

Foglight® Change Analyzer 6.0.0
User and Reference Guide



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Legend

- **WARNING:** A WARNING icon indicates a potential for property damage, personal injury, or death.

- ! **CAUTION:** A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.

- i **IMPORTANT NOTE, NOTE, TIP, MOBILE, or VIDEO:** An information icon indicates supporting information.

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Contents

Get started with Foglight Change Analyzer	6
Installation requirements	6
Credentials requirements	7
Data collection	7
Dashboard location	7
Navigation basics	8
Interact with Foglight Change Analyzer	9
Change Summary	10
Analyze Changes	11
VM Performance	12
Impact Analysis	13
VM Configuration Comparison	19
Change History	20
Users and Permissions	22
Settings	23
Scheduled Actions	23
Change Alarms	24
Highest Impact Changes	26
Reference	27
Analyze Changes view	27
Purpose	27
Description of view elements	27
Change Summary view	28
Purpose	29
Description of view elements	32
Change History view	33
Purpose	34
Description of view elements	34
Impact Analysis view	35
Purpose	35
Description of view elements	36
Users and Permissions view	38
Purpose	38
Description of view elements	38
VM Configuration Comparison view	39
Purpose	39
Description of view elements	39
VM Performance view	41
Purpose	41
Description of view elements	41
Foglight Change Analyzer reports	42

About Us	44
We are more than just a name	44
Our brand, our vision. Together.	44
Contacting Quest	44
Technical support resources	44

Get started with Foglight Change Analyzer

Foglight® Change Analyzer allows you to track changes in your virtual environment and understand their potential impact on performance and availability. It captures and reports on changes to VMs, hosts, clusters, datastores, and resource pools within a selected environment. It also allows you to compare VMs to a “gold standard” VM or template and alerts you when changes cause their configurations to drift from the standard.

This guide provides information about Foglight Change Analyzer. Read it to acquire an overall understanding of the workings and capabilities of Foglight Change Analyzer and use it as a reference whenever you require specific information about this product. This guide is intended for IT managers who want to monitor virtual infrastructure changes and diagnose issues in the virtual environment.

This section introduces you to the Foglight Change Analyzer environment, and provides you with essential foundational information.

To get started with Foglight Change Analyzer see these topics:

- [Installation requirements](#)
- [Credentials requirements](#)
- [Data collection](#)
- [Dashboard location](#)
- [Navigation basics](#)

This version of Foglight Change Analyzer works with Foglight for VMware. Support for additional virtualization environments will be added in future releases. For detailed information about the Foglight VMware® environment, see the *Foglight for VMware User and Reference Guide*.

Installation requirements

Foglight Change Analyzer comes installed on Foglight for Virtualization, Enterprise Edition or Foglight Evolve and can be installed on a Foglight Management Server.

Foglight Change Analyzer requires the following cartridges for data collection:

- 1 *vUsage-Feedback-5_8_1.car*
- 2 *DRP-5_8_1.car*
- 3 *OptimizerAutomation-5_8_1.car*
- 4 *CommonAnalytics-5_8_1.car*
- 5 *Virtual-VMware-5_8_1.car*

i **NOTE:** After installing the *Virtual-VMware-5_8_1.car* cartridge, existing vCenter agents (VC agents) must be updated using the **Update Agent** button in the **VMware Environment > Administration** tab.

- 6 *Virtual-VMware-Admin-5_8_1.car*

- 7 *Optimizer-5_8_1.car (recommended)*
- 8 *VMware-Optimizer-5_8_1.car (recommended)*
- 9 *ChangeAnalyzer-5_8_1.car*

While Foglight for Virtualization, Enterprise Edition or Foglight Evolve comes with these cartridges pre-installed and enabled, a stand-alone Foglight release requires that these components be installed on the Foglight Management Server. The sequence of cartridge installation is important because of their dependencies.

For more information about installing Foglight Change Analyzer, and for details about system requirements and version compatibility, see the *Foglight Change Analyzer Release Notes*.

Credentials requirements

Foglight Change Analyzer provides recommendations for changes in the VMware® environment to make more efficient use of resources. As a prerequisite, a VMware agent must be configured with a user that has elevated privileges, beyond the read-only privileges required for monitoring.

For a list of privileges required for the VMware agent, see section “Configuring Monitoring Agents for Data Collection” in the *Foglight for VMware User and Reference Guide*.

To review the permissions each user/group has for a selected object, see [Users and Permissions](#).

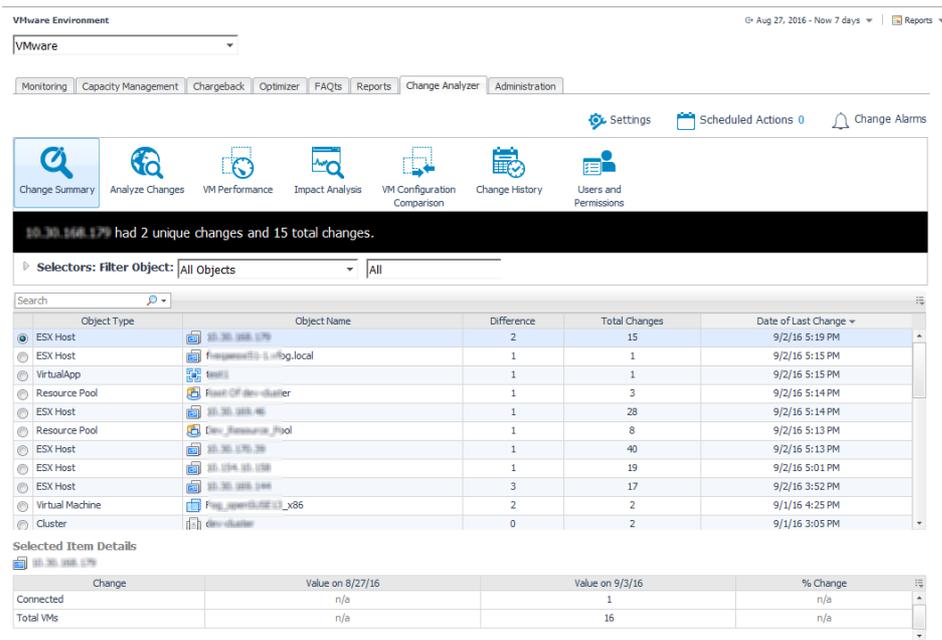
Data collection

The Change Analyzer dashboard automatically displays the virtual machine hosts (VMware® target machines) that Foglight, Foglight for Virtualization, Enterprise Edition, or Foglight Evolve monitors, for which recommendations are provided. No further setup is required.

Dashboard location

After installing Foglight Change Analyzer, the **Change Analyzer** tab appears in the **VMware Environment** dashboard.

Figure 1. Change Analyzer dashboard location



To access the Change Analyzer dashboard:

- 1 Log in to the Foglight, Foglight for Virtualization, Enterprise Edition, or Foglight Evolve browser interface.
- 2 On the navigation panel, under Dashboards, click **VMware > VMware Environment**.
The VMware Environment dashboard opens.
- 3 Click the **Change Analyzer** tab.
The Change Analyzer dashboard opens.

Navigation basics

For detailed information about navigating the Foglight Change Analyzer user interface, see the “Navigation basics” topic in the *Foglight for VMware User and Reference Guide*.

Interact with Foglight Change Analyzer

This section provides instructions on how to use the Foglight Change Analyzer views to analyze the changes occurred in your environment.

When you install Foglight for Virtualization, Enterprise Edition or Foglight Evolve, the **Environment Overview dashboard > Investigate tab** provides an overview of changes with the highest impact on your environment. For more information, see [Highest Impact Changes](#).

When you install Foglight Change Analyzer and a Foglight system, the **Change Analyzer** tab appears in the VMware Environment dashboard. It provides several ways of analyzing the changes made to your virtual infrastructure, and of assessing their impact on your virtual environment.

You begin this process by using the **Group Selector**, located in the upper left section of the **VMware Environment** dashboard, to select the virtual environment that you want to monitor. The Foglight Change Analyzer views display the changes made to the selected virtual environment and assess their impact on that virtual environment.

Figure 2. Group Selector



Select the timeframe for the analysis from the **Time Range** located on the top right corner of the VMware Environment dashboard.

The **Change Analyzer** tab includes the following elements:

- **Actions bar:**
 - **Settings.** Click this icon to open the Settings dialog box. It allows you to configure the settings to be taken into calculation when analyzing the impact that various changes have on your environment. For details, see [Settings](#).
 - **Scheduled Actions.** Click this icon to open the Scheduled Actions dialog box. It allows you to view and modify the list of actions scheduled to be run at a particular time in the future. For details, see [Scheduled Actions](#).
 - **Change Alarms.** Click this icon to open the Change Alarms dialog box. It allows you to define and manage alarms to be triggered when changes that occur in your environment pose performance or security risks. For details, see [Change Alarms](#).
- **Menu bar:**
 - **Change Summary.** Click this icon to open the Change Summary view. This view shows all the changes that occurred to VMs, hosts, clusters, datastores, and resource pools within a selected environment, during a selected timeframe. For details, see [Change Summary](#).
 - **Analyze Changes.** Click this icon to open the Analyze Changes view. This view allows you to analyze what is changing performance-wise in a selected environment, during a selected timeframe. For details, see [Analyze Changes](#).

Figure 3. Change Summary view

Menu bar

Selectors bar

Quick view

Object Type	Object Name	Difference	Total Changes	Date of Last Change
ESX Host	10.30.168.179	1	10	9/2/16 5:19 PM
ESX Host	fwgwes01-1-rfog-local	1	1	9/2/16 5:15 PM
VirtualApp	test1	1	1	9/2/16 5:15 PM
Resource Pool	Host Of dev-cluster	1	3	9/2/16 5:14 PM
ESX Host	10.30.168.46	1	28	9/2/16 5:14 PM
Resource Pool	dev_Resource_Pool	1	8	9/2/16 5:13 PM
ESX Host	10.30.170.26	1	38	9/2/16 5:13 PM
ESX Host	10.124.10.120	1	14	9/2/16 5:01 PM
ESX Host	10.30.168.144	1	14	9/2/16 3:52 PM
Virtual Machine	fwgwes01-001-L3_x86	2	2	9/1/16 4:25 PM
Cluster	dev-cluster	0	2	9/1/16 3:05 PM

Change	Value on 8/31/16	Value on 9/3/16	% Change
Connected	n/a	1	n/a
Total VMs	n/a	16	n/a

To display all changes occurred in a selected virtual environment:

- 1 Click the **Change Summary** icon on the Change Analyzer tab > Menu bar.
The Change Summary view opens.
- 2 Select the timeframe for the analysis from the Time Range located at the top right corner of the VMware Environment dashboard.
- 3 On the Selectors bar, choose the objects to be included in the change analysis report, by selecting the environment and the virtual objects from the drop-down lists, or by typing the name of an object in the **Search** box.
The upper table in the Quick view is updated to display the objects that match the selection.
- 4 To analyze in more detail the changes made to a particular VM, select an object from the upper table in the Quick view.

