

Foglight® 5.9.x
Getting Started 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.

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

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Components

Quest Software Inc.'s Foglight® solution simplifies application performance monitoring and reduces the skills and effort required to manage applications, the user experience, and the supporting infrastructure.

Unlike other solutions, Foglight uses a single code base, and has a model-driven design that couples fast deployment and accelerated time-to-value. It offers the modular flexibility required to deliver a range of capabilities and sophistication to meet the needs of any organization, from those still focused on technology-centric monitoring to those that have completed the transition to application-centric or transactional monitoring.

Foglight performs equally well in physical, virtual, and mixed infrastructure environments, providing visibility into issues affecting the application and end-user experience. Intuitive workflows help you quickly move from the symptom to the root cause in the application, database, infrastructure, or network to resolve issues, reducing mean time to resolution. Predefined and drag-and-drop dashboards provide insight that is tailored to each stakeholder. By offering comprehensive visibility into your monitored environment, Foglight helps ensure that cross-functional teams collaborate on and prioritize issues that matter most to the business.

Foglight comprises several different components, which are described individually. You will be installing and using these components as you perform the steps in the installation and setup process and get started using Foglight.

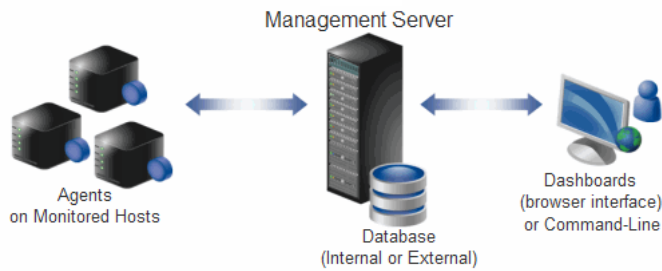
- [Foglight Management Server](#)
- [Foglight browser interface](#)
- [Foglight command-line interface](#)
- [Foglight Agent Manager](#)
- [Foglight cartridges](#)
- [Foglight agents](#)
- [Foglight architecture overview](#)

Foglight Management Server

Foglight Management Server is the central component of Foglight. The Management Server receives information from agents, stores and processes data, and makes it available in the browser interface.

The Foglight database stores all system, application, and performance data. Over time, it becomes an invaluable source of historical information for planning future system capacity requirements and for doing point-in-time analysis.

Figure 1. Foglight Management Server diagram



Foglight browser interface

Foglight has a browser interface that displays data collected from your monitored environment. It allows you to view this data in various formats and levels of detail.

The browser interface consists of three areas:

- A navigation panel that:
 - Lists all of the dashboards that are available to the current user.
 - Provides access to the Administration home page, which presents a summary of information about Foglight from an administrative perspective and allows you to navigate to the pages where you perform administrative tasks.
- A display area in which you can view and create dashboards and reports.
- An action panel that:
 - Lists the various actions that you can perform on the dashboard that is currently displayed.
 - Contains views and data that can be added to a dashboard or report that you are creating.
 - Provides access to the online help.

i | **NOTE:** The action panel is referred to as the page panel in the Web Component Framework documentation, for example in the *Web Component Reference*.

See the *User Guide* and the *Administration and Configuration Guide* for more information.

Customizable dashboards

Foglight also includes the Web Component Framework (WCF), which allows you to create and populate your own custom interface views on top of the dynamic data schemas generated by the Management Server. See the *Web Component Guide* and the *Web Component Tutorial* for more information.

Foglight command-line interface

Foglight provides commands that allow you to manage and work with Foglight components without having to use the browser interface. These commands allow you to perform tasks such as managing the Management Server, the Agent Manager, agents, cartridges, and licenses, as well as work with entities such as metrics, monitoring policies, and schedules. For example, this interface allows you to automate component-management tasks using scripts or to use regular expressions to select multiple entities.

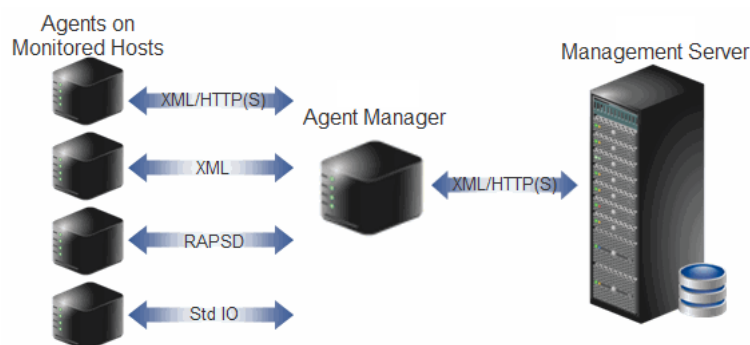
See the *Command-Line Reference Guide* for more information.

