for the host.

Datastores

- **Type** – type of the infrastructure object
- **Datastores** – name of the datastore
- **Parent Object** – name of the parent object for the datastore
Click a link in this column to switch to the **Infrastructure View** for the parent object.
- **File System** – type of the file system on the datastore
- **Capacity** – total capacity of the datastore
- **Free Space** – free space remaining on the datastore
- **VM Count** – number of VMs residing on the datastore
- **Categories** – number of categories to which the datastore is included
Click a link in this column to see all categories and groups for the datastore.

Clusters

- **Type** – type of the infrastructure object
- **Cluster** – name of the cluster
- **Parent Object** – name of the parent object for the cluster
Click a link in this column to switch to the **Infrastructure View** for the parent object.
- **CPU Count** – number of CPU cores in the cluster

- **CPU Capacity** – total frequency of all CPU cores in the cluster
- **Memory Size** – total size of memory available for the cluster
- **Host Count** – number of hosts in the cluster
- **VM Count** – number of VMs residing on the cluster
- **Categories** – number of categories to which the cluster is included

Click a link in this column to see all categories and groups for the cluster.

Computers

- **Type** – type of the infrastructure object
- **Computers** – name of the computer on which Veeam backup agent is installed
- **IP Address** – IP address of the computer on which Veeam backup agent is installed
- **Cluster** – name of a failover cluster added to a protection group
- **Operation Mode** – mode in which Veeam backup agent job runs (*Server or Workstation*)
- **Location** – location assigned to the computer in Veeam Backup & Replication
- **Protection Group** – name of a protection group to which the computer is included
- **Backup Job/Policy** – name of the backup job or policy assigned to Veeam backup agent on the computer
- **Last Backup State** – state of the latest job session
- **Last Successful Backup** – date and time when the latest restore point was created
- **Categories** – number of categories to which the computer is included

Click a link in this column to see all categories and groups for the datastore.

You can choose what columns to show or hide in the objects table:

- To hide one or more columns, right-click the table header, and clear check boxes next to the corresponding data fields.
- To make hidden columns visible, right-click the table header, and select check boxes next to the corresponding data fields.

Exporting Object Details to Excel

You can export categorization data to a Microsoft Excel spreadsheet file and save it for documenting purposes:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Business View**.
3. In the inventory pane, select the necessary node.
4. Open the tab with the name of the object: *Virtual Machines, Hosts, Datastores, Clusters, Computers*.
5. To find the necessary object by name, use the **Search** field at the top of the list.
6. At the top of the list, click **Export to Excel** and save the file.

Business View Performance Charts

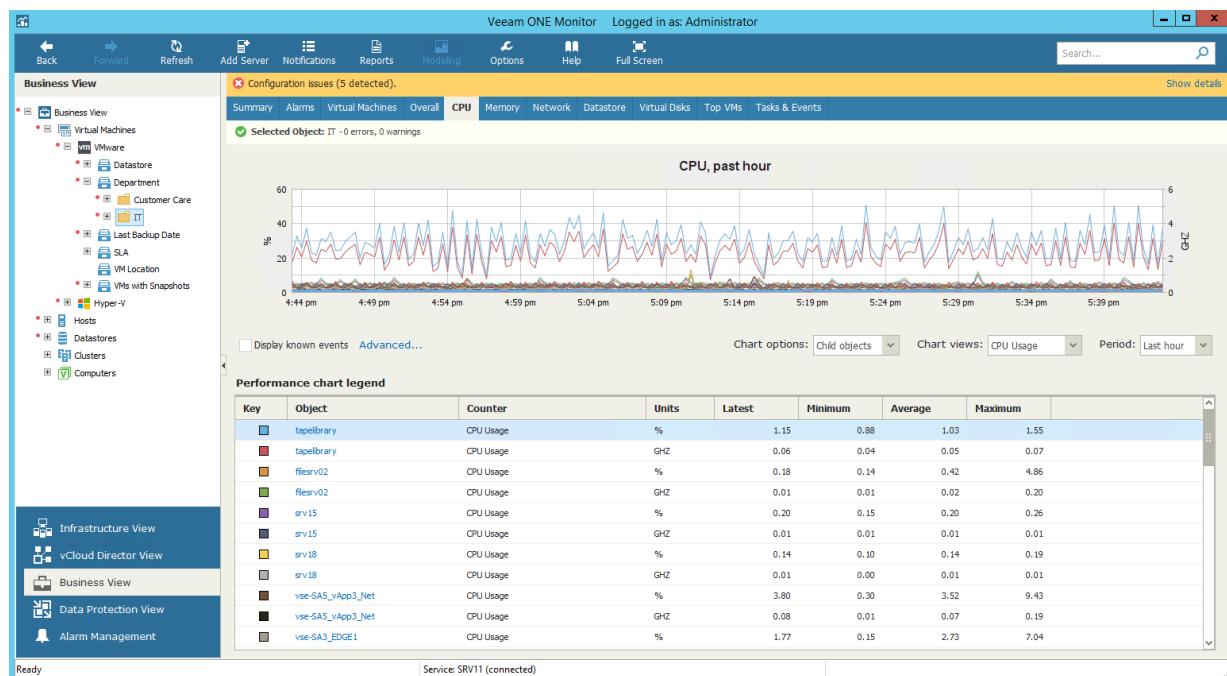
You can launch performance charts for infrastructure objects organized into business groups. You can view the performance of objects in custom groups, and identify whether there are enough resources allocated to these objects.

For Business View, Veeam ONE Monitor supports all dashboards that apply to categorized virtual infrastructure objects – VMs, hosts, clusters and datastores.

To access a performance chart for a categorized virtual infrastructure object:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click **Business View**.
3. In the inventory pane, select the necessary object.
4. Open the necessary performance chart tab.

For more information on performance charts, see [VMware vSphere Performance Charts](#) and [Microsoft Hyper-V Performance Charts](#).



Troubleshooting Performance of Categorized Objects

Veeam ONE Monitor includes a set of dashboards that give you enhanced control over categorized virtual infrastructure objects and facilitate the troubleshooting process:

- Top N dashboards display top and bottom resource consumers in a group:
 - To view VMs that consume the greatest amount of compute, network and storage resources, choose the necessary VM group in the inventory pane and go to the **Top VMs** tab.
 - To view the most loaded hosts, choose the necessary host group in the inventory pane and go to the **Top Hosts** tab.
 - To view the least loaded hosts, choose the necessary host group in the inventory pane and go to the **Lowest Load** tab.

For more information on the **Top and Lowest Load** dashboards, see [VMware vSphere Top and Lowest Load](#) and [Microsoft Hyper-V Top and Lowest Load](#).

- **Tasks & Events** dashboard shows tasks and events targeted for categorized objects.

To view the list of tasks and events for a categorized virtual infrastructure object, select it in the inventory pane and go to the **Tasks & Events** tab.
- **Processes** dashboard provides control over processes and services running inside the guest OS of a VM.
 - For Windows- based machines, you can view, end or restart processes.
 - You can view or end daemons on Linux-based machines.

To view the list of processes, select the necessary VM in the inventory pane and go to the **Processes** tab.

For more information on VM processes, see [VMware vSphere In-Guest Processes](#) and [Microsoft Hyper-V In-Guest Processes](#).
- **Console** view allows you to access the VM guest OS right from the Veeam ONE Monitor interface.

To access a VM console, select the necessary VM in the inventory pane and go to the **Console** tab.

For more information on working with VM console, see [VMware vSphere VM Console](#) and [Microsoft Hyper-V VM Console](#).

Generating Reports

To obtain a point-in-time view of your virtual infrastructure and data protection operations, you can create reports from the Veeam ONE Monitor console:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. At the bottom of the inventory pane, click the necessary view – Infrastructure View, vCloud Director View, Business View, or Data Protection View.
3. Do one of the following:
 - o Click the **Report** button on the toolbar and choose the necessary report from the list.
 - o Right-click the necessary infrastructure object or a node in the inventory tree, click **Reports** and choose the necessary report from the list.
4. On the Veeam ONE Reporter login page, specify user credentials.
5. On the report details page, specify the report parameters.
6. In the **Actions** pane on the right, click **Create Report**.

You can quickly switch to the Workspace dashboard and generate any other reports supplied by Veeam ONE Reporter. To do that, click **View all reports** in the **Actions** pane on the right.

The screenshot shows the 'HOST CONFIGURATION CHARGEBACK' report configuration page. The left panel displays report parameters: Currency (US Dollar), Hosts (vcenter01.tech.local), and a checkbox for calculating costs based on total hosts cost (5000 USD). A note states: 'Note: to use per-host calculation, set costs in the Actions panel'. The bottom left shows the 'veeAM' logo and the title 'Host Configuration Chargeback'. The bottom right contains sections for 'Description' (a note about audit and VM cost identification) and 'Report Parameters' (listing hosts, costs, distribution, and VM count settings). The right panel, titled 'ACTIONS', includes buttons for 'Create report' and 'View all reports', and sections for 'Hardware costs' (Datastores and Hosts links) and a 'Description' note.

Appendix A. Veeam ONE Settings Utility

The Veeam ONE Settings utility allows you to change configuration of the Veeam ONE software components.

NOTE:

The Veeam ONE Settings utility must be used only under the guidance of Veeam Support. It is strongly recommended that you obtain detailed instructions from the Veeam Support team before changing any configuration settings in your Veeam ONE deployment.

To run the Veeam ONE Settings utility:

1. Open Veeam ONE Monitor.
For details, see [Accessing Veeam ONE Monitor](#).
2. Click **Options** on the toolbar and select **Server Settings**.
Alternatively, you can press **[CTRL + S]** on the keyboard.
3. Open the **Other** tab.
4. In the **Support utility** section, click **Launch**.