The lower table in the Quick view is updated to display detailed information for the selected VM. It shows all the changes that make up the difference reported for the selected object. The black banner on the Selectors tab is updated to display a message summarizing the changes occurred for the selected objects.

For additional information about this view, see [Change Summary view](#).

Analyze Changes

The **Analyze Changes** view allows you to analyze what is changing performance-wise in a selected environment, during a selected timeframe.

Figure 4. Analyze Changes view

The screenshot shows the 'Analyze Changes' view in Foglight. At the top is a menu bar with icons for Change Summary, Analyze Changes, VM Performance, Impact Analysis, VM Configuration Comparison, Change History, and Users and Permissions. Below the menu bar is a selectors bar with dropdowns for 'All Objects', 'All', and 'Virtual Machine'. A search box is located above a main table. The table has columns for Object Name, Change Event, Performance Impact, Affected Objects, and Change Date. A 'Quick view' section is visible on the right side of the table. Below the main table is a 'Selected Item Details' section showing performance data for 'Fog_RHEL_7'.

Object Name	Change Event	Performance Impact	Affected Objects	Change Date
auto5	VM 'auto5' was powered off	-86.4	2	8/31/16 4:31 PM
Fog_TPL_CentOS_7_x64	VM 'Fog_TPL_CentOS_7_x64' has been moved to a different host '10.30.152.57'	-25.0	46	8/31/16 3:30 PM
XD78SM002	VM 'XD78SM002' was powered on	-16.4	3	8/31/16 7:01 AM
XD78SM001	VM 'XD78SM001' was powered on	-16.4	3	8/31/16 7:01 AM
XD78SM003	VM 'XD78SM003' was powered on	-16.4	3	8/31/16 7:01 AM
XD78SM002	VM 'XD78SM002' was powered on	-14.4	3	9/1/16 7:01 AM
V61AFC-1	VM 'V61AFC-1' was powered off	-12.1	3	9/1/16 2:18 AM
Fog_SLES_12	VM 'Fog_SLES_12' was powered on	-11.9	2	8/31/16 3:18 PM
Fog_RHEL_5.6_EN_x86_64	VM 'Fog_RHEL_5.6_EN_x86_64' was powered on	-11.9	2	8/31/16 3:18 PM
Fog_RHEL_5.6_EN_x86_64	Memory allocation changed for VM 'Fog_RHEL_5.6_EN_x86_64'	-11.9	2	8/31/16 3:18 PM
auto3	VM 'auto3' has been moved to a different host '10.30.169.46'	-11.3	1	8/31/16 5:25 PM
Fog_SLES_12	VM 'Fog_SLES_12' was powered on	-10.6	1	8/31/16 4:04 PM
Fog_SLES_12	VM 'Fog_SLES_12' was powered off	-10.6	1	8/31/16 4:03 PM
Fog_SLES_12	Change in number of vCPUs allocated to VM 'Fog_SLES_12'	-10.6	1	8/31/16 4:04 PM
XD78SM002	VM 'XD78SM002' was powered off	-9.6	4	9/1/16 7:01 PM
XD78SM001	VM 'XD78SM001' was powered off	-9.6	4	9/1/16 7:01 PM

Affected Object	Performance Before	Performance After	Performance Change
Fog_RHEL_7	94.7	84.1	-10.6

To analyze the impact of changes occurred in a selected virtual environment:

- 1 Click the **Analyze Changes** icon on the Change Analyzer tab > Menu bar. The Analyze Changes view opens.
- 2 Select the timeframe for the analysis from the Time Range located at the top right corner of the VMware Environment dashboard.
- 3 On the Selectors bar, choose the objects to be included in the analysis by selecting the environment and objects from the drop-down lists, or by typing the name of an object in the **Search** box.

NOTE: To modify the analysis settings, use the Setting menu on the Actions bar. For details, see [Settings](#).

The system analyzes the data based on the selected settings. A progress bar appears indicating the status of the operation. When the operation completes, the upper table in the Quick view is updated to display the objects that have experienced an event that affects the performance of the environment, during the selected timeframe.

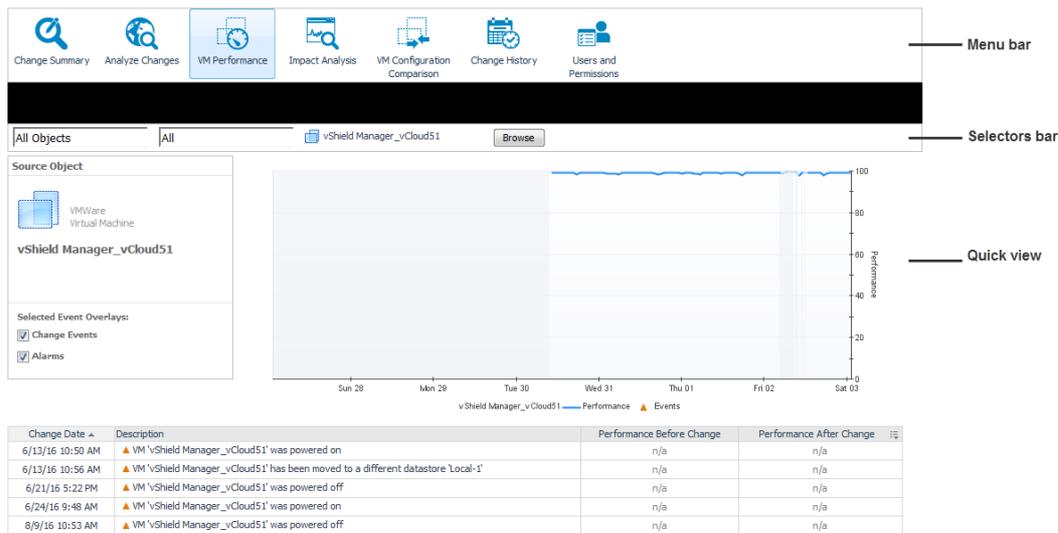
- 4 To analyze in more detail which objects in the environment are affected performance-wise by an event, select an object/event from the upper table in the Quick view. The lower table in the Quick view is updated to display all objects whose performance is affected by the selected object/ event.

For additional information about this view, see [Analyze Changes view](#).

VM Performance

The **VM Performance** view allows you to analyze the performance of a selected VM, during a selected timeframe.

Figure 5. VM Performance view



To analyze the performance of a virtual machine:

- 1 Click the **VM Performance** icon on the Change Analyzer tab > Menu bar.
The VM Performance view opens.
- 2 Select the timeframe for the analysis from the Time Range located at the top right corner of the VMware Environment dashboard.
- 3 On the Selectors bar:
 - a Choose the objects to be included in the analysis by selecting the environment and objects from the drop-down lists.
 - b Click **Browse** to open the **Select a Virtual Machine** dialog box.
 - c Optional. Select the **Powered-On VMs Only** check box to display only the VMs that are powered on.
 - d Select a virtual machine from the Object Name table or by typing its the name in the **Search** box.
 - e Click **Select** to close the **Select a Virtual Machine** dialog box.

The Quick view is updated to display the performance of the selected VM during the selected timeframe. Alarms and events that affected the VM performance are also overlaid on the graph.

- 4 Analyze the VM performance in more detail, by reviewing the information in the Quick View graph. To change the display settings, click the **Customizer** icon  at the top right corner of the graph. The standard chart customizer offers the following options: *Use View Settings*, *Automatic*, *From Data*, and *Data vs Calibrated*. See the “Time Plot Chart” topic in the Foglight online help for information about these options.
- 5 Analyze the events and alarms that affected the VM performance, by reviewing the information in the Quick View table.

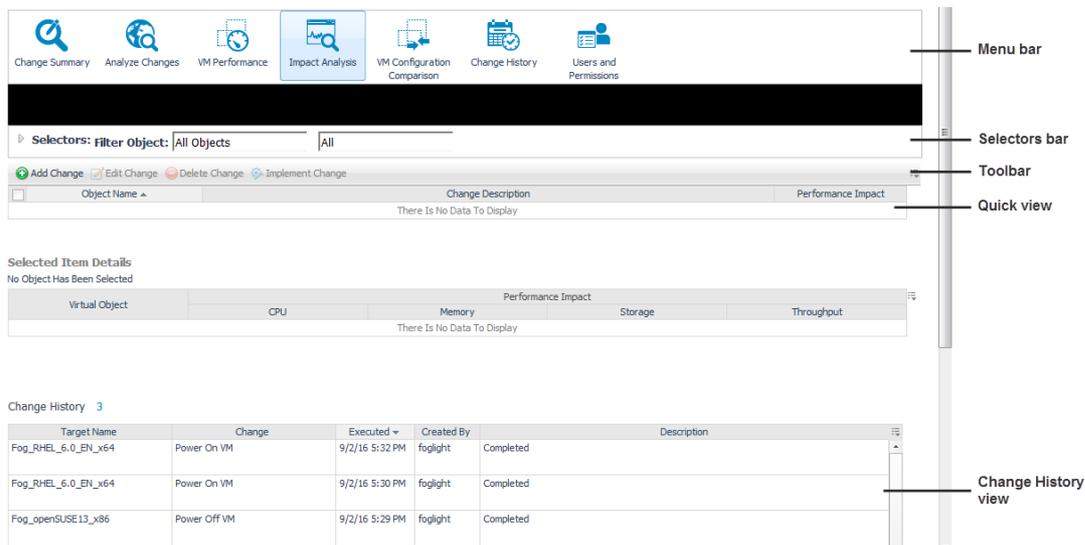
For additional information about this view, see [VM Performance view](#).