Foglight Agent Manager

Foglight Agent Manager is a client application that manages Foglight agents installed on monitored hosts. It provides a centralized communications link between the Management Server and the agents. The Agent Manager also provides a number of support services such as the ability to deploy, upgrade, and configure agents.

An instance of the Agent Manager is automatically installed with new installations of the Management Server. This embedded Agent Manager instance runs on the Management Server machine. You can deploy agents to the embedded Agent Manager if you want to monitor the machine on which the Management Server runs. You can also deploy instances of the Agent Manager to remote hosts.

Figure 2. Foglight Agent Manager diagram



The Agent Manager communicates with Foglight agents using a variety of protocols, as indicated in [Figure 2](#).

For more information, see the *Foglight Agent Manager Guide*.

Foglight cartridges

Cartridges extend the functionality of Foglight and are installed on the Management Server. A cartridge contains one or more components, such as agents for deployment, communication capabilities, and modifications to the way that data is transformed or handled, as well as rules, reports, and views.

When a cartridge is installed and enabled, its components become part of the Management Server. Adding cartridges allows you to monitor additional parts of your environment.

See the *Administration and Configuration Guide* for more information about managing cartridges. See the cartridge documentation for information about each cartridge.

Foglight agents

Agents are deployed to hosts in your environment and send data to the Management Server. Agents monitor the availability and performance of many aspects of your environment, including operating systems, databases, virtual hosts, top processes, custom applications, application servers, and Web servers.

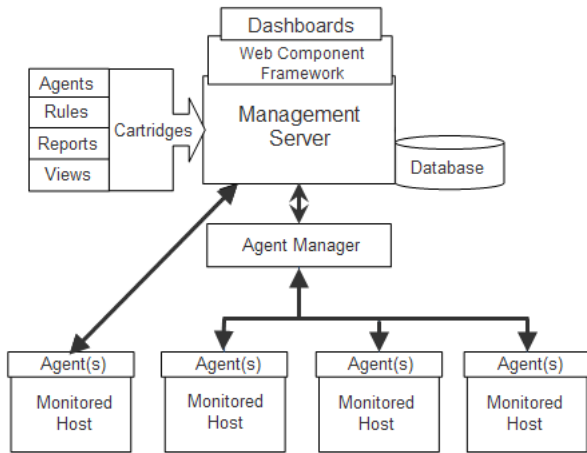
There are several types of agents. One or more instances of each type of agent managed by the Agent Manager can be deployed per host. For example, there is an agent that collects metrics from the operating system of the host machine. There are also agents that are embedded into systems or the software that they monitor, such as the Java EE Technology Agent. Foglight also includes internal agents that monitor Foglight components and services.

See the *Administration and Configuration Guide* for more information about managing and configuring agents. See the documentation for the cartridge in which the agent was included for details about each agent.

Foglight architecture overview

The components described in the preceding sections combine to compose Foglight (as shown in [Figure 3](#)).