This section describes configuration settings that you can change using the Veeam ONE Settings utility.

General Settings

The **General** section groups configuration settings common for all Veeam ONE software components.

This section includes the following tabs:

- [Database](#)
- [Retention Policy Period](#)
- [Web Identity](#)

Database

On the **Database** tab, you can modify connection settings for the Veeam ONE database and the Microsoft SQL Server that hosts this database. By default, the fields are populated with the values specified during Veeam ONE installation.

To change database configuration settings:

1. In the **Server name** field, specify the name of the SQL Server that hosts the Veeam ONE database.
2. In the **Database name** field, specify the name of the database that stores Veeam ONE data.
3. In the **Command time-out** field, specify the wait time in seconds for a command to execute on the Veeam ONE database.

By default, the time-out value is set to 18000 seconds (5 hours).

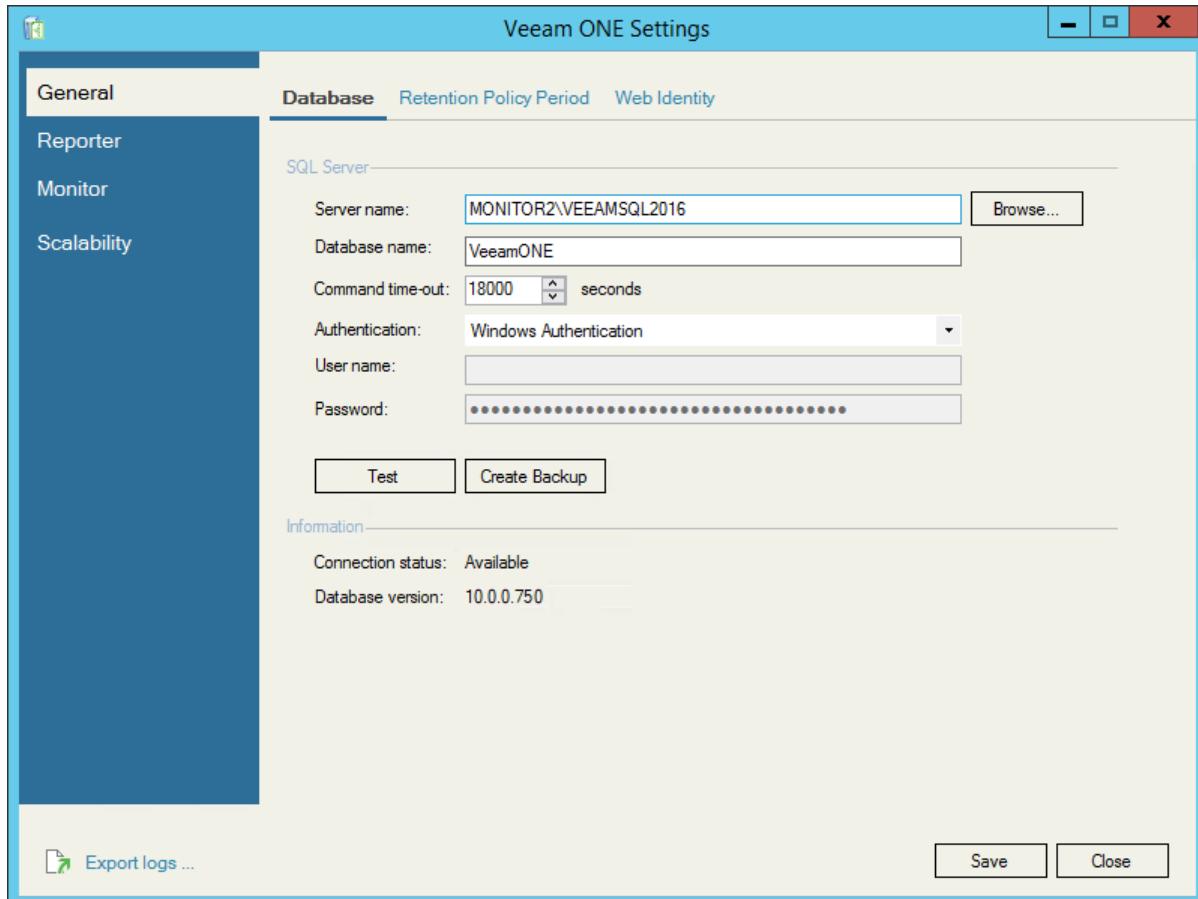
4. From the **Authentication** list, select the type of authentication that Veeam ONE components must use to connect to the Microsoft SQL Server that hosts the Veeam ONE database.
5. In the **User name/Password** fields, specify credentials of the Windows account used to connect to the Microsoft SQL Server that hosts the Veeam ONE database.

The credentials must be specified only if the authentication type is set to Windows Authentication. The user name must be specified in the *domain\username* format.

6. Click **Save** to apply settings.
7. To check if Veeam ONE can connect to the specified database using the specified connection settings, click **Test**.

To back up the Veeam ONE database to a **BAK** file, click **Create Backup** and specify the location where the database backup file must be saved.

In the **Information** section, you can view the Veeam ONE connection status and version number.



Retention Policy Period

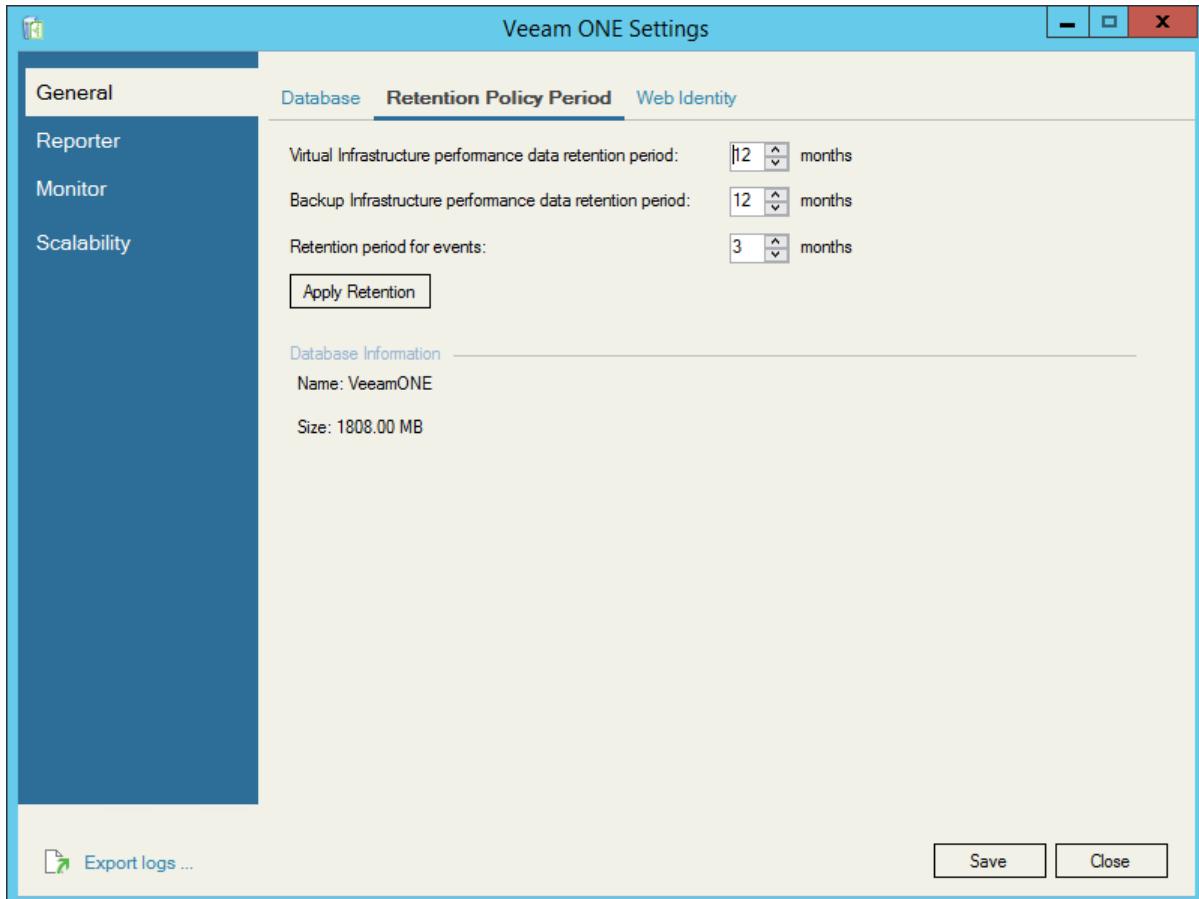
On the **Retention Policy Period** tab, you can modify the time period during which historical data is stored in the Veeam ONE database. By default, virtual and backup infrastructure performance data is retained for 12 months, and event data is stored for 3 months.

To modify the retention period:

1. In the **Virtual infrastructure performance data retention period** field, specify the period for storing virtual infrastructure performance data, in months.
2. In the **Backup infrastructure performance data retention period** field, specify the period for storing backup infrastructure performance data, in months.
3. In the **Retention period for events** field, specify the period for storing events data.

You can specify a value from 1 to 36.