Impact Analysis

The **Impact Analysis** view allows you to define a sequence of changes and see what impact those changes have on your system’s performance. It also allows you to trigger the execution of these changes immediately or schedule these changes within Foglight, Foglight for Virtualization, Enterprise Edition, or Foglight Evolve. The

Change History embedded view displays the history of changes implemented using the Impact Analysis functionality. For detailed information about how the performance impact is calculated, see [Performance impact assessment](#).

Figure 6. Impact Analysis view



To review the impact of modeled changes on your environment:

- 1 Click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.
The Impact Analysis view opens.
- 2 On the Selectors bar, choose the objects to be included in the analysis by selecting the environment and objects from the drop-down lists.
The Quick view is updated to display the change models already created, that match the selection criteria.
- 3 On the Quick view upper table, choose the change models that you want to review by selecting their corresponding check boxes.
- 4 Analyze in more detail how the selected models affect your systems' performance, by reviewing the information in the Quick view lower table.

To add a change model to your environment:

- 1 Click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.
The Impact Analysis view opens.
- 2 On the Toolbar, click **Add Change**  .
The **Model Change** dialog box opens.
- 3 From the **Change Type** drop-down list select a type for the new change model.
The fields on the dialog box change depending on your selection.
- 4 If you selected **Power Off a VM** or **Power On a VM** in [Step 3](#), define the following settings:
 - **VM Name.** Choose the VM that should be powered off/ powered on. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box.
- 5 If you selected **Move a VM** in [Step 3](#), define the following settings:

- **VM Name.** Choose the VM that should be moved. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box.
 - **Destination.** Choose the environment where the VM should be moved. Click **Browse** to open the **Select the Destination** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Destination** dialog box.
 - **Storage.** Choose the storage where the VM should be moved. Click **Browse** to open the **Select the Storage** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Storage** dialog box.
- 6 If you selected **Change VM Configuration** in [Step 3](#), define the following settings:
- **VM to Configure.** Choose the VM that should be configured. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box. The **Model a Change** dialog box is updated to display the current CPU and memory configuration settings for the selected VM.
 - **CPU Allocation.** Change the number of vCPUs allocated to this VM by typing the new value in the **Change To** field.
 - **CPU Reservation.** Change the CPU reservation for the selected VM by typing the new value in the **Change To** field.
 - **CPU Limit.** Change the CPU limit for the selected VM by typing the new value in the **Change To** field. To use unlimited CPU resources, select the **Unlimited** check box.
 - **Memory Allocation.** Change the memory resources allocated to this VM by typing the new value in the **Change To** field.
 - **Memory Reservation.** Change the memory reservation for the selected VM by typing the new value in the **Change To** field.
 - **Memory Limit.** Change the memory limit for the selected VM by typing the new value in the **Change To** field. To use unlimited memory resources, select the **Unlimited** check box.
- 7 If you selected **Change RP Configuration** in [Step 3](#), define the following settings:
- **RP to Configure.** Choose the resource pool that should be configured. Click **Browse** to open the **Select the Resource Pool** dialog box. Select the RP from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Resource Pool** dialog box. The **Model a Change** dialog box is updated to display the current CPU and memory configuration settings for the selected RP.
 - **CPU Reservation.** Change the CPU reservation for the selected RP by typing the new value in the **Change To** field.
 - **CPU Limit.** Change the CPU limit for the selected RP by typing the new value in the **Change To** field. To use unlimited CPU resources, select the **Unlimited** check box.
 - **Memory Reservation.** Change the memory reservation for the selected RP by typing the new value in the **Change To** field.
 - **Memory Limit.** Change the memory limit for the selected RP by typing the new value in the **Change To** field. To use unlimited memory resources, select the **Unlimited** check box.
- 8 If you selected **Change HA Failure Configuration** in [Step 3](#), define the following settings:
- **Cluster to Configure.** Choose the cluster that should be configured. Click **Browse** to open the **Select the Cluster** dialog box. Select the cluster from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Cluster** dialog box.
 - Select a failover mechanism from the **HA Failover** drop-down list:
 - **HA Failover Disabled.** Use this option to disable the failover mechanism configured for the selected cluster.

- **Host Failures the Cluster Will Tolerate.** Use this option to configure how many host failures the cluster can tolerate before its performance is affected. Specify the number of hosts in the **Count** field.
 - **Percentage of Resources Reserved as Failover Capacity.** Use this option to configure the resources reserved for the cluster in case of a failover. Specify the number of CPUs and the amount of memory reserved for failover, in the **CPU(%)** and **Memory(%)** fields, respectively.
 - **Specify Failover Hosts.** Use the arrows to move (from the **Available Hosts** table to the **Failover Hosts** table) the hosts that should be used as failover in case other hosts in the cluster fail.
- 9 If you selected **Deploy a VM** in [Step 3](#), define the following settings:
- **VM Name.** Type in this field the name of the VM that should be deployed.
 - **VM Selection.** Choose the size of the deploying VM from the options available in the drop-down list:
 - **Default.** Use this option to set the default VM size, with the following pre-configured parameters: CPU=2GHz, Memory=4GB, Storage=25GB, Throughput=1MB/s.
 - **Existing VM.** Use this option to set the VM parameters according to a specific existing VM. In this case, the parameters of the deploying VM (CPU, Memory, Storage, and Throughput) are equal to the parameters of the selected VM.
 - **New Custom Size.** Use this option to set custom resource allocation (CPU, Memory, Storage, and Throughput) for the deploying VM.
 - **Select VM.** This option is available only when **Existing VM** is selected from the **VM Selection** drop-down. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box. The **Model a Change** dialog box is updated to display the current CPU, memory, storage, and throughput configuration settings for the selected VM.
 - **Container.** Choose the container for the VM to be deployed. Click **Browse** to open the **Select the Container** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Container** dialog box.
 - **Storage.** Choose the storage for the VM to be deployed. Click **Browse** to open the **Select the Storage** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Storage** dialog box.
 - **Template.** Choose the template for the deployment. Click **Browse** to open the **Select the Template** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Template** dialog box.
 - **Utilization.** Define the values and units for each of the following configuration settings: **CPU**, **Memory**, **Storage**, and **Throughput**.
- 10 Click **Save** to create the change model and close the **Model Change** dialog box.
- The newly created model is displayed in the Quick view.

To edit a change model:

- 1 Click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.
The Impact Analysis view opens.
- 2 On the Quick view, select the model you want to modify from the upper table.
- 3 On the Toolbar, click **Edit Change**  .
The **Model Change** dialog box opens, displaying the current information for the selected model.

i | **NOTE:** The change type cannot be modified.

- 4 If you selected a **Power Off a VM** or a **Power On a VM** change model, edit the following settings, as necessary:
 - **VM Name.** Choose the VM that should be powered off/ powered on. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box.
- 5 If you selected a **Move a VM** change model, edit the following settings, as necessary:
 - **VM Name.** Choose the VM that should be moved. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box.
 - **Destination.** Choose the environment where the VM should be moved. Click **Browse** to open the **Select the Destination** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Destination** dialog box.
 - **Storage.** Choose the storage where the VM should be moved. Click **Browse** to open the **Select the Storage** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Storage** dialog box.
- 6 If you selected a **Change VM Configuration** change model, edit the following settings, as necessary:
 - **VM to Configure.** Choose the VM that should be configured. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box. The **Model a Change** dialog box is updated to display the current CPU and memory configuration settings for the selected VM.
 - **CPU Allocation.** Change the number of vCPUs allocated to this VM by typing the new value in the **Change To** field.
 - **CPU Reservation.** Change the CPU reservation for the selected VM by typing the new value in the **Change To** field.
 - **CPU Limit.** Change the CPU limit for the selected VM by typing the new value in the **Change To** field. To use unlimited CPU resources, select the **Unlimited** check box.
 - **Memory Allocation.** Change the memory resources allocated to this VM by typing the new value in the **Change To** field.
 - **Memory Reservation.** Change the memory reservation for the selected VM by typing the new value in the **Change To** field.
 - **Memory Limit.** Change the memory limit for the selected VM by typing the new value in the **Change To** field. To use unlimited memory resources, select the **Unlimited** check box.
- 7 If you selected a **Change RP Configuration** change model, edit the following settings, as necessary:
 - **RP to Configure.** Choose the resource pool that should be configured. Click **Browse** to open the **Select the Resource Pool** dialog box. Select the RP from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Resource Pool** dialog box. The **Model a Change** dialog box is updated to display the current CPU and memory configuration settings for the selected RP.
 - **CPU Reservation.** Change the CPU reservation for the selected RP by typing the new value in the **Change To** field.
 - **CPU Limit.** Change the CPU limit for the selected RP by typing the new value in the **Change To** field. To use unlimited CPU resources, select the **Unlimited** check box.
 - **Memory Reservation.** Change the memory reservation for the selected RP by typing the new value in the **Change To** field.
 - **Memory Limit.** Change the memory limit for the selected RP by typing the new value in the **Change To** field. To use unlimited memory resources, select the **Unlimited** check box.
- 8 If you selected a **Change HA Failure Configuration** change model, edit the following settings, as necessary:

- **Cluster to Configure.** Choose the cluster that should be configured. Click **Browse** to open the **Select the Cluster** dialog box. Select the cluster from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Cluster** dialog box.
- Select a failover mechanism from the **HA Failover** drop-down list:
 - **HA Failover Disabled.** Use this option to disable the failover mechanism configured for the selected cluster.
 - **Host Failures the Cluster Will Tolerate.** Use this option to configure how many host failures the cluster can tolerate before its performance is affected. Specify the number of hosts in the **Count** field.
 - **Percentage of Resources Reserved as Failover Capacity.** Use this option to configure the resources reserved for the cluster in case of a failover. Specify the number of CPUs and the amount of memory reserved for failover, in the **CPU(%)** and **Memory(%)** fields, respectively.
 - **Specify Failover Hosts.** Use the arrows to move (from the **Available Hosts** table to the **Failover Hosts** table) the hosts that should be used as failover in case other hosts in the cluster fail.