Figure 3. Foglight architecture

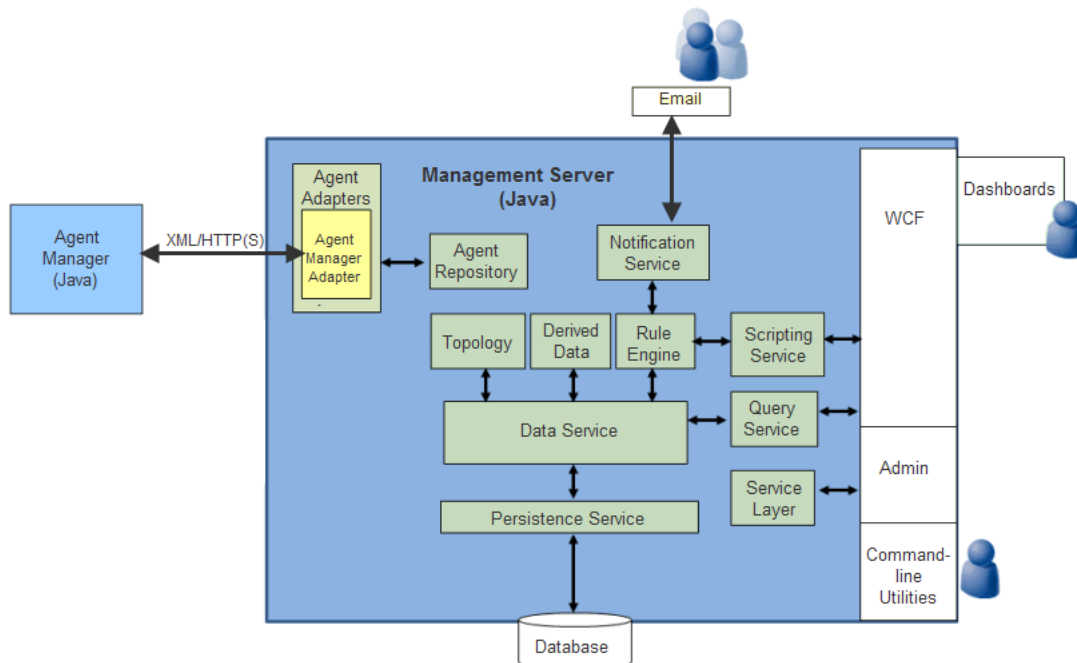


Users interact with the Management Server and the data collected by the agents through dashboards in the Foglight browser interface, which is built on the Web Component Framework. See the *Web Component Guide* for more information about the framework and browser interface.

Cartridges are installed onto the Management Server, providing agents, rules, reports, and views specific to the application or technology that the cartridge is designed to monitor.

Agents are deployed to monitored hosts and communicate with the Management Server either directly, or through the Agent Manager.

Figure 4. Foglight Management Server architecture



In order to gain a better understanding of how the Management Server provides a complete view of your monitored system, review the following typical data workflows.

Example Agent Data Workflow:

- 1 Data from an agent arrives. The Management Server transforms it into canonical form (topology CDT) and creates model instances.
- 2 The Data Service receives the transformed agent data for management.
- 3 The presence of new metric data triggers the notification of all interested subscribers.
 - a The first subscriber is a derived data metric that is calculated and then sent back to the Data Service for management.
 - b The second subscriber is the Rule Engine. It notes that a rule wants a particular piece of data and adds it to its locally cached set.
- 4 The Rule Engine notes that the rule is available for evaluation. It gets the Groovy script that defines the rule expression from the Scripting Service and evaluates it. The rule fires at severity level FATAL.
- 5 Severity level FATAL has several actions associated with it, including an action to send an e-mail to specific users through the Notification Service.

Example User Workflow:

- 1 A Foglight user logs in to Foglight through the browser interface to check the system status.
- 2 The user selects a dashboard.
- 3 WCF displays the dashboard and makes a series of queries to the Data Service through the Query Service.
 - a A query asks the Query Service for data.
 - b The Query Service asks the Data Service.
 - c The Data Service can provide part of the data as cached. However, some of the data is historical, requiring the Persistence Service to retrieve the historical data from the Database and return the result to the Data Service.
- 4 The user wants to change a rule condition, and navigates to the appropriate dashboard to do so.
- 5 The request to change the rule condition is sent to the Service Layer, which verifies that the user has the necessary authorization before passing on the change request.
- 6 The Service Layer contacts the Rule Engine and makes the requested change.
- 7 The Rule Engine persists its new state in the Database.
- 8 Once the change is successful, the Service Layer notes who made the change in the change audit log.

Installation and Setup Overview

This section provides an overview of the Foglight installation and setup process. It summarizes the main steps involved in installing Foglight and contains directions to instructions in other guides; it is intended as a preface or supplement to these guides.

- [Part 1: Installing the Management Server](#)
- [Part 2: Starting Foglight and logging in](#)
- [Part 3: Installing cartridges](#)
- [Part 4: Installing and running the Agent Manager](#)
- [Part 5: Deploying and creating agents](#)

References to the *Installation and Setup Guide* set

The Foglight documentation suite includes a multi-guide *Installation and Setup Guide* set. Throughout this guide, instructions direct you to the Installation and Setup Guide where the same type of information exists in all guides in the set. In these cases, see the Installation and Setup Guide for the database and platform you are running. When information exists only in certain guides, those guides are referred to by name or type.