4. Click **Apply Retention**.



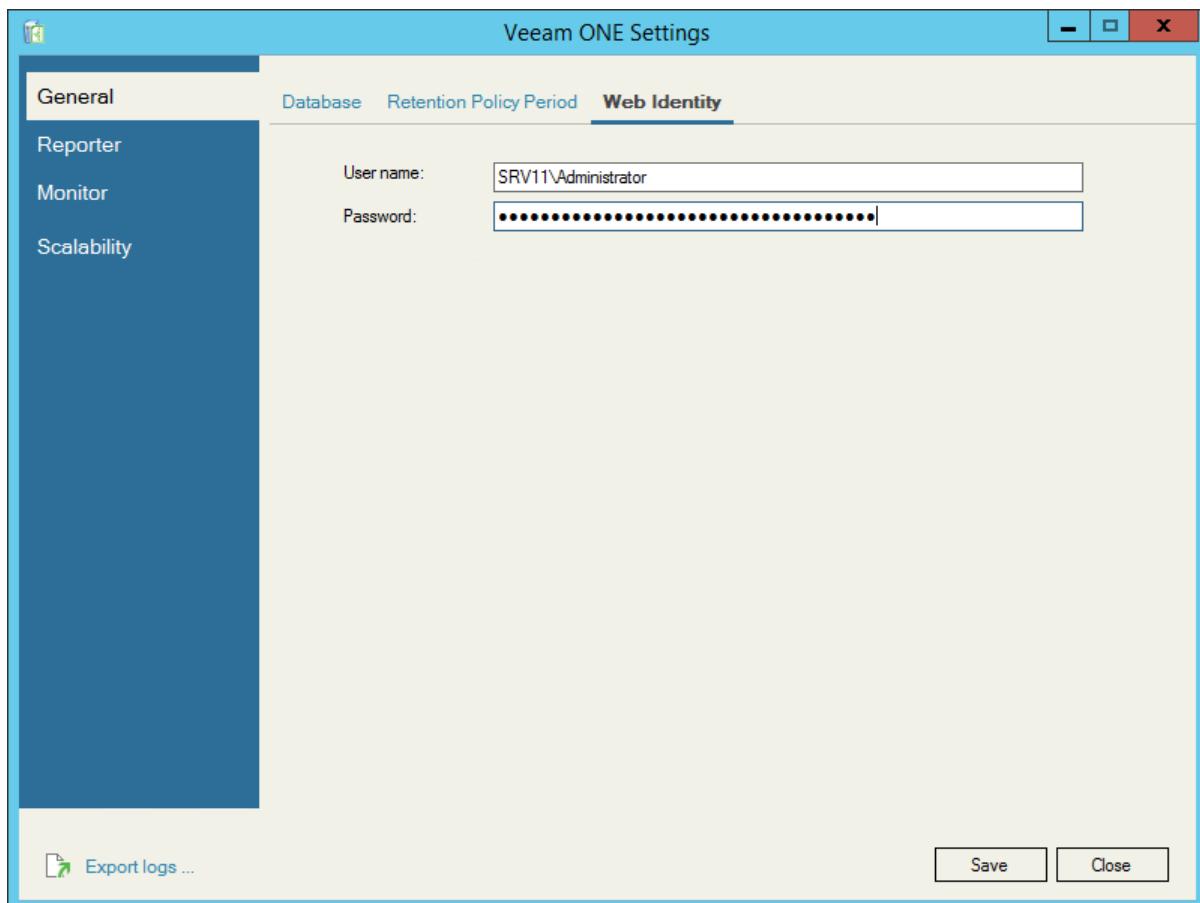
Web Identity

On the **Web Identity** tab, you can change credentials of the account used to run the Veeam ONE Reporter website. Credentials of this account are specified during installation. In some cases, you might need to change these credentials (for example, if the password of the account has expired).

To modify the credentials of the web identity account:

1. In the **User name** field, specify the account user name.
2. In the **Password** field, specify the account password.

3. Click **Save**.



Reporter Settings

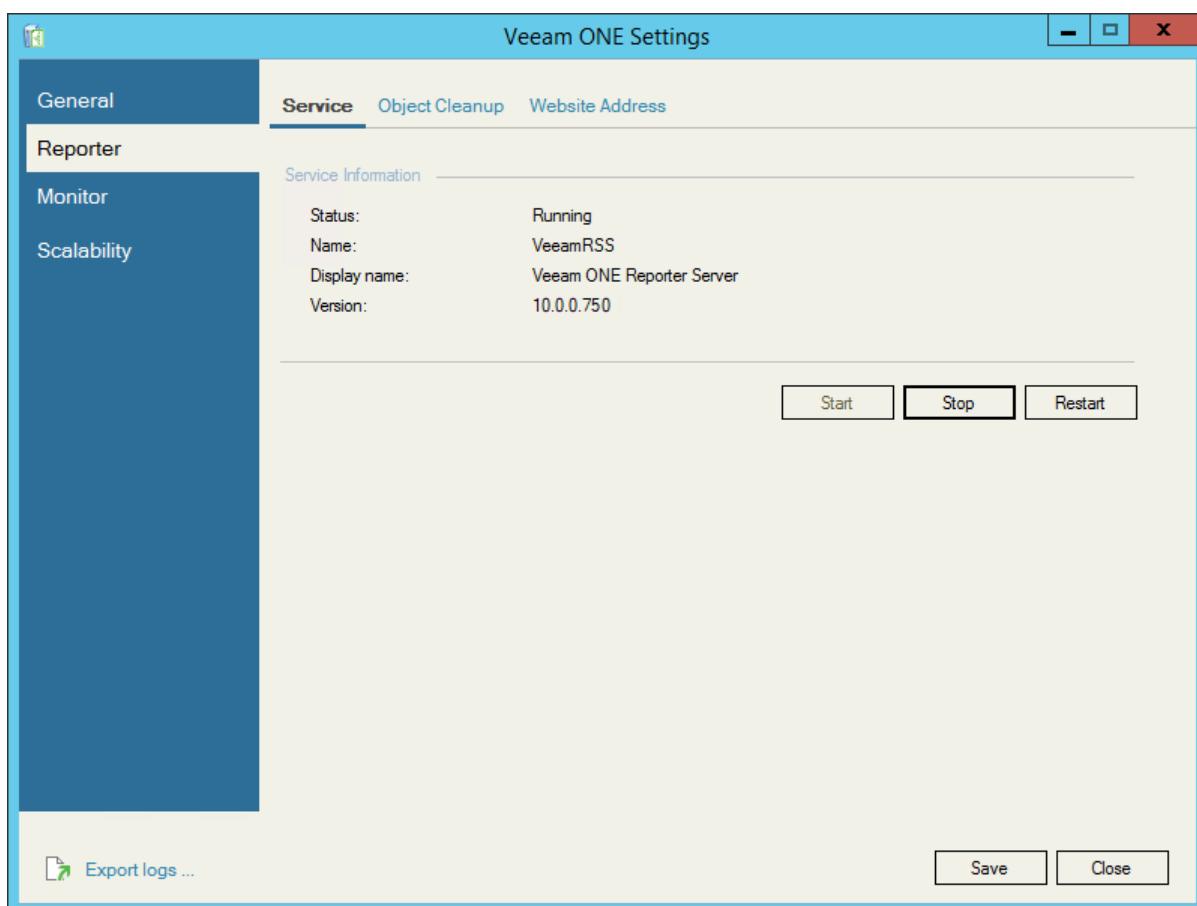
The **Reporter** section groups configuration settings for Veeam ONE Reporter.

This section includes the following tabs:

- [Service](#)
- [Object Cleanup](#)
- [Website Address](#)

Service

On the **Service** tab, you can start, stop or restart the Veeam ONE Reporter Server service. These operations may be required to complete Veeam ONE configuration updates.



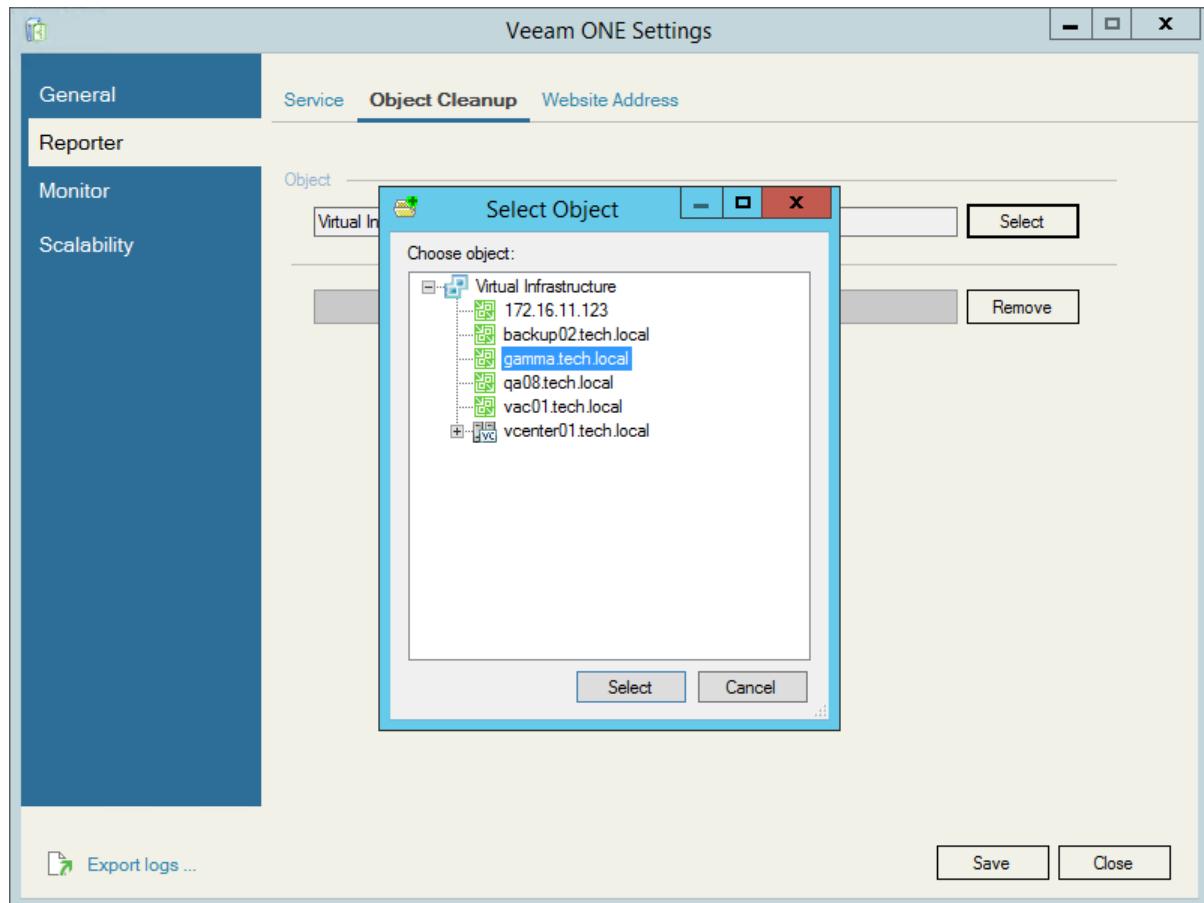
Object Cleanup

On the **Object Cleanup** tab, you can remove residual data on deleted infrastructure objects from the Veeam ONE database.