9 If you selected a **Deploy a VM** change model, edit the following settings, as necessary:

- **VM Name.** Type in this field the name of the VM that should be deployed.
- **VM Selection.** Choose the size of the deploying VM from the options available in the drop-down list:
 - **Default.** Use this option to set the default VM size, with the following pre-configured parameters: CPU=2GHz, Memory=4GB, Storage=25GB, Throughput=1MB/s.
 - **Existing VM.** Use this option to set the VM parameters according to a specific existing VM. In this case, the parameters of the deploying VM (CPU, Memory, Storage, and Throughput) are equal to the parameters of the selected VM.
 - **New Custom Size.** Use this option to set custom resource allocation (CPU, Memory, Storage, and Throughput) for the deploying VM.
- **Select VM.** This option is available only when **Existing VM** is selected from the **VM Selection** drop-down. Click **Browse** to open the **Select the Virtual Machine** dialog box. Select the VM from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Virtual Machine** dialog box. The **Model a Change** dialog box is updated to display the current CPU, memory, storage, and throughput configuration settings for the selected VM.
- **Container.** Choose the container for the VM to be deployed. Click **Browse** to open the **Select the Container** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Container** dialog box.
- **Storage.** Choose the storage for the VM to be deployed. Click **Browse** to open the **Select the Storage** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Storage** dialog box.
- **Template.** Choose the template for the deployment. Click **Browse** to open the **Select the Template** dialog box. Select a virtual object from the Object Name's table, or by typing its name in the **Search** box. Click **Select** to close the **Select the Template** dialog box.
- **Utilization.** Define the values and units for each of the following configuration settings: **CPU**, **Memory**, **Storage**, and **Throughput**.

10 Click **Save** to update the change model and close the **Model Change** dialog box.

The updated model is displayed in the Quick view.

To delete a change model:

- 1 Click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.
The Impact Analysis view opens.
- 2 On the Quick view, select the model you want to modify from the upper table.

- 3 On the Toolbar, click **Delete Change**  .
The **Delete Selected Modeled Changes** dialog box opens.
- 4 Click **Yes** to confirm the operation.
The selected model is deleted from the Quick view.

To implement a modeled change:

- 1 Click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.
The Impact Analysis view opens.
- 2 On the Quick view upper table, select the modeled change you want to implement.
- 3 On the Toolbar, click **Implement Change**  .
The Implement Change dialog box opens.
- 4 On the **Implement** tab:
 - Review the details of the modeled change and their impact on the system.
 - Choose whether the change should be applied immediately (select the **Now** option button) or later (select the **Later** option button and a **Date** and **Time** from the drop-down lists)
- 5 On the **Notifications** tab:
 - Type a name for the report that should be sent out when the change is implemented.
 - Select the email addresses for the users that should be notified when this change is implemented.
 - To add an email address to the list of available options, click the **Add** icon, type a valid email address in the available field, then click **Add**.
 - To delete an email address from the list of available options, select its check box, click the **Delete** icon. The address is deleted from the list immediately.
- 6 Click **Save**.
The selected change is triggered immediately or scheduled within Foglight, Foglight for Virtualization, Enterprise Edition, or Foglight Evolve. Changes already executed are displayed in the Impact Analysis—Change History view.

For additional information about this view, see [Impact Analysis view](#).

VM Configuration Comparison

The **VM Configuration Comparison** view allows you to compare all VMs within a selected environment to a specific “gold standard” template or reference VM. If they differ, it displays a detailed list of all the configuration differences.

Figure 7. VM Configuration Comparison view

Virtual Machine	Differences	Date of Last Change
Fog_Per_07_CentOS_7_x64_Unit_Load_FglAM3	7	7/7/16 2:01 PM
vShield Manager	5	8/30/16 4:47 PM
vse-vDC Network (48e76f4d-3ddd-46bc-96ec-c298548c87af)-0	5	n/a
SCVMM12R2	5	8/15/16 3:51 PM
SCVMM2012	5	8/16/16 11:56 AM
Fog_PVS_zhuhai	5	n/a
Fog_RHEL_6_x86_64	5	8/11/16 6:54 PM
NeoRC_s80_1209	5	n/a
Fog_Per_08_CentOS_7_x64_Unit_Load_FglAM4	5	n/a
Fog_06_VL_Win2012_STD_x86_64_EN_fglam	5	n/a
Fog_TPL_Win2008_R2_ENT_SP1_x86_64_vFog7.0(with sql server 2012)_performance	5	n/a

Property	Fog_CentOS_65_x86_64_Rick_32	Fog_Per_07_CentOS_7_x64_Unit_Load_FglAM3	Change	Change %
VM CPU Cores	1	8	7	700 %
VM CPU Reservation	0 Hz	16 GHz	16 GHz	n/a
VM CPU Limit	Unlimited	16 GHz	n/a	n/a
VM CPU Shares	1,000	16 GHz, 8,000	7,000	700 %
VM Memory Allocation	512 MB	16 GB	15.5 GB	3,100 %
VM Memory Reservation	0 MB	16 GB	16 GB	n/a
VM Memory Shares	5,120	163,840	158,720	3,100 %

To compare a list of VMs with a “gold standard” template:

- Click the **VM Configuration Comparison** icon on the Change Analyzer tab > Menu bar. The VM Configuration Comparison view opens.
- Select the timeframe for the analysis from the Time Range located at the top right corner of the VMware Environment dashboard.
- On the Selectors tab, choose the objects to be included in the configuration comparison:
 - Select the VMs to be compared (from the **Filter Object** drop-down lists).
 - Select the “gold standard” template (from the **Compare With** drop-down list). Alternatively, click **Browse** to open the **Select the Virtual Machine or Template** dialog box, choose a virtual machine or a template from the list, and click **Select**.

TIP: To clear the compared VMs list, click **Clear** in the **Compare With** drop-down list.

The Quick view is updated to display the list of VMs that match the selection. The upper table lists the VMs that deviate from the standard and the changes made for these VMs.

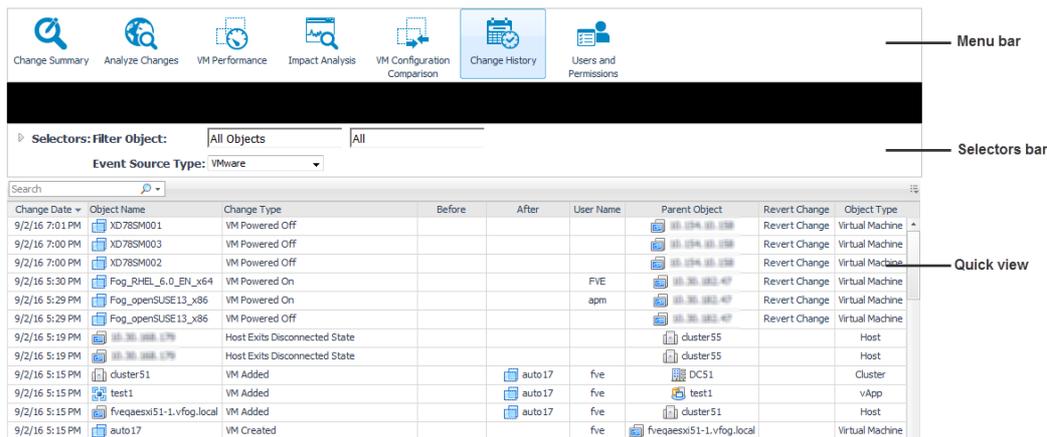
- In the Quick view, select a VM from the upper table. The lower table is updated to display detailed information about the changes that make up the differences reported in the upper table for the selected VM.

For additional information about this view, see [VM Configuration Comparison view](#).

Change History

The **Change History** view lists all changes that occurred to VMs, resource pools, hosts, clusters, disks, datastores, and data centers within a selected environment over a selected timeframe.

Figure 8. Change History view



To view the change history for your environment:

- 1 Click the **Change History** icon on the Change Analyzer tab > Menu bar.
The Change History view opens.
- 2 Select the timeframe for the analysis from the Time Range located at the top right corner of the VMware Environment dashboard.
- 3 On the Selectors bar, select the object for which you want to see the change history:
 - a Select the event types from the **Event Source Type** drop-down list.
 - b Select the environment and the virtual objects from the drop-down lists, or by typing the name of a virtual object in the **Search** box.

The Quick view is updated to display the list of VMs that match the selection.

- 4 In the Quick view, review the history of changes made for the selected VMs, during the selected timeframe. The view provides various details (including the type of change and who made the changes) and allows you to revert select changes, if the change was incorrectly applied or resulted in poor performance. For more information about reverting a change, see [To revert a change:](#).

To revert a change:

- 1 On the Change History—Quick view, identify the change that you want to revert, and click the **Revert Change** link.
The **Implement Change** dialog box opens.
- 2 On the **Implement** tab, review the name of the virtual object and the change details. Choose whether the change should be made immediately (select the **Now** check box) or at a later date (select the **Later** check box and a date and time from the **Date** and **Time** drop-down lists).
- 3 Optionally, on the **Notifications** tab, select the users to be notified about this change.
 - In the **Report Name** field, type a short description of the change being made.
 - Use the **Add** and **Delete** buttons to define the list of users (email addresses) to be notified about this change.
- 4 To implement the change, click **Save**.