Before you get started

Before you install Foglight, review the components you plan to install and ensure that you have the necessary information, such as port numbers and server names or the target installation locations.

Before you begin, you must determine if you are going to set up and run the Management Server in High Availability (HA) or standalone mode, and decide whether to use an embedded or external database. For help making these determinations, see “High Availability mode” in the Installation and Setup Guide for running Foglight with an external database and “Using embedded databases” or “Using external databases” in the Installation and Setup Guide for the type of database you plan to run.

Before installing Foglight, review the *System Requirements and Platform Support Guide*, and “Before installing Foglight” and “Preparing to install” in your *Installation and Setup Guide*.

Part 1: Installing the Management Server

- 1 **Install the Management Server:** Run the installer by following the appropriate set of instructions in “Installing Foglight” in the *Installation and Setup Guide*.

An instance of the Agent Manager is automatically installed with the Management Server and runs on the Management Server machine. See “Configuring the embedded Agent Manager” in the *Agent Manager Guide*.

- 2 **Configure the Management Server and database:** Once you install the Management Server, you may need to configure it, change its settings, or perform other additional setup steps. For more information, see “Foglight settings” in the *Installation and Setup Guide*.

Depending on the type of database you are running, you may need to configure it or change its settings. For example:

- If you are using an external database and decided to manually set up the database after installation, see “Manual database configuration” in the *Installation and Setup Guide* for your platform and external database.
- If you are using an external database, see “External database access for remote users” in the *Installation and Setup Guide* for your platform and external database.
- If you want to set up an encrypted connection to an external database, see “Setting up an encrypted database connection” in the *Installation and Setup Guide* for your platform and external database.

For more information, see “Foglight settings” in the *Installation and Setup Guide* for the platform and database you are running. See the section “Installing Foglight FAQ” in the *Installation and Setup Guide* if you encounter problems when performing the steps listed above.

Part 2: Starting Foglight and logging in

Before you begin: For instructions to migrate from using an embedded PostgreSQL® database with the Management Server to using an external PostgreSQL database, see “Appendix: Switching from an Embedded to an External Database” in the *Foglight Installation and Setup Guide* (for UNIX® or Windows® systems with Embedded PostgreSQL Database).

1 Initialize the Database:

- If you are using an external database, the database must be initialized successfully before you can run Foglight.
- If you are using the embedded database, the initialization is performed when you start the Management Server.

2 **Start the Management Server:** The Management Server can be run in standalone mode, in High Availability (HA) mode (with an external database), or as a Windows® service. See “Starting and stopping the Foglight Management Server” in the *Installation and Setup Guide* and “Running the Foglight Management Server” in the *Command-Line Reference Guide*.

3 **Configure the embedded Agent Manager:** In most cases, you do not need to configure the embedded Agent Manager. If you need to configure the embedded Agent Manager, you can do so by running the Agent Manager configuration interface from the embedded Agent Manager installation directory. See “Configuring the embedded Agent Manager” in the *Agent Manager Guide* for more information.

4 **Log in to Foglight:** See “Logging in to Foglight” in the *User Guide* for more information.

i | NOTE: The Foglight browser interface requires JavaScript. Before attempting to log in, ensure that JavaScript is enabled in your Web browser.

See “Running the Foglight Management Server FAQ” in the *Installation and Setup Guide* if you encounter problems when performing the steps listed above.

Part 3: Installing cartridges

Foglight includes two types of cartridges: cartridges that contain Foglight Agent Manager installers and cartridges that contain components for monitoring additional parts of your environment.

On **Foglight systems**, you must install both types of cartridges before you can deploy agents to the hosts in your environment and begin collecting data.

The Agent Manager and some of the component cartridges are pre-installed when you install **Foglight™ for Virtualization, Enterprise Edition**; other cartridges must be installed manually. See the *Foglight for Virtualization*,

Enterprise Edition Upgrade Guide for details. You must deploy agents to the hosts in your environment in order to collect data.

The Agent Manager cartridges are available in the `\Server\FoglightClient-FglAM-<version>` directory on your install media. Monitoring cartridges are available in the subdirectories of `\Cartridges` on your install media.