In some cases, data collected from infrastructure objects remain in the Veeam ONE database even if connections to these infrastructure objects are removed in the Veeam ONE Monitor console. As a result, residual data may appear in Veeam ONE reports.

To clean data on obsolete infrastructure objects from the Veeam ONE database:

1. Click **Select** and choose an infrastructure object for which data must be removed.
2. Click **Remove** and wait for completion of the object data cleanup.



Website Address

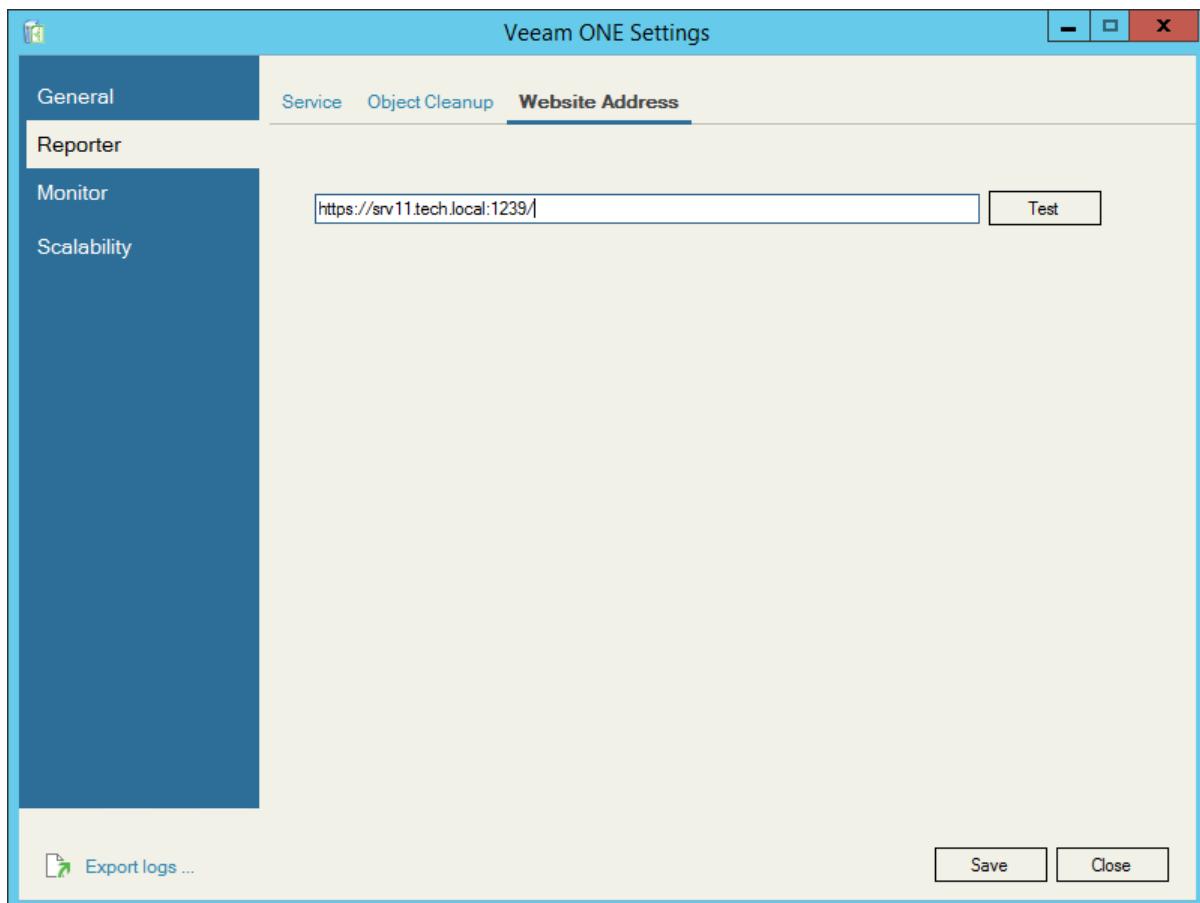
On the **Website Address** tab, you can change the Veeam ONE Reporter website address.

In some cases, the website URL may change – for example, if you change the name of the machine where the Veeam ONE Web UI component runs. In this case, you must update the website URL in Veeam ONE configuration settings. Otherwise, you will not be able to launch reports directly from the Veeam ONE Monitor console.

To change the Veeam ONE Reporter website address:

1. In the **Website address** field, specify the new Veeam ONE Reporter website address.
2. Click **Test** to check if Veeam ONE Monitor will be able to access the website at the specified URL.

3. Click **Save**.



Monitor Settings

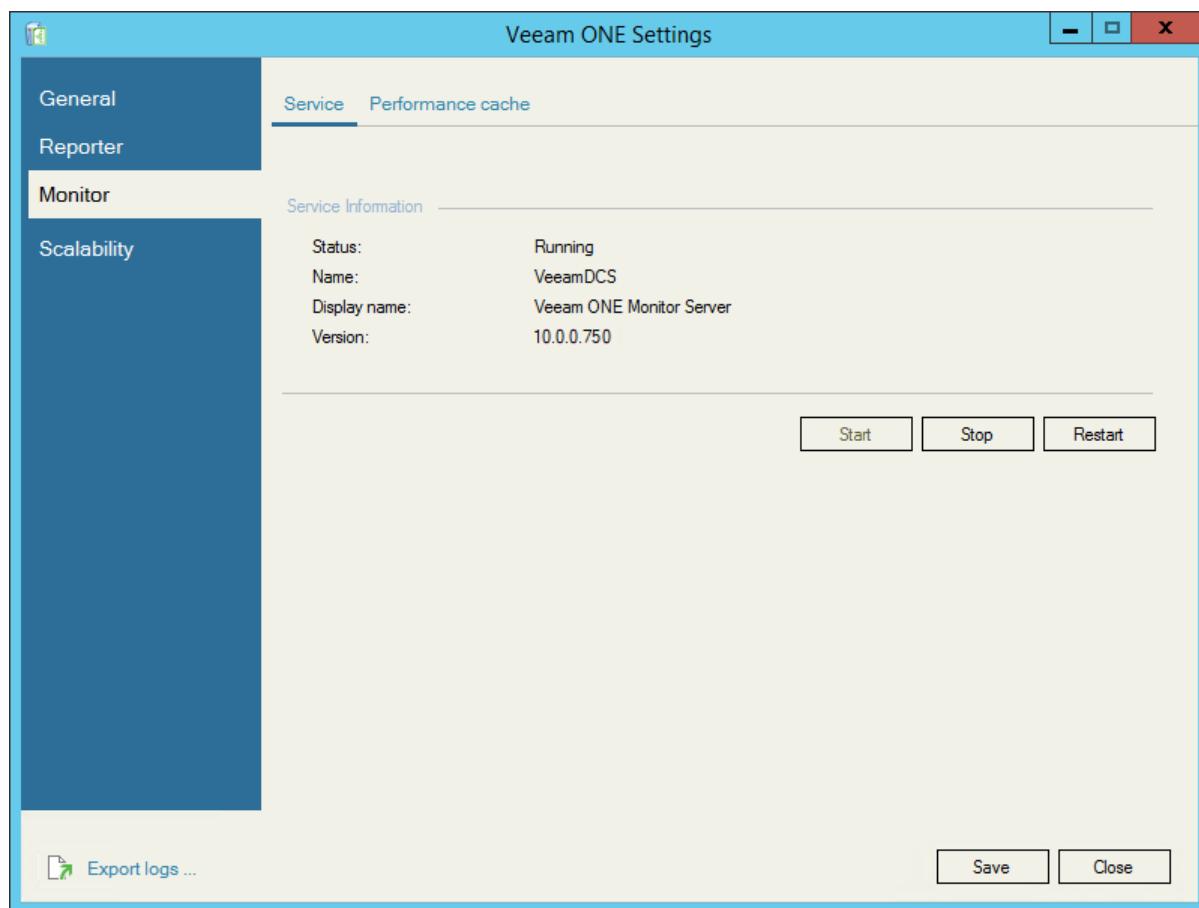
The **Monitor** section groups configuration settings for Veeam ONE Monitor.