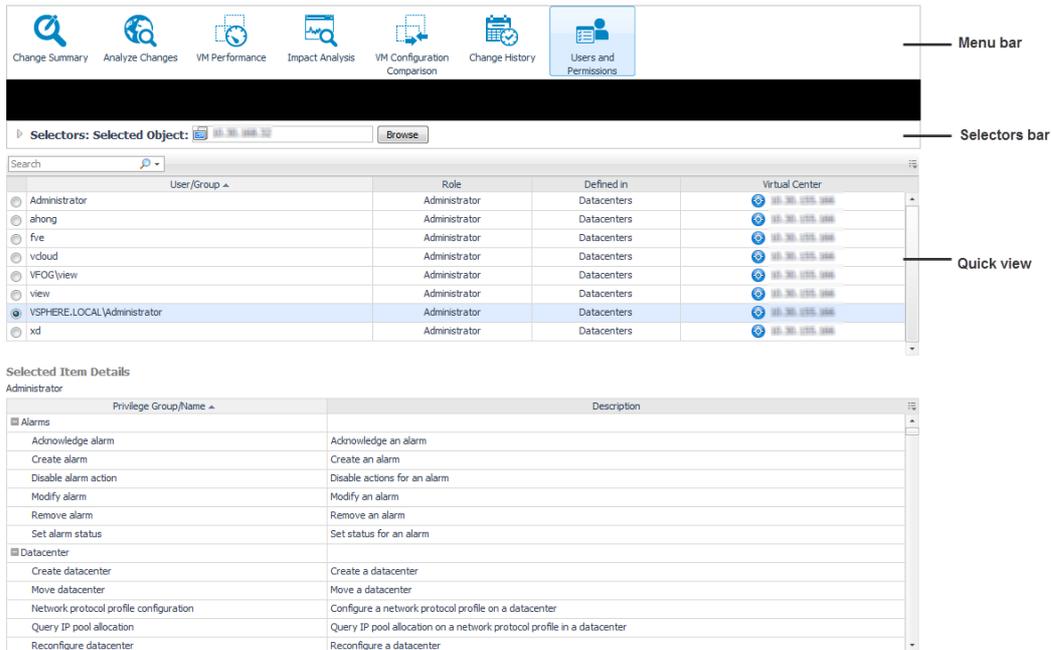
For additional information about this view, see [Change History view](#).

Users and Permissions

The **Users and Permissions** view displays the user/group, role, and the privileges the role has, for a selected virtual object. It also identifies where the permissions are defined.

All these user groups and associated privileges are set up in Foglight for VMware. This view only allows you to review these settings. For information about configuring user groups and privileges, see the Foglight for VMware documentation.

Figure 9. Users and Permissions view



To view user groups and privileges for a selected environment:

- 1 Click the **Users and Permissions** icon on the Change Analyzer tab > Menu bar.
The Users and Permissions view opens.
- 2 On the Selectors bar, select the object for which you want to review the users groups:
 - a Click **Browse** to open the **Select an Object** dialog box.
 - b Select the virtual object type from the **Select Object Type** drop-down list, or by typing the name of a virtual object in the **Search** box.
The Object's table is updated to show the objects that match the selection.
 - c Select an object from the Object's table and click **Select** to close the **Select an Object** dialog box.
The Quick view is updated to display the user groups defined for the selected virtual object. The upper table provides details about roles and where each user group is defined.
- 3 In the Quick view, select a user group from the upper table.
The lower table is updated to display detailed information about the privileges defined for the selected group.

For additional information about this view, see [Users and Permissions view](#).

Settings

The **Settings** dialog allows you to configure the settings to be taken into calculation when analyzing the impact that various changes have on your environment.

To configure the analysis settings:

- 1 Click the **Settings** icon on the Change Analyzer tab > Actions bar.
The **Settings** dialog box opens.
- 2 Define the following settings, by typing the appropriate value in their corresponding text box:
 - **Impact on Performance.** Minimum value (as percentage) to be taken into consideration when calculating the performance impact.
 - **Time before Event.** Timeframe before the event (minutes, hours, or days) to be taken into consideration when calculating the performance impact.
 - **Time after Event.** Timeframe after the event (minutes, hours, or days) to be taken into consideration when calculating the performance impact.
- 3 Click **Save** to save the analysis settings and close the **Settings** dialog box.

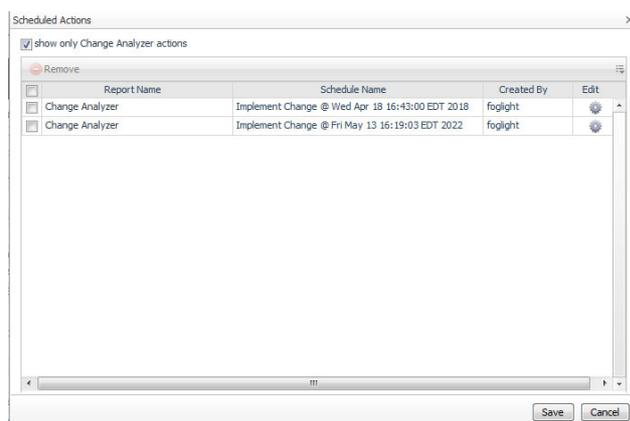
Scheduled Actions

Modeled changes can be implemented automatically, or scheduled for implementation at a particular time in the future (for example, within a maintenance window).

i | **IMPORTANT:** Foglight users must have the “Remediation role” to be able to run and automate recommendations. This role can be assigned to a user using the User Management dashboard. For more information about this dashboard, see the “Controlling user access to dashboards” topic in the Foglight Online Help.

The **Scheduled Actions** dialog shows the list of operations scheduled to be run at a particular time in the future, and allows you to edit or remove any scheduled actions. To view only the actions specific to Foglight Change Analyzer, select the “**show only Change Analyzer actions**” checkbox. When the checkbox is not selected, the dialog shows all actions scheduled for your virtual environment.

Figure 10. Scheduled Actions dialog box



To edit a scheduled action:

- 1 In the **Scheduled Actions** dialog, click the **Edit** icon at the right end of the action you want to modify.

The **Edit Scheduled Action** dialog box appears.

- 2 Modify the report name, add or remove email addresses, and updated the date and time when the action will be executed, as necessary.

- 3 Click **Apply**.

The scheduled action is updated in the list.

- 4 To save the changes, click **Save**.

The settings are saved and the **Scheduled Actions** dialog box closes.

To delete a scheduled action:

- 1 In the **Scheduled Actions** dialog, select the check box for the action you want to delete, and click **Remove**.

- 2 To save the changes, click **Save**.

The settings are saved and the **Scheduled Actions** dialog box closes.

Change Alarms

The **Change Alarms** dialog allows you to define and manage alarms to be triggered when changes that occur in your environment pose performance or security risks. It also allows you to review the alarms history.

The alarms table presents the following information:

- **Alarm Name.** The name of the alarm.
- **Monitor Object.** The object(s) being monitored, for which the alarm is triggered.
- **Alarm Description.** A short description of the alarm.

To add an alarm:

- 1 Click the **Change Alarms** icon on the Change Analyzer tab > Actions bar.

The **Change Alarms** dialog box opens.

- 2 Click **Add an Alarm**.

The **Add Alarm** dialog box opens.

- 3 Type a name for the alarm in the **Alarm Name** text box.

- 4 Select the type of environment for which the alarm will be triggered, by selecting one or multiple check boxes in the **Monitor** section.

- 5 Define the alarm scope. Click **Browse**.

The **Alarm Scope** dialog box opens.

- a Select the virtual object type from the **Object Type** drop-down list, or by typing the name of a virtual object in the **Search** box.

The Object's table is updated to show the objects that match the selection.

- b Select one or several objects from the Object's table and click **Select** to close the **Alarm Scope** dialog box.

The Scope field is updated to display the virtual objects selected to be in scope of this alarm.

- 6 Click **Apply** to create the alarm and close the **Add Alarm** dialog box.

The newly created alarm is displayed in the Change Alarms table.

- 7 Click **Save** to save the changes made to alarms and close the **Change Alarms** dialog box.

To edit an alarm:

- 1 Click the **Change Alarms** icon on the Change Analyzer tab > Actions bar.
The **Change Alarms** dialog box opens.
- 2 Select an alarm from the **Change Alarms** table.
The **Edit an Alarm** icon is enabled.
- 3 Click **Edit an Alarm**.
The **Edit Alarm** dialog box opens, showing the current settings of the alarm.
- 4 If needed, edit the alarm name in the **Alarm Name** text box.
- 5 If needed, edit the type of environment for which the alarm will be triggered, by selecting one or multiple check boxes in the **Monitor** section.
- 6 If needed, re-define the alarm scope. Click **Browse**.
The **Alarm Scope** dialog box opens.
 - a Select the virtual object type from the **Object Type** drop-down list, or by typing the name of a virtual object in the **Search** box.
The Object's table is updated to show the objects that match the selection.
 - b Select one or several objects from the Object's table and click **Apply** to close the **Alarm Scope** dialog box.
The Scope field is updated to display the virtual objects selected to be in scope of this alarm.
- 7 Click **Apply** to apply the changes to the selected alarm and close the **Edit Alarm** dialog box.
The Change Alarms table is updated to reflect the changes made to the selected alarm.
- 8 Click **Save** to save the changes made to alarms and close the **Change Alarms** dialog box.

To delete an alarm:

- 1 Click the **Change Alarms** icon on the Change Analyzer tab > Actions bar.
The **Change Alarms** dialog box opens.
- 2 Select an alarm from the **Change Alarms** table.
The **Delete an Alarm** icon is enabled.
- 3 Click **Delete an Alarm**.
The **Delete the Selected Alarm** dialog box opens.
- 4 Click **Yes** to confirm the operation.
The selected alarm is deleted from the Change Alarms table.
- 5 Click **Save** to save the changes made to alarms and close the **Change Alarms** dialog box.

To view the alarms history:

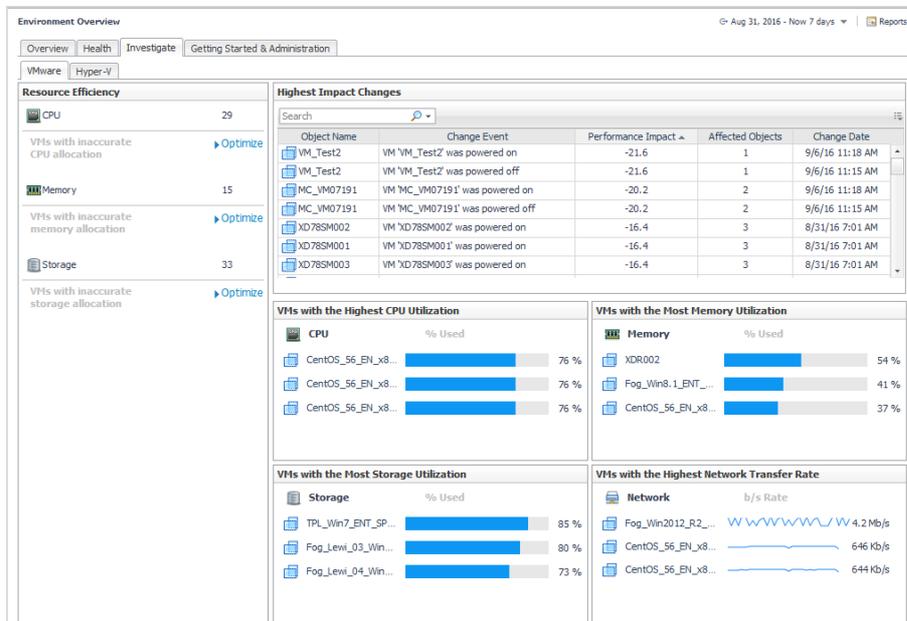
- 1 Click the **Change Alarms** icon on the Change Analyzer tab > Actions bar.
The **Change Alarms** dialog box opens.
- 2 Select an alarm from the **Change Alarms** table.
- 3 Click **Show History**.
The **Alarms History** dialog box opens.
- 4 Review the history of events that have triggered the selected alarm. The table displays the following information:
 - **Event Date.** Date and time when the event (that triggered the alarm) took place.