Install the Agent Manager cartridge (only on **Foglight systems**), then download the installer for your platform and install the Agent Manager on remote hosts as described in [Part 4: Installing and running the Agent Manager](#). After installing the Agent Manager on remote hosts, you can deploy agents to these remote hosts as described in [Part 5: Deploying and creating agents](#).

i **NOTE:** As described in [Part 1: Installing the Management Server](#), an instance of the Agent Manager is automatically installed with new installations of the Management Server. This embedded Agent Manager instance runs on the Management Server machine. You can deploy agents to this Agent Manager if you want to monitor the machine on which the Management Server runs.

The Agent Manager Adapter cartridge is also installed. If you have Agent Manager instances running on remote hosts and do not want to download Agent Manager installers to additional hosts, you do not need to install the Agent Manager cartridge. The existing instances can connect to the Management Server.

You can install and manage cartridges using the command-line interface or the browser interface. The instructions below assume that you are using the browser interface. See “Managing cartridges” in the *Command-Line Reference Guide* for command-line instructions.

1 Before you begin:

- See the cartridge documentation for installation prerequisites.
- Ensure that the Management Server is running, log in to Foglight, and ensure that you can access the dashboards under the Administration module.

2 **Install the cartridge:** See “Extending your monitoring reach with Foglight cartridges” in the *Administration and Configuration Guide*.

Part 4: Installing and running the Agent Manager

i **NOTE:** For Foglight systems only. The steps outlined in this section assume that you have already installed the cartridge that contains the Foglight Agent Manager installers. If you have not, see [Part 3: Installing cartridges](#) for more information before proceeding.

You can download the installers from the Components for Download dashboard. If unauthenticated or headless access to the installers is required, you can access a URL for direct download with a browser or file retrieval tool; no login to Foglight is required.

1 Before you begin:

- Ensure that the Management Server is running, log in to Foglight, and ensure that you can access the dashboards under the Administration module.
- Identify the host name and port of each Management Server with which the Agent Manager is going to communicate.

2 **Download or retrieve the Agent Manager installer:** Different ways of obtaining installers (`fglam-<version>-<platform>.<bin|exe>`) are described below. To identify the name of the installer for your platform, see “Downloading the Agent Manager installer” in the *Agent Manager Guide*.

- **Download the installer from the Components for Download dashboard in Foglight to each machine where you want to install the Agent Manager:** See “Using the components for download dashboard” in the *Installation and Setup Guide* for your platform.
- **Download or retrieve the installer from a URL to each machine where you want to install the Agent Manager:** If unauthenticated access to the installers is required, or if you need to download

the installers from a headless machine, see “Using the components for download page” in the *Installation and Setup Guide* for your platform.

- 3 **Install the Agent Manager:** You can use the installer GUI, the command-line installer, or the silent installer. See “Installing the Agent Manager” in the *Agent Manager Guide* for your platform.
- 4 **Configure the Agent Manager:** Some configuration of the Agent Manager can be done during installation. The Agent Manager can also be configured after installation to set items such as:
 - The host name reported by the Agent Manager instance (used in cases where you need to explicitly set the host name)
 - Connection options, such as settings for connecting using HTTPS
 - An override option for using a self-signed server SSL certificate

Depending on the platform on which the Agent Manager is installed and the mode in which Foglight is running, you may need to perform additional configuration steps. See “Configuring the Agent Manager” in the *Agent Manager Guide* for information about the configuration interface and about other configuration you might need to perform.

The Agent Manager can automatically detect HA-enabled Management Servers and configure itself for them. You might need to perform additional configuration if, for example, a Management Server in the HA cluster has special SSL certificate requirements or if it uses a proxy. In addition, if you are running Foglight in HA mode, see “Managing the Foglight Management Server” in the Command-Line Reference Guide for details about the Remote Monitor utility.

- 5 **Start the Agent Manager:** See “Starting or stopping the Agent Manager process” in the *Agent Manager Guide* or in the Command-Line Reference Guide for information about starting the Agent Manager.

See “Frequently asked questions” in the *Foglight Agent Manager Guide* if you encounter problems.