This section includes the following tabs:

- [Service](#)
- [Performance Cache](#)

Service

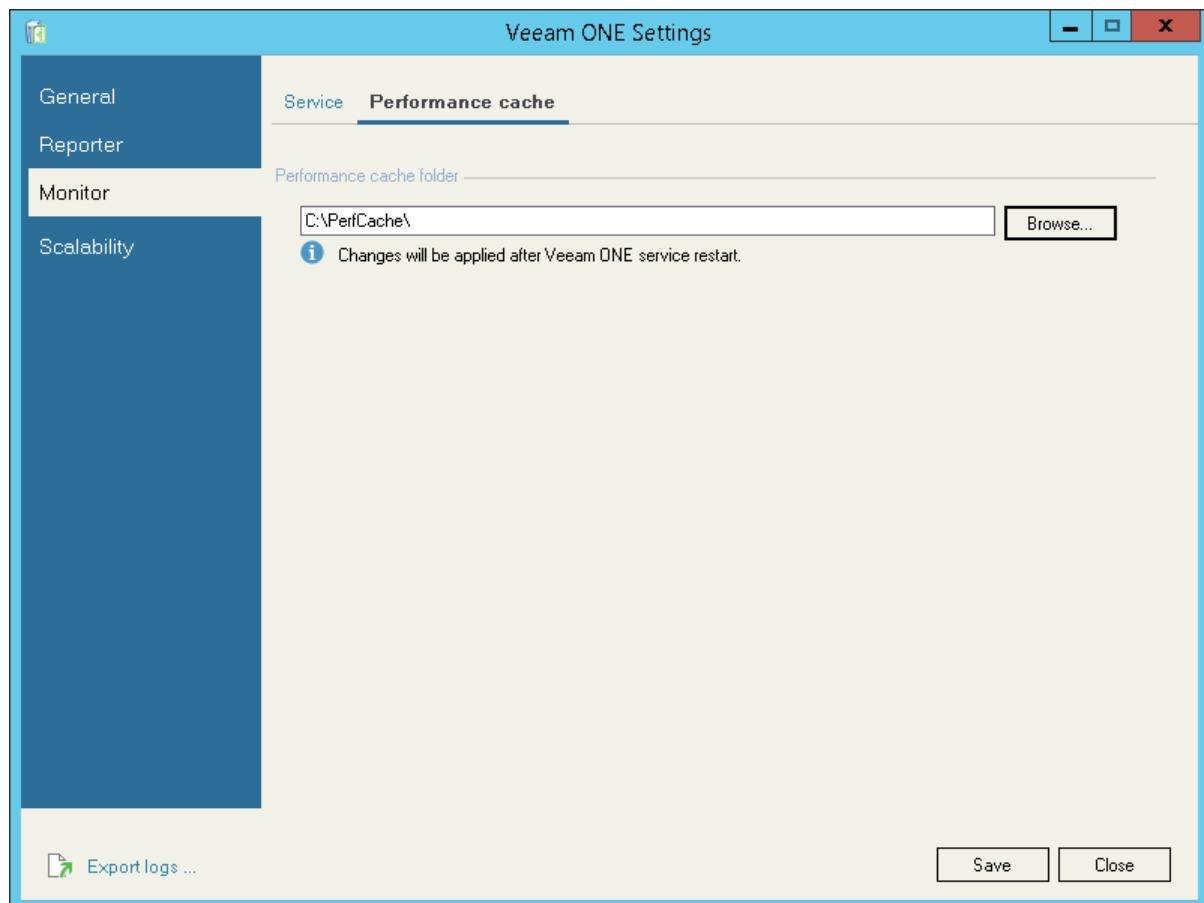
On the **Service** tab, you can start, stop or restart the Veeam ONE Monitor Server service. These operations may be required to complete Veeam ONE configuration updates.



Performance Cache

On the **Performance Cache** tab, you can change the path to the directory in which performance cache is stored. After you change the directory, switch to the **Service** tab and restart Veeam ONE Service.

The initial directory to store performance cache is specified during installation.



Scalability

In the **Scalability** section, you can choose Veeam ONE data collection mode and metrics that Veeam ONE must collect.

This section includes the following tabs:

- [Data Collection Mode](#)
- [Performance Metrics](#)

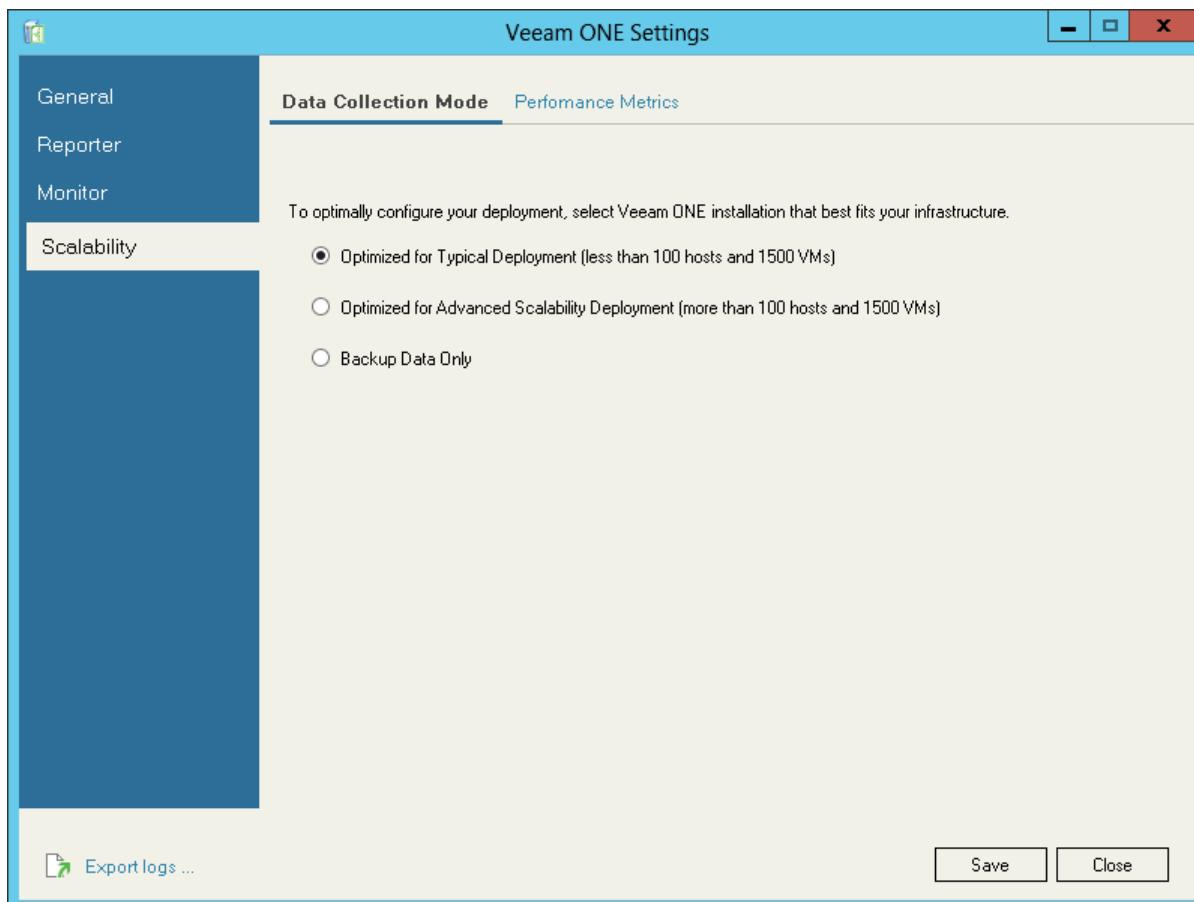
Data Collection Mode

On the **Data Collection Mode** tab, you can choose Veeam ONE data collection mode. The data collection mode determines what metrics Veeam ONE must collect, and specifies the product configuration.

Data collection mode is specified during Veeam ONE installation. In some cases, you might need to change the data collection mode – for example, if you need to change the level of data granularity.

To change the data collection mode:

1. In the **Installation Type** field, choose the necessary option (*Typical, Advanced Scalability, Backup data only*).
For more information on data collection mode, see section [Choose Data Collection Mode](#) of the Veeam ONE Deployment Guide.
2. Click **Save**.



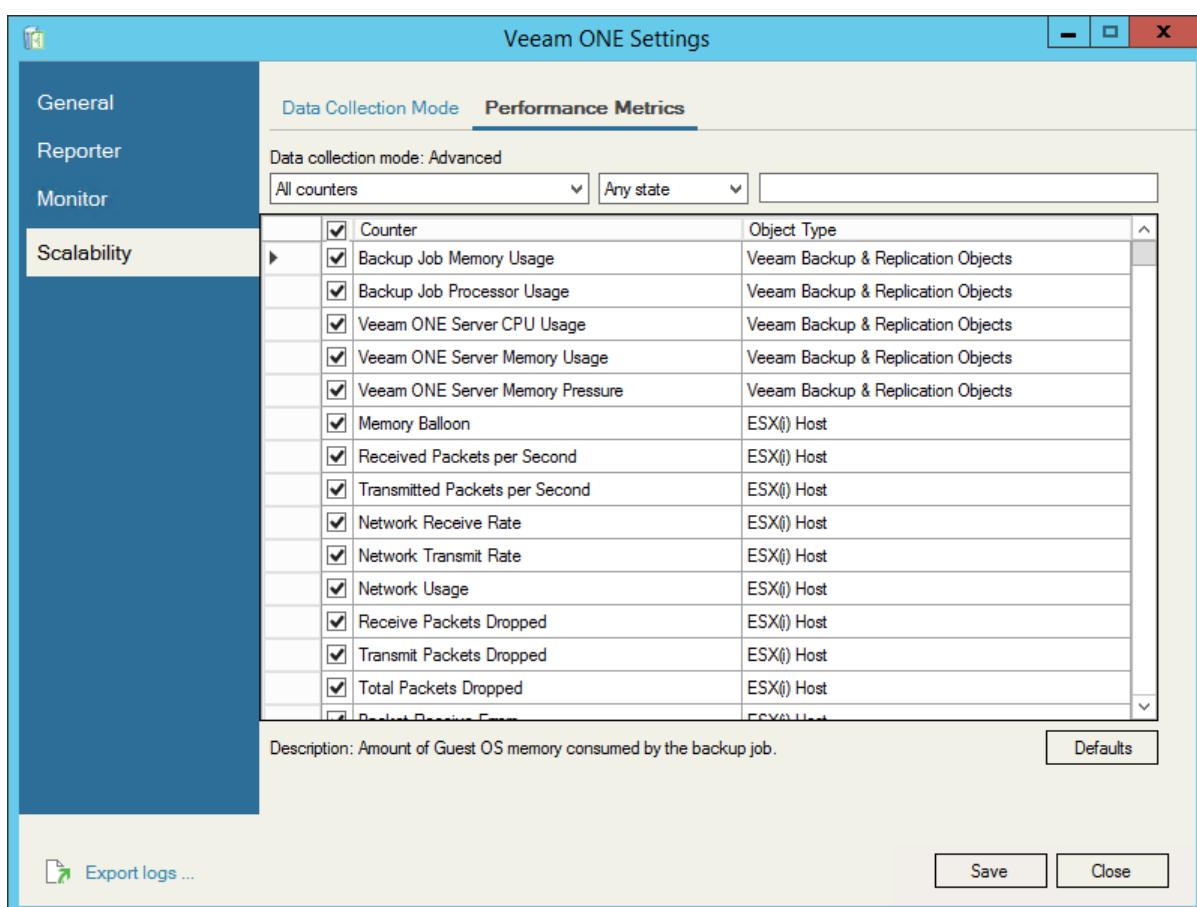
Performance Metrics

On the **Performance metrics** tab, you can explicitly define metrics that Veeam ONE must collect.