- **Virtual Object.** Virtual object for which the event (that triggered the alarm) took place.
 - **Alarm Name.** The alarm name.
 - **Event Description.** Description of the event that triggered the alarm.
- 5 To review the alarm history for a specific virtual object, type the name of the virtual object in the **Search** box. The table is updated to display only the information for the selected object.
 - 6 Click **Close** to close the **Alarms History** dialog box.
 - 7 Click **Save** to save the changes made to alarms and close the **Change Alarms** dialog box.

Highest Impact Changes

In Foglight for Virtualization, Enterprise Edition or Foglight Evolve systems, the **Environment Overview dashboard > Investigate tab > VMware tab** provides an overview of changes with the highest impact on your environment.

Figure 11. Environment Overview > Investigate tab > VMware tab



The **Highest Impact Changes** pane provides the following information about the objects that have experienced an event that affects the performance of the environment, during a selected timeframe.

Table 1. Highest Impact Changes

Data displayed	Description
Object Name	Shows the object name.
Change Event	Shows the event that impacts the performance of the environment.
Performance Impact	Shows the impact on performance, as a percentage.
Affected Objects	Shows the number of objects in the environment who's performance is affected by the event.
Change Date	Shows the date and time when the event occurred.

Reference

This section contains reference information about views and report templates that are included with Foglight Change Analyzer.

Foglight Change Analyzer includes the following views:

- [Analyze Changes view](#)
- [Change Summary view](#)
- [Change History view](#)
- [Impact Analysis view](#)
- [Users and Permissions view](#)
- [VM Configuration Comparison view](#)
- [VM Performance view](#)

Foglight Change Analyzer comes with a set of pre-defined report templates that can be run from the Reports dashboard (**Dashboards > Reports**). Using this dashboard, operators can run reports, build custom reports, and view generated reports. Advanced Operators can also schedule and manage reports. For a list of pre-defined report templates provided for Foglight Change Analyzer, see [Foglight Change Analyzer reports](#).

Analyze Changes view

To open the Analyze Changes view, click the **Analyze Changes** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **Analyze Changes** view allows you to analyze what is changing performance-wise in a selected environment, during a selected timeframe.

Description of view elements

This view is made up of the following elements:

- [Analyze Changes—Selectors bar](#)
- [Analyze Changes—Quick view](#)

Analyze Changes—Selectors bar

Table 2. Analyze Changes—Selectors bar

Description	This bar allows you to specify the objects to be included in the analysis.
Data displayed	<p>Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well):</p> <ul style="list-style-type: none"> • All Objects • All Clusters • All Standalone Hosts • Unassigned <p>Object selector. Allows you to select the object to be analyzed.</p> <p>Object Type selector. Allows you to select a virtual object from the following options:</p> <ul style="list-style-type: none"> • ESX Host • Virtual Machine <p>Search box. Allows you to type the name of a virtual object to be analyzed.</p>
Where to go next	The Analyze Changes—Quick view is updated to display the objects that have experienced an event that affects the performance of the environment, during the selected timeframe.

Analyze Changes—Quick view

Table 3. Analyze Changes—Quick view

Description	This view displays the objects that have experienced an event that affects the performance of the environment, during the selected timeframe.
Data displayed	<p>Upper table. Displays all objects that have experienced an event that affects the performance of the environment, during the selected timeframe.</p> <ul style="list-style-type: none"> • Object Name. Shows the object name. • Change Event. Shows the event that impacts the performance of the environment. For a list of change events being monitored and reported, see Table 4. • Performance Impact. Shows the impact on performance, as a percentage. • Affected Objects. Shows the number of objects in the environment who's performance is affected by the event. • Change Date. Shows the date and time when the event occurred. <p>Lower table. Displays the list of all objects who's performance is affected by the object/event selected in the upper table.</p> <ul style="list-style-type: none"> • Affected Object. Shows the name of the objects affected by the event. • Performance Before. Shows the performance value before the event. • Performance After. Shows the performance value after the event. • Performance Change. Shows the ratio of the change.
Where to go next	Drill down on: N/A

Change Summary view

To open the Change Summary view, click the **Change Summary** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **Change Summary** view shows all the changes that occurred to VMs, hosts, clusters, datastores, and resource pools within a selected environment, during a selected timeframe.

The following table presents the change events that Foglight Change Analyzer captures and presents upon request.

Table 4. Change events

Event type	Change name	Change description
Cluster Events	Cluster created	New cluster was added to the environment.
	Cluster Deleted	Cluster was removed from the environment.
	Host Added	New host was added to cluster.
	Host Removed	Host was removed from cluster.
	VM Added	VM was added to cluster.
	VM Removed	VM was removed from cluster.
	HA Enabled	Cluster HA was enabled.
	HA Disabled	Cluster HA was disabled.
	HA Configuration Change	Cluster HA configuration was changed.
	Host Enters Disconnected State	Host has been disconnected.
	Host Exits Disconnect State	Host has reconnected.
	Host Enters Maintenance Mode	Host has entered maintenance mode.
	Host Exits Maintenance Mode	Host has exited maintenance mode.
	Datacenter Events	Host Added
Host Removed		Host was removed from the datacenter.
Cluster Added		Cluster was added to the datacenter.
Cluster Removed		Cluster was removed from the datacenter.
Datastore Added		Datastore was added to the datacenter.
Datastore Removed		Datastore was removed from the datacenter.
Datastore Events	Datastore Created	New datastore was added to the environment.
	Datastore Removed	Datastore was removed from the environment.
	Datastore Added to Host	Datastore was mapped to host.
	Datastore Removed from Host	Datastore was unmapped from host.
Datastore Resource Allocation Events	Datastore Capacity Increased	Capacity of the datastore was changed.

Table 4. Change events

Event type	Change name	Change description
Host Events	Host Added	New host was added to the environment.
	Host Removed	Host was removed from the environment.
	VM Added	VM has been added to host.
	VM Removed	VM has been removed from host.
	VM Host Move Target	Host was the target of a VM move from a different host.
	VM Host Move Source	Host was the source of a VM move to a different host.
	Datastore Added	New datastore was mapped to host.
	Datastore Removed	Datastore mapping has been removed from host.
	Host Enters Disconnected State	Host has been disconnected.
	Host Exits Disconnected State	Host has reconnected
	Host Enters Maintenance Mode	Host has entered maintenance mode.
	Host Exits Maintenance Mode	Host has existed maintenance mode.
	Host Link Up	Host network link is up.
	Host Link Down	Host network link is down.
	Resource Pool Events	Resource Pool Created
Resource Pool Removed		Resource pool was removed from environment.
Resource Pool Moved		Resource Pool was moved to a new parent.
VM Added		VM was added to resource pool.
VM Removed		VM was removed from resource pool.

Table 4. Change events

Event type	Change name	Change description	
Resource Pool Resource Allocation Events	CPU Limit Increased	Resource Pool CPU Limit Changed.	
	CPU Limit Decreased	Resource Pool CPU Limit Changed.	
	CPU Reservation Increased	Resource Pool CPU Reservation Changed.	
	CPU Reservation Decreased	Resource Pool CPU Reservation Changed.	
	CPU Priority Increased	Resource Pool CPU Priority Changed.	
	CPU Priority Decreased	Resource Pool CPU Priority Changed.	
	Memory Limit Increased	Resource Pool Memory Limit Changed.	
	Memory Limit Decreased	Resource Pool Memory Limit Changed.	
	Memory Reservation Increased	Resource Pool Memory Reservation Changed.	
	Memory Reservation Decreased	Resource Pool Memory Reservation Changed.	
	Memory Priority Increased	Resource Pool Memory Priority Changed.	
	Memory Priority Decreased	Resource Pool Memory Priority Changed.	
	Virtual Machine Events	VM Created	New VM was added to environment.
		VM Removed	VM was removed from environment.
VM Powered On		VM was powered on.	
VM Powered Off		VM was powered off.	
VM Suspended		VM was suspended.	
VM Restarted		VM was restarted.	
VM Host Move		VM has been moved to a different host.	
VM Resource Pool Move		VM has been moved to a different resource pool.	
VM datastore Move		VM has been moved to a different datastore.	

Table 4. Change events

Event type	Change name	Change description
Virtual Machine Resource Allocation Events	VM CPU Allocation Increased	Change in number of vCPUs allocated to VM.
	VM CPU Allocation Decreased	Change in number of vCPUs allocated to VM.
	VM CPU Limit Increased	CPU limit changed for VM.
	VM CPU Limit Decreased	CPU limit changed for VM.
	VM CPU Reservation Increased	Reserved CPU level changed for VM.
	VM CPU Reservation Decreased	Reserved CPU Level changed for VM.
	VM CPU Priority Increased	CPU Priority changed for VM.
	VM CPU Priority Decreased	CPU Priority changed for VM.
	VM Memory Allocation Increased	Memory allocation changed for VM.
	VM Memory Allocation Decreased	Memory allocation changed for VM.
	VM Memory Limit Increased	Memory limit changed for VM.
	VM Memory Limit Decreased	Memory limit changed for VM.
	VM Memory Reservation Increased	Reserved memory level changed for VM.
	VM Memory Reservation Decreased	Reserved memory level changed for VM.
	VM Memory Priority Increased	Memory priority changed for VM.
	VM Memory Priority Decreased	Memory priority changed for VM.
DRS Events	VM migration from one ESX host to another	VM Migration from one ESX host to another.
vCloud Director Resource Allocation Events	Organization was created	vCloud Organization was created.
	Organization was deleted	vCloud Organization was deleted.
	Provider vDC was created	vCloud Provider vDC was created.
	Provider vDC was deleted	vCloud Provided vDC was deleted.
	vDC was created	vCloud vDC was created.
	vDC was deleted	vCloud vDC was deleted.
	The usesFastProvisioning value of a vCloud vDC was modified	The UsesFastProvisioning value of a vCloud vDC was modified.
	The IsThinProvision value of a vCloud vDC was modified	The IsThinProvision value of a vCloud vDC was modified.
	Virtual machine was created	vCloud VM was created.
	Virtual machine was deleted	vCloud VM was deleted.
	vApp was created	vCloud vApp was created.
	vApp was deleted	vCloud vApp was deleted.