Part 5: Deploying and creating agents

In Foglight, agents are packaged within cartridges. You must install the Agent Manager before deploying agents (excluding some agents, such as Java EE Technology Agents) to a host. The steps in this section assume that you are deploying agents to the Agent Manager, have installed the cartridges in which the agents are contained, and have installed and configured the Agent Manager on the target hosts. If you have not, see [Part 4: Installing and running the Agent Manager](#).

- 1 **Before you begin:**
 - Review the cartridge documentation for agent installation prerequisites.
 - Ensure that the Management Server is running and log in to Foglight.
 - Ensure that you can access the dashboards under the Administration module.
 - Ensure that the Agent Manager is running on the target machine(s).
- 2 **Deploy agent packages and create agent instances:** First, agent packages must be deployed to the Agent Manager on the target host. Once you deploy agents, you can create agent instances on that host and then start collecting data. You can perform these steps from the browser interface or the command line:
 - See “Deploying agent packages to monitored hosts” and “Creating agent instances on monitored hosts” in the *Administration and Configuration Help* for browser interface instructions.
 - See “Deploying agent packages” and “Creating or deleting agent instances” in the *Command-Line Reference Guide* for command-line instructions.
- 3 **Configure agents:** Once the agents are deployed, you may need to edit their properties. See “Editing instance-specific agent properties” in the *Administration and Configuration Help* and the cartridge documentation for more information.

- 4 **Manage agents:** You can manage agents from the browser interface or the command-line. See “Configuring Foglight agents for host monitoring” and “Suspending alarms and data collection” in the *Administration and Configuration Guide* and “Managing agents” in the *Command-Line Reference Guide*.

Starting Points

Foglight offers a wide range of functionality through customizable dashboards. There are multiple starting points and workflows available for users with different roles and needs: administrators in charge of managing Foglight, operational users interested in troubleshooting problems throughout their monitored environment, users focused on monitoring a specific domain or system, or users interested in services management.

When you log in to Foglight, several dashboards are initially selected as starting points and listed under Homes in the navigation panel. This section introduces some of these dashboards.

- [Before you get started](#)
- [Foglight for Virtualization Environment Overview](#)
- [Foglight for Storage Management Environment Overview](#)
- [Foglight Operator's Welcome page](#)
- [Foglight Administrator's Welcome page](#)
- [Service Operations Console](#)
- [Hosts dashboard](#)
- [Next steps](#)

This section uses terminology specific to the Foglight browser interface; see “Working with dashboards” in the *Foglight User Help* for more information about these terms.

Before you get started

The section below provides getting started tips on common elements in the browser interface and describes features that can affect how you see data in the monitoring dashboards.

- [Insufficient roles](#)
- [Working in a current or a diagnostic time range](#)

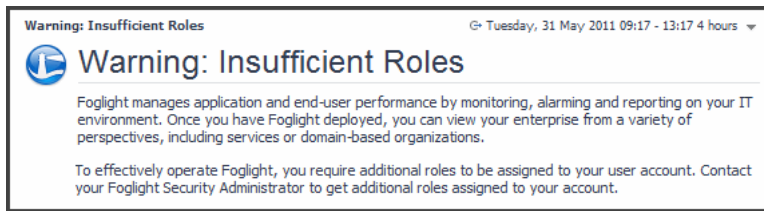
Insufficient roles

This section applies only to Foglight systems.

The appearance of the Welcome page and the range of dashboards you can access from this page vary depending on your user role. If you have Administrator-level permissions, you can access advanced dashboards and configuration workflows. See the *Administration and Configuration Guide*. Users with the Operator role (but not the Administrator role) have permission to access a smaller set of dashboards.

If you are a user with an assigned role or role combination that does not provide sufficient privileges to do anything useful in Foglight, a warning page appears.

Figure 1. Insufficient Roles warning




Contact your Foglight Security Administrator to have additional roles assigned to your account or to request that a different home page be configured for you.

Working in a current or a diagnostic time range

These getting started tips help you understand whether you are working in a real time range or a diagnostic time range and how to switch from one to the other.

NOTE: Some pages do not take a time range input and so do not display a time range.

By default, the time range at the top of a dashboard is in real time. When the dashboard's time range is in real time, the  icon and the word *Now* appear in the time range display.