The list of metrics that Veeam ONE collects depends on the selected data collection mode. However, you can also manually add a number of performance metrics to that list.

To choose performance metrics that must be collected:

1. In the **Counters** drop-down list, select an infrastructure object to which metrics pertain.
2. In the **State** drop-down list, select the metrics state (*Enabled*, *Disabled*, *Any state*).
3. To quickly find the necessary metric, type the metric name in the search field on the right.
4. Select check boxes next to metrics that Veeam ONE must collect.
5. Click **Save**.



Click **Defaults** to restore Veeam ONE default settings for performance metrics, and select only those metrics that must be collected in accordance with the chosen data collection mode.

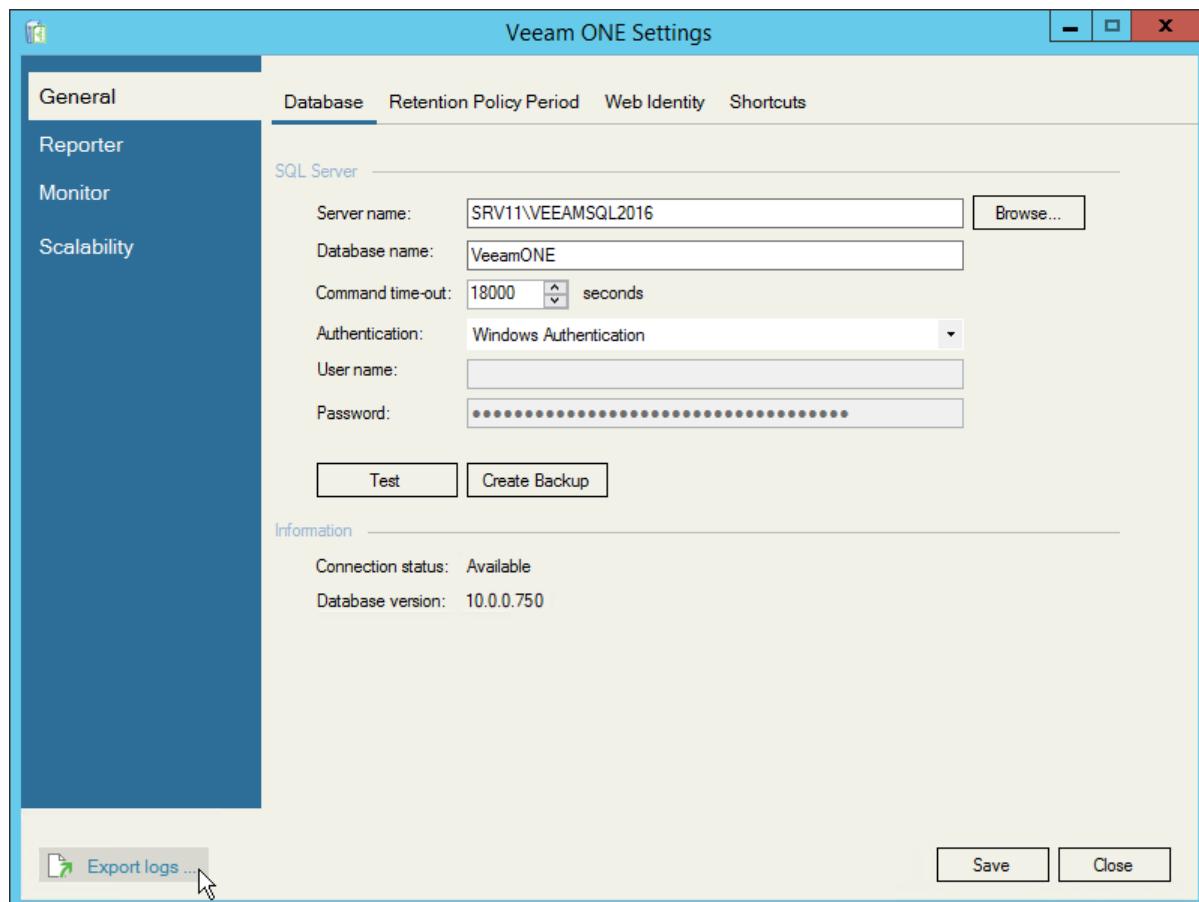
Exporting Logs

Diagnostic logs include information that can be used by the Veeam Support Team to troubleshoot issues that occur in Veeam ONE. In addition, diagnostic logs include information about the managed virtual and backup infrastructures. This type of information is used to speed up the root cause analysis when troubleshooting issues.

Veeam ONE Monitor allows you to export diagnostic logs for the Veeam ONE Monitor and Reporter components:

1. At the bottom left corner of the Veeam ONE Settings utility, click **Export logs**.
2. Specify a location where the exported logs must be saved.

The Veeam ONE Settings utility will export logs and save them to a ZIP archive in the specified location.



Appendix B. Grouping Expressions Syntax

You can create custom grouping expressions for categories with dynamic groups. In grouping expressions, you can use:

- [Object Properties](#)
- [Operators](#)
- [Methods](#)
- [Logical Operators](#)
- [Constants](#)

This section describes components that you can use in grouping expressions.

Object Properties

To create grouping expressions, you can use properties of the following types of objects:

- [Host](#)
- [Storage](#)
- [Cluster](#)
- [Virtual Machine](#)
- [Computer](#)

Host

The following properties of host systems are supported in grouping expressions.

Property	Return Data Type	Description
CustomAttribute	Text (string)	<p>Returns a value of a custom attribute assigned to a host.</p> <p>Specify the name of a custom attribute in brackets. For example, CustomAttribute ("department") will return the value of the '<i>department</i>' attribute for a host.</p> <p>Note:</p> <ul style="list-style-type: none">• This property is available for VMware vSphere hosts only.• You cannot use methods to define the custom attribute name. However, the CustomAttribute property can be used to define values in methods.
CustomProperty	Text (string)	<p>Returns a value of a custom property assigned to a host.</p> <p>Specify the name of a custom property in brackets. For example, CustomProperty ("department") will return the value of the '<i>department</i>' property for a host.</p> <p>Note: This property is available for Microsoft Hyper-V hosts only.</p>
Tag	Text (string)	<p>Returns a tag assigned to a host.</p> <p>Specify the name of a tag category in brackets. For example, Tag ("department") will return the tag of the '<i>department</i>' category for a host.</p> <p>Note: This property is available for VMware vSphere 5.5 or later.</p>
Name	Text (string)	Returns a host name.

Property	Return Data Type	Description
Memory	Numeric (double precision floating-point number)	Returns an amount of host physical memory, in GB.
Location	Text (string)	Returns a location assigned to a host in Veeam Backup & Replication.
ProcessorCores	Numeric (integer)	Returns a number of processor cores for a host.
CPUFrequency	Numeric (double precision floating-point number)	Returns a CPU frequency, in MHz.
VMCount	Numeric (integer)	Returns a number of VMs registered on a host.
HostModel	Text (string)	Returns a host model. Note: This property is available for VMware vSphere hosts only.
CPUSockets	Numeric (integer)	Returns a number of CPU sockets for a host.
InfrastructureLocation	Text (string)	Returns a path to a host in the virtual infrastructure.
Connection_State	Text (string)	Returns a connection state of a host.
PowerState	Text (string)	Returns a power state of a host.

Storage

The following properties of storage systems are supported in grouping expressions.

Property	Return Data Type	Description
CustomAttribute	Text (string)	Returns a value of a custom attribute assigned to a storage. Specify the name of a custom attribute in brackets. For example, CustomAttribute ("department") will return the value of the ' <i>department</i> ' attribute for a storage. Notes: <ul style="list-style-type: none">• This property is available for VMware vSphere storage systems only.• You cannot use methods to define the custom attribute name. However, the CustomAttribute property can be used to define values in methods.
Tag	Text (string)	Returns a tag assigned to a storage. Specify the name of a tag category in brackets. For example, Tag ("department") will return the tag of the ' <i>department</i> ' category for a storage. Note: This property is available for VMware vSphere 5.5 or later.
Name	Text (string)	Returns a storage object name.
Capacity	Numeric (double precision floating-point number)	Returns storage capacity, in GB.
FileSystemType	Text (string)	Returns a type of storage file system, such as VMFS or NTFS.
FreeSpace	Numeric (double precision floating-point number)	Returns an amount of free storage space, in GB.