Description of view elements

This view is made up of the following elements:

- [Change Summary—Selectors bar](#)
- [Change Summary—Quick view](#)

Change Summary—Selectors bar

Table 5. Change Summary—Selectors bar

Description	This bar allows you to specify the objects to be included in the report. It displays on the black banner a message summarizing the changes occurred for the selected objects.
Data displayed	<p>Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well):</p> <ul style="list-style-type: none">• All Objects• All Clusters• All Standalone Hosts• Unassigned <p>Object selector. Allows you to select the object to be analyzed.</p> <p>Search box. Allows you to type the name of a virtual object to be analyzed.</p>
Where to go next	The Change Summary—Quick view is updated with information relevant for the for the selected objects.

Change Summary—Quick view

Table 6. Change Summary—Quick view

Description	This view displays the VMs, hosts, clusters, datastores, and resource pools that match the selection made on the Change Summary—Selectors bar , and additional details for a select object.
Data displayed	<p>Upper table. Displays the VMs, hosts, clusters, and resource pools that match the selection criteria.</p> <ul style="list-style-type: none">• Object Type. Shows the object type.• Object Name. Shows the object name.• Difference. Shows the total number of differences in the configuration of that object, during the selected timeframe.• Total Changes. Shows the total number of changes that occurred to cause those configuration changes, during the selected timeframe.• Date of Last Change. Shows the date and time when the last change occurred. <p>NOTE: The number of differences may not be the same as the number of changes.</p> <p>Lower table. Displays a detailed list of all the changes that make up the difference reported for the object selected in the upper table.</p> <ul style="list-style-type: none">• Change. Shows the type of change. For a list of change events being monitored and reported, see Table 4.• Value on <Date1>. Shows the configuration value at the beginning of the analysis period.• Value on <Date2>. Shows the configuration value at the end of the analysis period.• % Change. Shows the ratio of the change.
Where to go next	Drill down on: N/A

Change History view

To open the Change History view, click the **Change History** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **Change History** view lists all changes that occurred to VMs, resource pools, hosts, clusters, disks, datastores, and data centers within a selected environment over a selected timeframe.

Description of view elements

This view is made up of the following elements:

- [Change History—Selectors bar](#)
- [Change History—Quick view](#)

Change History—Selectors bar

Table 7. Change History—Selectors bar

Description	This bar allows you to specify the objects for which you want to see the change history.
Data displayed	<p>Filter Object. Allows you to select the VMs to be included in the report.</p> <p>Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well):</p> <ul style="list-style-type: none"> • All Objects • All Clusters • All Standalone Hosts • Unassigned <p>Object selector. Allows you to select the object to be analyzed.</p> <p>Event Source Type. Allows you to select the type of events for which you want to see the change history. The following options are available in the drop-down list:</p> <ul style="list-style-type: none"> • FVE-initiated changes • VMware
Where to go next	The Change History—Quick view is updated to display the change history for the selected objects.

Change History—Quick view

Table 8. Change History—Quick view

Description	This view displays the change history for the objects selected in the Change History—Selectors bar .
Data displayed	<ul style="list-style-type: none">• Change Date. Shows the date and time of the change.• Object Name. Shows the virtual object name.• Change Type. Shows the type of change. For a list of change events being monitored and reported, see Table 4.• Before. Shows the value of the configuration parameter before the change.• After. Shows the value of the configuration parameter after the change.• User Name. Shows the name of the user who made the change.• Parent Object. Shows the parent object for the selected object.• Revert Change. Click the Revert Change link to open the Implement Change dialog box, which allows you to revert a change (if the change was incorrectly applied or resulted in poor performance), provided that you have the proper credentials. This link is available only for select type of changes.• Object Type. Shows the object type.
Where to go next	Drill down on: N/A

Impact Analysis view

To open the Impact Analysis view, click the **Impact Analysis** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **Impact Analysis** view allows you to define a sequence of changes and see what impact those changes have on your system's performance. It also allows you to trigger the execution of these changes immediately or schedule these changes within Foglight, Foglight for Virtualization, Enterprise Edition, or Foglight Evolve. For detailed information about how the performance impact is calculated, see [Performance impact assessment](#).

Performance impact assessment

This section presents the algorithm used by Foglight Change Analyzer to calculate the performance impact of a modeled change on your system.

Calculate the total available cumulative CPU, Memory, Storage, and Throughput resources (Total Resource). Account for the warning threshold and failover resource requirement. For example, in a 4-host cluster where each host has 8GB of memory, the Memory Warning Threshold is set to 80%, and a single host is reserved for failover, the total available cumulative Memory resource would be 19.2GB (32GB - 8GB * .80).

Calculate the total required cumulative CPU, Memory, Storage, and Throughput resources prior to the change(s) (Current Requirement). This would be the sum of the actual average utilization or resource reservation, whichever is larger, for each powered-on VM currently deployed.

Calculate the total required cumulative CPU, Memory, Storage, and Throughput resources after the change(s) (Change Requirement).

If the Current Requirement is less than the Total Resource, and the Change Requirement is less than the Total Resource, there is no performance impact (for the resource) as a result of the change.

If the Current Requirement is less than the Total Resource, and the Change Requirement is greater than or equal to the Total Resource, performance will be degraded (for the resource) as a result of the change, due to a lack of resource equal to the absolute difference between the Change Requirement and the Total Resource.

If the Current Requirement is greater than or equal to the Total Resource, and the Change Requirement is less than the Total Resource, the current performance impact (for the resource) will be improved as a result of the change, due to a gain in resource equal to the absolute difference between the Current Requirement and the Total Resource.

If the Current Requirement is greater than the Total Resource, the Change Requirement is greater than the Total Resource, the absolute difference between the Current Requirement and the Change Requirement is greater than 5% of the Total Resource, and the Current Requirement is less than the Change Requirement, the current performance will be further degraded (for the resource) as a result of the change, due to a lack of resource equal to the absolute difference between the Current Requirement and the Change Requirement.

If the Current Requirement is greater than the Total Resource, the Change Requirement is greater than the Total Resource, the absolute difference between the Current Requirement and the Change Requirement is greater than 5% of the Total Resource, and the Current Requirement is greater than the Change Requirement, the current performance impact (for the resource) will be reduced but not eliminated as a result of the change, due to a gain of resource equal to the absolute difference between the Current Requirement and the Change Requirement.

In all other cases, there is no performance impact.

Description of view elements

This view is made up of the following elements:

- [Impact Analysis—Selectors bar](#)
- [Impact Analysis—Toolbar](#)
- [Impact Analysis—Quick view](#)
- [Impact Analysis—Change History view](#)

Impact Analysis—Selectors bar

Table 9. Impact Analysis—Selectors bar

Description	This bar allows you to specify the virtual objects for which you want to review the modeled changes.
	Filter Object. Allows you to select the VMs for which you want to review, create, or modify modeled changes.
	Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well):
Data displayed	<ul style="list-style-type: none">• All Objects• All Clusters• All Standalone Hosts• Unassigned
	Object selector. Allows you to select the object to be analyzed.
Where to go next	The Impact Analysis—Quick view is updated with information relevant for the for the selected environment.

Impact Analysis—Toolbar

Table 10. Impact Analysis—Toolbar

Description	This bar allows you to add, edit, delete and implement modeled changes in a selected environment.
Data displayed	Add Change. Allows you to model a change to the environment. Edit Change. Allows you to edit a modeled change. Delete Change. Allows you to delete a modeled change. Implement Change. Allows you to implement a modeled change to the environment.
Where to go next	The Impact Analysis—Quick view is updated with to display the latest information about the modeled changes.

Impact Analysis—Quick view

Table 11. Impact Analysis—Quick view

Description	This view displays the changes modeled for a selected virtual environment (in the upper table), detailed information about their impact on the system's performance (in the middle table), and the change history for the selected virtual environment (in the lower table).
Data displayed	Upper table. Displays all changes modeled for the selected environment. <ul style="list-style-type: none">• Object Name. Shows the name of the virtual object to which the modeled change applies.• Change Description. Shows a short description of the modeled change.• Performance Impact. Shows the impact the change has on the system's performance. For detailed information about how the performance impact is calculated, see Performance impact assessment. Lower table. Displays detailed information about the modeled change selected in the upper table. <ul style="list-style-type: none">• Virtual Object. Shows the virtual objects affected by the selected modeled change.• Performance Impact: CPU, Memory, Storage, and Throughput. Shows the impact of the modeled change on the system's performance.
Where to go next	Drill down on: N/A

Impact Analysis—Change History view

Table 12. Impact Analysis—Change History view

Description	This view displays the history of changes implemented using the Impact Analysis functionality.
Data displayed	Target Name. Shows the virtual objects affected by the modeled change. Change. Shows the type of change. For a list of change events being monitored and reported, see Table 4 . Executed. Shows the date and time when the change was executed. Created by. Shows the user who created the modeled change. Description. Shows a description for the modeled change.
Where to go next	Drill down on: N/A

Users and Permissions view

To open the Users and Permissions view, click the **Users and Permissions** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **Users and Permissions** view displays the user/group, role, and the privileges the role has, for a selected virtual object. It also identifies where the permissions are defined.

Description of view elements

This view is made up of the following elements:

- [Users and Permissions—Selectors bar](#)
- [Users and Permissions—Quick view](#)

Users and Permissions—Selectors bar

Table 13. Users and Permissions—Selectors bar

Description	This bar allows you to specify the objects for which you want to review the user groups and permissions. Selectors: Selected Object > Click Browse to open the Select an Object dialog box. Select Object Type drop-down list. Allows you to select a virtual object from the following options: <ul style="list-style-type: none">• ESX Host• Cluster• Datacenter• Datastore• Datastore Cluster• Virtual Machine• Resource Pool• vApp Search box. Allows you to type the name of a virtual object.
Data displayed	
Where to go next	The Users and Permissions—Quick view is updated with information relevant for the for the selected object.

Users and Permissions—Quick view

Table 14. Users and Permissions—Quick view

Description	This view displays the list of user groups with configured for a selected virtual object (in the upper table) and detailed information about their credentials (in the lower table).
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Table 14. Users and Permissions—Quick view

	<p>Search box. Allows you to type the name of a user group that you want review.</p> <hr/> <p>Upper table. Displays all the user groups defined for the virtual object selected in the Users and Permissions—Selectors bar.</p> <ul style="list-style-type: none">• User/Group. Shows the user group name.• Role. Shows the role assigned to a user group.• Defined in. Shows the virtual object(s) where the user group is defined.• Virtual Center. Shows the virtual center where the user group is defined. <hr/> <p>Lower table. Displays detailed information about credentials defined for the user group selected in the upper table.</p> <ul style="list-style-type: none">• Privilege Group/Name. Shows the privilege groups defined for a selected user group. Expand each privilege group to see the name of all privileges defined as part of that group.• Description. Shows a short description of each privilege type. <hr/>
Data displayed	
Where to go next	Drill down on: N/A

VM Configuration Comparison view

To open the VM Configuration Comparison view, click the **VM Configuration Comparison** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **VM Configuration Comparison** view allows you to compare all VMs within a selected environment to a specific “gold standard” template or reference VM. If they differ, it displays a detailed list of all the configuration differences.

Description of view elements

This view is made up of the following elements:

- [VM Configuration Comparison—Selectors bar](#)
- [VM Configuration Comparison—Quick view](#)

VM Configuration Comparison—Selectors bar

Table 15. VM Configuration Comparison—Selectors bar

Description	This bar allows you to specify the objects to be included in the configuration comparison.
Data displayed	<p>Filter Object. Allows you to select the VMs to be compared with the “gold standard” template.</p> <p>Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well):</p> <ul style="list-style-type: none"> • All Objects • All Clusters • All Standalone Hosts • Unassigned <p>Object selector. Allows you to select the object to be analyzed.</p> <p>Compare With. Allows you to select the “gold standard” template against which the VMs should be compared.</p> <p>TIP: To clear the compared VMs list, click Clear in the Compare With drop-down list. Click Browse to open the Select the Virtual Machine or Template dialog box. Select a check box or type the VM/template name in the Search box to identify the name of the “gold standard VM.” Click Select to enable the selection and close the dialog box.</p>
Where to go next	The VM Configuration Comparison—Quick view is updated with information relevant for the for the selected objects.

VM Configuration Comparison—Quick view

Table 16. VM Configuration Comparison—Quick view

Description	This view displays a list of VMs that deviate from the standard (in the upper table) and detailed information about the changes that make up these reported differences (in the lower table).
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Table 16. VM Configuration Comparison—Quick view

	<p>Search box. Allows you to type the name of a virtual object to be analyzed.</p> <hr/> <p>Upper table. Displays the VMs that deviate from the selected standard.</p> <ul style="list-style-type: none">• Virtual Machine. Shows the VM name.• Differences. Shows the total number of differences in the configuration of a VM comparing with the standard, for the selected timeframe.• Date of Last Change. Shows the date and time when the last change occurred. <hr/> <p>Lower table. Displays detailed information about the changes that make up the differences reported for the object selected in the upper table.</p> <ul style="list-style-type: none">• Property. Shows the configuration property that deviates from the standard. The list may include:<ul style="list-style-type: none">▪ VM CPU Cores▪ VM CPU Limit▪ VM CPU Reservation▪ VM CPU Shares▪ VM Memory Allocation▪ VM Memory Limit▪ VM Memory Reservation▪ VM Memory Shares• <Template Name>. Shows the value of that property for the “gold template”.• <Selected Object Name>. Shows the value of that property for the selected VM.• Change. Shows the property deviation between the VM and the standard.• Change %. Shows the ratio of the property deviation.
Data displayed	
Where to go next	Drill down on: N/A

VM Performance view

To open the VM Performance, click the **VM Performance** icon on the Change Analyzer tab > Menu bar.

For more details, see the following topics:

- [Purpose](#)
- [Description of view elements](#)

Purpose

The **VM Performance** view allows you to analyze the performance of a selected VM, during a selected timeframe.

Description of view elements

This view is made up of the following elements:

- [VM Performance—Selectors bar](#)
- [VM Performance—Quick view](#)

VM Performance—Selectors bar

Table 17. VM Performance—Selectors bar

Description	This bar allows you to specify the object you want to analyze.
Data displayed	<p>Environment selector. Allows you to select the environment to be analyzed. The following options are available by default in the drop-down list (additional user-created items may appear in the list as well.):</p> <ul style="list-style-type: none">• All Objects• All Clusters• All Standalone Hosts• Unassigned <p>Object selector. Allows you to select the object to be analyzed. Click Browse to open the Select a Virtual Machine. Select a virtual machine from the table or type the VM name in the Search box.</p>
Where to go next	The VM Performance—Quick view is updated with information relevant for the for the selected object.

VM Performance—Quick view

Table 18. VM Performance—Quick view

Description	This view displays performance information for the selected VM, during the selected timeframe.
Data displayed	<p>Source Object. Virtual machine name and type.</p> <p>Selected Event Overlays:</p> <ul style="list-style-type: none">• Change Events. Displays on the performance graph the events that affected the VM's performance during the selected timeframe.• Alarms. Displays on the performance graph any alarms triggered for the selected VM during the selected timeframe. <p>Performance graph. Displays the VM's performance during the selected timeframe. The following display settings are available by clicking the Customizer icon (at the top right corner): <i>Use View Settings</i>, <i>Automatic</i>, <i>From Data</i>, and <i>Data vs Calibrated</i>. See the "Time Plot Chart" topic in the Foglight online help for information about these options.</p> <p>NOTE: You can zoom in and out the graph using the mouse. For information about this feature, see the "Time Plot Chart" topic in the Foglight online help.</p> <p>Performance table. Displays the events and alarms that affected the VM's performance during the selected timeframe.</p> <ul style="list-style-type: none">• Change Date. Shows the date and time of the performance change (when an event happened or an alarm was generated).• Description. Provides a description of the event/alarm.• Performance Before Change. Shows the performance value before the event.• Performance After Change. Shows the performance value after the event.
Where to go next	Drill down on: N/A

Foglight Change Analyzer reports

Several report templates are available with Foglight Change Analyzer, and together they provide a detailed analysis of the changes made in your environment over time.

Each report template uses report parameters to define the content of the report. Use a template's default report parameters to quickly generate or schedule a report or optionally change the report parameters to customize the report to better meet your requirements.

The following tables contains an alphabetical list of the Foglight Change Analyzer reports. They also provide a brief description of the report and the report parameters used to define the content. Report parameters marked with an asterisk (*) are required and you must specify this parameter before the report can be generated.

- i** **NOTE:** If you are using the **Templates by Module** tab on the **Run Report** wizard, click the expansion box to the left of the:
- Change Analyzer entry to view the Foglight Change Analyzer reports
 - Common Analytics entry to view reports shared between several virtual cartridges, including Foglight Change Analyzer

Table 19. Foglight Change Analyzer report templates

Report Name	Report Description	Input Parameters: Default Value
Change Analyzer - Impact Analysis	Includes the information displayed in the Change Analyzer > Impact Analysis tab. The report contains information regarding the "object name", "change description", "performance impact", "virtual object" and "performance impact on the virtual object".	<ul style="list-style-type: none"> • * Time Range: Last 4 hours
Change Analyzer - Alarm Notification	A new change alarm report is generated and a notification is sent by e-mail each interval.	<ul style="list-style-type: none"> • * changeAlarm • * eventCount: Null • alarmHistory: Last 4 hours
Change History	Includes all history information displayed in the Change Analyzer > Change History tab. The report contains information regarding the "target name", "description of change", "execution date", and "created by".	<ul style="list-style-type: none"> • * Time Range: Last 4 hours • * virtualizationType • * selectedService • * eventSource

Table 20. Common Analytics report templates

Report Name	Report Description	Input Parameters: Default Value
Cartridge-initiated Changes History Report	Includes FVE Cartridge-initiated change information regarding "target name", "description of change", "execution date", "created by" and "status". NOTE: This report was named "Changes History Report" in previous versions of this cartridge.	<ul style="list-style-type: none"> • * Time Range: Last 4 hours • * SelectedService • * Type of Virtualization • Cartridge Type: ChangeAnalyzer

We are more than just a name

We are on a quest to make your information technology work harder for you. That is why we build community-driven software solutions that help you spend less time on IT administration and more time on business innovation. We help you modernize your data center, get you to the cloud quicker and provide the expertise, security and accessibility you need to grow your data-driven business. Combined with Quest's invitation to the global community to be a part of its innovation, and our firm commitment to ensuring customer satisfaction, we continue to deliver solutions that have a real impact on our customers today and leave a legacy we are proud of. We are challenging the status quo by transforming into a new software company. And as your partner, we work tirelessly to make sure your information technology is designed for you and by you. This is our mission, and we are in this together. Welcome to a new Quest. You are invited to Join the Innovation™.

Our brand, our vision. Together.

Our logo reflects our story: innovation, community and support. An important part of this story begins with the letter Q. It is a perfect circle, representing our commitment to technological precision and strength. The space in the Q itself symbolizes our need to add the missing piece—you—to the community, to the new Quest.

Contacting Quest

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The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. The Support Portal enables you to:

- Submit and manage a Service Request.
- View Knowledge Base articles.
- Sign up for product notifications.
- Download software and technical documentation.
- View how-to-videos.
- Engage in community discussions.
- Chat with support engineers online.
- View services to assist you with your product.