Property	Return Data Type	Description
UsedSpace	Numeric (double precision floating-point number)	Returns an amount of used storage space, in GB.
VMCount	Numeric (integer)	Returns a number of VMs whose files reside on a storage object.
Type	Text (string)	Returns a storage type (<i>Shared</i> or <i>Local</i>).
InfrastructureLocation	Text (string)	Returns a path to a storage object in the virtual infrastructure.
DatastoreCluster	Text (string)	Returns a name of a cluster where storage object resides. Note: This property is available for VMware vSphere storage objects only.

Cluster

The following properties of clusters are supported in grouping expressions.

Property	Return Data Type	Description
CustomAttribute	Text (string)	Returns a value of a custom attribute assigned to a cluster. Specify the name of a custom attribute in brackets. For example, <code>CustomAttribute("department")</code> will return the value of the ' <i>department</i> ' attribute for a cluster. Notes: <ul style="list-style-type: none"> • This property is available for VMware vSphere clusters only. • You cannot use methods to define the custom attribute name. However, the <code>CustomAttribute</code> property can be used to define values in methods.
CustomProperty	Text (string)	Returns a value of a custom property assigned to a cluster. Specify the name of a custom property in brackets. For example, <code>CustomProperty("department")</code> will return the value of the ' <i>department</i> ' property for a cluster. Note: This property is available for Microsoft Hyper-V clusters only.

Property	Return Data Type	Description
Tag	Text (string)	Returns a tag assigned to a cluster. Specify a name of a tag category in brackets. For example, Tag ("department") will return the tag of the ' <i>department</i> ' category for a cluster. Note: This property is available for VMware vSphere 5.5 or later.
Name	Text (string)	Returns a cluster name.
CPUFrequency	Numeric (integer)	Returns cluster CPU frequency, in MHz.
Connection_State	Text (string)	Returns a connection state of a cluster. Note: This property is available for Microsoft Hyper-V clusters only.
HostCount	Numeric (integer)	Returns a number of hosts in a cluster.
Memory	Numeric (integer)	Returns a memory size of a cluster, in MB.
ProcessorCores	Numeric (integer)	Returns a sum of cores for all hosts in a cluster.
VMCount	Numeric (integer)	Returns a number of VMs whose files reside in a cluster.
InfrastructureLocation	Text (string)	Returns a path to a cluster in the virtual infrastructure.
IsDRSEnabled	Text (string)	Returns a flag that indicates if distributed resource scheduler enabled in a cluster. Note: This property is available for VMware vSphere clusters only.
Location	Text (string)	Returns a location assigned to a host in Veeam Backup & Replication.

Virtual Machine

The following properties of VMs are supported in grouping expressions.

Property	Return Data Type	Description
CustomAttribute	Text (string)	<p>Returns a value of a custom attribute assigned to a VM.</p> <p>Specify the name of a custom attribute in brackets. For example, <code>CustomAttribute ("department")</code> will return the value of the '<i>department</i>' attribute for a VM.</p> <p>Notes:</p> <ul style="list-style-type: none">• This property is available for VMware vSphere VMs only.• You cannot use methods to define the custom attribute name. However, the CustomAttribute property can be used to define values in methods.
CustomProperty	Text (string)	<p>Returns a value of a custom property assigned to a VM.</p> <p>Specify the name of a custom property in brackets. For example, <code>CustomProperty ("department")</code> will return the value of the '<i>department</i>' property for a VM.</p> <p>Note: This property is available for Microsoft Hyper-V VMs only.</p>
Tag	Text (string)	<p>Returns a tag assigned to a VM.</p> <p>Specify the name of a tag category in brackets. For example, <code>Tag ("department")</code> will return the tag of the '<i>department</i>' category for a VM.</p> <p>Note: This property is available for VMware vSphere 5.5 or later.</p>
Name	Text (string)	Returns a VM name.
GuestOS	Text (string)	Returns a VM guest OS.
vCPU	Numeric (integer)	Returns the number of vCPUs configured for a VM.
Memory	Numeric (double precision floating-point number)	Returns the amount of memory allocated to a VM.

Property	Return Data Type	Description
VirtualDiskSize	Numeric (double precision floating-point number)	Returns the amount space occupied by all VM disks.
PowerState	Text (string)	Returns a VM power state. <ul style="list-style-type: none"> • For VMware vSphere: <i>Powered On, Powered Off, Suspended</i> • For Microsoft Hyper-V: <i>Powered Off, Running, Saved</i>
Location	Text (string)	Returns a location assigned to a VM in Veeam Backup & Replication.
VMFolderPath	Text (string)	Returns a name of a folder where VM files reside. Note: This property is available for VMware vSphere VMs only.
HasSnapshots	Text (string)	Returns a flag indicating whether a VM has snapshots or not (<i>Yes, No</i>). Note: This property is available for VMware vSphere VMs only.
HasCheckpoints	Text (string)	Returns a flag indicating whether a VM has checkpoints or not (<i>Yes, No</i>). Note: This property is available for Microsoft Hyper-V VMs only.
SnapshotCreateTime	Date and time	Returns the date and time when a snapshot was created, in the mm/dd/yyyy hh:mm:ss format. Notes: <ul style="list-style-type: none"> • This property is available for VMware vSphere VMs only. • If a VM has several snapshots, the property returns the creation date of the latest snapshot.
CheckpointCreateTime	Date and time	Returns the date and time when a checkpoint was created, in the mm/dd/yyyy hh:mm:ss format. Notes: <ul style="list-style-type: none"> • This property is available for Microsoft Hyper-V VMs only. • If a VM has several checkpoints, the property returns the creation date of the current checkpoint.

Property	Return Data Type	Description
SnapshotAge	Numeric (integer)	Returns how many hours ago a snapshot was created. Note: This property is available for VMware vSphere VMs only.
Datastore	Text (string)	Returns the name of a storage system (datastore) where VM files reside. Note: If VM files reside on several datastores, the property returns the name of a datastore where the VM configuration file is located.
HasBackups	Text (string)	Returns a flag indicating whether a VM has backups or not (<i>Yes</i> , <i>No</i>).
LastBackupDate	Date and time	Returns the date and time when the latest backup session was performed for a VM in Veeam Backup & Replication, in the mm/dd/yyyy hh:mm:ss format. Note: The backup session is returned only if a restore point was created as a result of this session.
BackupRPO	Numeric (integer)	Returns the number of hours that passed since last backup session completed.
ReplicationRPO	Numeric (integer)	Returns the number of hours that passed since last replication session completed.
BackupJob	Text (string)	Returns a name of a backup job that protects a VM.
InfrastructureLocation	Text (string)	Returns a path to a VM in the virtual infrastructure.
VMFolderPath	Text (string)	Returns a user path to a VM in the virtual infrastructure. Note: This property is available for VMware vSphere VMs only.
Network	Text (string)	Returns the network to which a VM is connected. Note: If a VM is connected to several networks, the property will return a random network.

Property	Return Data Type	Description
ReplicationJob	Text (string)	Returns a name of a replication job in which a VM is included in Veeam Backup & Replication. Note: If a VM is included in several replication jobs, the property will return a random job.
IpAddress	Text (string)	Returns an IP address assigned to a VM.
ComputerName	Text (string)	Returns a domain name assigned to a VM.
Connection_State	Text (string)	Returns a connection state of a VM.
Datacenter	Text (string)	Returns a name of a datacenter where a VM resides.
IsReplica	Text (string)	Returns a flag indicating whether a VM is a replica of an original VM.
CPUFrequency	Numeric (double precision floating-point number)	Returns a frequency of a CPU in MHz. Note: This property is available for Microsoft Hyper-V VMs only.
IsShielded	Text (string)	Returns a flag indicating whether a VM is shielded. Note: This property is available for Microsoft Hyper-V VMs only.

Computer

The following properties of protected computers are supported in grouping expressions.

Property	Return Data Type	Description
BackupServer	Text (string)	Returns a name of Veeam Backup & Replication server that manages the backup agent.
LastBackupDate	Date and time	Returns the date and time when the latest backup session was performed for a computer in Veeam Backup & Replication, in the mm/dd/yyyy hh:mm:ss format.

Property	Return Data Type	Description
BackupRPO	Numeric (integer)	Returns a number of hours that passed since last backup session completed.
BpAgentLicenseType	Text (string)	Returns a type of license installed on a backup agent.
Location	Text (string)	Returns a location assigned to a computer in Veeam Backup & Replication.
BpAgentManagementType	Text (string)	Returns a management type of a backup agent (<i>Standalone</i> , <i>Managed by VBR</i>).
Name	Text (string)	Returns a name of a computer that runs a backup agent.
ProtectedComputersGroup	Text (string)	Returns a name of a protection group for a computer.
ClusterName	Text (string)	Returns a name of a failover cluster in which a computer resides.
IpAddress	Text (string)	Returns an IP address assigned to a computer that runs a backup agent.
FQDN	Text (string)	Returns an FQDN assigned to a computer that runs a backup agent.
JobName	Text (string)	Returns a name of a job that runs on a backup agent.
PolicyName	Text (string)	Returns a name of a backup policy assigned to a backup agent.

Operators

To manipulate values in grouping expressions, you can use the following operators:

Operator	Return Data Type	Description	Example
+	Text (string) Numeric	Joins two string values to one string. Adds two numeric values.	For a VM included in a replication job, expression "Replication Job: " + ReplicationJob returns a string similar to <i>Replication Job: Webserver Daily Replication</i> . Expression 2 + 2 returns 4. Expression 2.05 + 1 returns 3.05.
<	Boolean	Less than. Returns <i>True</i> if the value of left operand is less than the value of right operand. Otherwise, returns <i>False</i> .	For a VM, expression Memory < 2048 returns <i>True</i> if the amount of memory configured for a VM is less than 2048 MB.
<=	Boolean	Less than or equal to. Returns <i>True</i> if the value of left operand is less than or equal to the value of right operand. Otherwise, returns <i>False</i> .	For a VM, expression Memory <= 2048 returns <i>True</i> if the amount of memory configured for a VM is less than or equal to 2048 MB.
>	Boolean	Greater than. Returns <i>True</i> if the value of left operand is greater than the value of right operand. Otherwise, returns <i>False</i> .	For a VM, expression Memory > 2048 returns <i>True</i> if the amount of memory configured for a VM is greater than 2048 MB.
>=	Boolean	Greater than or equal to. Returns <i>True</i> if the value of left operand is greater than or equal to the value of right operand. Otherwise, returns <i>False</i> .	For a VM, expression Memory >= 2048 returns <i>True</i> if the amount of memory configured for a VM is greater than or equal to 2048 MB.
=	Boolean	Equal. Returns <i>True</i> if the value of left operand is the same as the value of right operand. Otherwise, returns <i>False</i> .	For a VM, expression Memory = 2048 returns <i>True</i> if the amount of memory configured for a VM is equal to 2048 MB. For a VM, expression Name = "vdi001" returns <i>True</i> if the VM name is <i>vdi001</i> .

Operator	Return Data Type	Description	Example
<>	Boolean	<p>Not equal.</p> <p>Returns <i>True</i> if the value of left operand is not the same as the value of right operand.</p> <p>Otherwise, returns <i>False</i>.</p>	<p>For a VM, expression <code>Memory <> 2048</code> returns <i>True</i> if the amount of memory configured for a VM is less or greater than 2048 MB.</p> <p>For a VM, expression <code>Tag(department) <> "support"</code> returns <i>True</i> if a tag of the <i>department</i> category assigned to a VM is other than <i>support</i>.</p>

Functions

To manipulate values in grouping expressions, you can use the following functions:

Function	Return Data Type	Description	Example
DateAdd	Date	<p>Returns a date value to which a time interval has been added, or from which a time interval has been subtracted.</p> <p>The function accepts the following arguments:</p> <ol style="list-style-type: none"> 1. Date and time to which a time interval must be added, in the YYYY-MM-DD format. 2. Time interval that must be added to the initial date and time. The interval can be a positive or negative number. 3. Measurement unit of the time interval ("h" - hour, "d" - day, "m" - month, "y" - year). 	<p>Expression <code>DateAdd("2016-10-20", 7, "d")</code> adds 7 days to the specified date, and returns <i>2016-10-27</i>.</p> <p>Nested expression <code>SnapshotCreateTime < DateAdd(DateAdd(Today, -2, "d"))</code> returns <i>True</i> if the latest VM snapshot was created earlier than 2 days and 12 hour ago.</p>
IndexOf	Numeric (integer)	<p>Returns the position of the first occurrence of a specified value (substring) in a string. Index of the first character in a string is 0.</p> <p>Returns -1 if the value is not found within the string.</p> <p>The function accepts the following arguments:</p> <ol style="list-style-type: none"> 1. String value. 2. Substring value whose index position must be found within the string value. 	<p>Expression <code>IndexOf("vdi001_mrk", "_")</code> returns <i>6</i>.</p> <p>Expression <code>IndexOf("vdi001", "_")</code> returns <i>-1</i>.</p>

Function	Return Data Type	Description	Example
Left	Text (string)	<p>Returns a substring that contains a specified number of characters from the left side of a string.</p> <p>The function accepts the following arguments:</p> <ol style="list-style-type: none"> 1. String value. 2. Number of characters from the left side of a string to return. 	<p>Expression <code>Left("vdi001_mrk", 6)</code> returns <i>vdi001</i>.</p> <p>Nested expression <code>Left("vdi001_replica", IndexOf("vdi002_replica", "_"))</code> returns <i>vdi002</i>.</p>
Length	Numeric (integer)	<p>Returns the number of characters in a string.</p> <p>The function accepts a string value as an argument.</p>	<p>Expression <code>Length("123456789")</code> returns <i>9</i>.</p> <p>For a VM, expression <code>Length("Name")</code> returns the number of characters in the VM name.</p>
Replace	Text (string)	<p>Returns a string in which a specified substring has been replaced with another substring.</p> <p>The function accepts the following arguments:</p> <ol style="list-style-type: none"> 1. String value. 2. Substring value that must be replaced. 3. Substring value that must replace the sought substring. <p>Note: If there are two or more equal substrings in a string, all substrings will be replaced.</p>	<p>Expression <code>Replace("vdi002_mrk", "_", "")</code> changes the <i>vdi002_mrk</i> value to <i>vdi002_mrk</i>.</p> <p>For a VM, expression <code>Replace(Name, "_replica", "")</code> removes the <i>_replica</i> suffix from the VM name.</p>
Right	Text (string)	<p>Returns a substring that contains a specified number of characters from the right side of a string.</p> <p>The function accepts the following arguments:</p> <ol style="list-style-type: none"> 1. String value. 2. Number of characters from the right side of a string to return. 	<p>Expression <code>Right("vdi003_mrk", 3)</code> returns <i>mrk</i>.</p> <p>Nested expression <code>Right("vdi003_replica", (IndexOf("vdi003_replica", "_")) + 1))</code> returns <i>replica</i>.</p>

Function	Return Data Type	Description	Example
Space	Text (string)	Returns a string that consists of the specified number of spaces. The function accepts a positive integer as an argument.	Nested expression Replace("vdi004_mrk", " ", Space(1)) changes the <i>vdi004_mrk</i> value to <i>vdi004 mrk</i> .
Substring	Text (string)	Retrieves a substring from a specified string. The substring starts at the specified character position (index) and has the specified length. Index of the first character in a string is 0. The function accepts the following arguments: <ol style="list-style-type: none">1. String value.2. Start index position of a substring that must be retrieved.3. Number of characters to retrieve starting with the specified index position.	Expression Substring("vdi005_mrk", 7, 3) returns <i>mrk</i> .
Trim	Text (string)	Returns a string with no leading or trailing spaces. The function accepts a string value as an argument.	Expression Trim(" vdi006 ") returns <i>vdi006</i> .
TrimLeft	Text (string)	Returns a string with no leading spaces. The function accepts a string value as an argument.	Expression Trim(" vdi007") returns <i>vdi007</i> .
TrimRight	Text (string)	Returns a string with no trailing spaces. The function accepts a string value as an argument.	Expression Trim("vdi008 ") returns <i>vdi008</i> .

Function	Return Data Type	Description	Example
ToDate	Date	<p>Converts a string containing a valid date representation to the DateTime format.</p> <p>Note: The function is based on the DateTime.TryParse function and accepts the same input values.</p>	<p>Expression <code>ToDate ("2009/03/12")</code> returns <i>2009-03-12</i>.</p> <p>Expression <code>ToDate ("ToDate ("2009/03/01")")</code> returns <i>2009-03-01</i>.</p>
ToLowerCase	Text (string)	<p>Converts a string to lower case letters.</p> <p>The function accepts a string value as an argument.</p>	<p>Expression <code>ToLowerCase ("LoWeRCaSe")</code> returns <i>lowercase</i>.</p>
ToUpperCase	Text (string)	<p>Converts a string to upper case letters.</p> <p>The function accepts a string value as an argument.</p>	<p>Expression <code>ToUpperCase ("uppercase")</code> returns <i>UPPERCASE</i>.</p>

Logical Operators

The logical operator `CASE` represents an *if-else* statement. It is used to evaluate a certain condition and execute an expression if this condition is true. If the condition is false, another expression is executed.

The `CASE` operator has the following syntax:

```
CASE
WHEN "Value" = "1" THEN "Expression 1"
ELSE "Expression 2"
END
```

Here:

- `WHEN` statement represents a condition that must be evaluated.
- `THEN` statement specifies a group to which an object must be placed if the condition is true.
- `ELSE` specifies a group to which an object must be placed if the condition is false.

You can include multiple `WHEN` statements to evaluate multiple conditions:

```
CASE
WHEN "Value" = "1" THEN "Expression 1"
WHEN "Value" = "2" THEN "Expression 2"
WHEN "Value" = "3" THEN "Expression 3"
ELSE "Expression 4"
END
```

Limitations

You cannot nest one `CASE` expression within another `CASE` expression. However, you can include methods to define values in a `CASE` statement.

Example

Business View includes a number of predefined categories that use `CASE` grouping expressions. You can use these predefined categories to understand how the `CASE` operator works.

For example, the *VMs with Snapshot* category uses the following grouping expression.

```
CASE
WHEN HasSnapshots = "No" THEN "No snapshots"
WHEN SnapshotCreateTime < DateAdd(Today, -30, "d") THEN "Older than 30 days"
WHEN SnapshotCreateTime < DateAdd(Today, -7, "d") THEN "Older than 7 days"
WHEN SnapshotCreateTime < DateAdd(Today, -1, "d") THEN "Older than 1 day"
ELSE "Recent snapshots"
END
```

Here:

- The first `WHEN` statement checks whether a VM has any snapshots. If a VM has no snapshots, this VM is included in the *No snapshots* group.
- The second, third and fourth `WHEN` statements check VM snapshot age. If the age more than 30 days, a VM is included in the *Older than 30 days* group. If the age more than 7 days, a VM is included in the *Older than 7 days* group. If the age more than 1 day, a VM is included in the *Older than 1 day* group.
- The `ELSE` statement includes in the *Recent snapshots* group all VMs with snapshots not older than 1 day.

Constants

To create grouping expressions, you can use the following constants.

Constant	Return Data Type	Description
vCenter	Text (string)	Returns the name of a virtual infrastructure server that manages a host, storage or VM.
Today	Date and time	Returns the current date and time in the YYYY-MM-DDThh:mm:ss format.