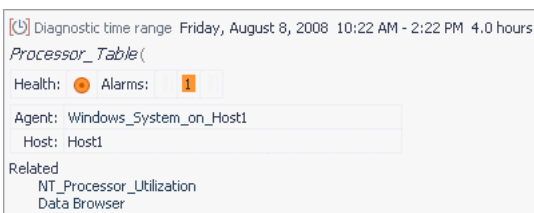


Hovering over the real time range icon displays a message that identifies the time range as real and informs you how to freeze the time range.


The time range is real time click to freeze

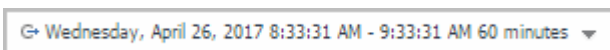
If you drill down on an alarm, Foglight disconnects from real time and enters a diagnostic time range. The diagnostic time range spans the same length of time as the current time range did prior to the drill down.

Within a diagnostic time range, Foglight typically sets three quarters of this span to occur prior to the alarm being fired and one quarter to occur after. For example, if the current time range spans four hours, when you drill down on an alarm, the diagnostic time range also covers a four-hour interval, from three hours prior to when the alarm fired to one hour after it fired (as shown in the following image).



In some cases, the alarm might occur close enough to the current moment that the last quarter of the diagnostic time range would cover a span of time that is in the future. If that is the case, Foglight sets the diagnostic time range to end at the current moment (shown as *Now* in the time range display).

When you are working in a diagnostic time range, no new data is displayed in the views on the dashboard. A frozen time range  icon in the time range display indicates that you have frozen the time range and entered a diagnostic time range.



Hovering over the icon displays a message that identifies the time range as frozen and informs you how to switch to real time.

The time range is in the past, click to switch to real time

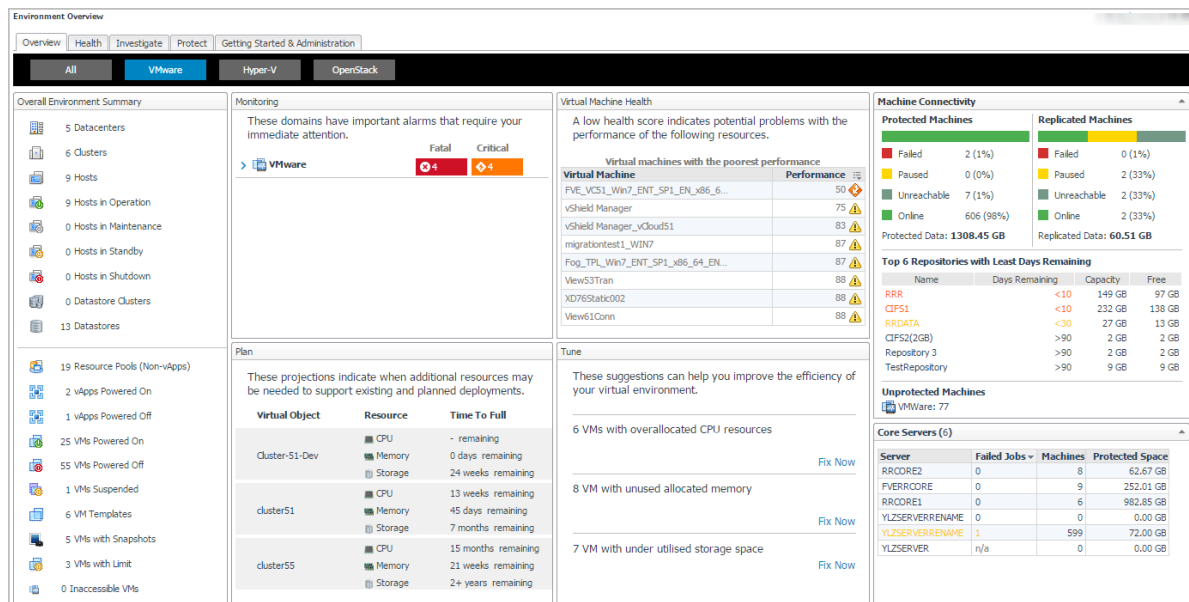
Until you unfreeze the time range, all drilldowns and navigation to views that use the global time range are frozen in this diagnostic time range.

Unfreezing the time range causes it to revert to the last monitoring time range that you used. For more information on current and diagnostic time ranges, see “Time range” in the *Foglight User Help*.

Foglight for Virtualization Environment Overview

This section provides an introduction to the Foglight for Virtualization, Enterprise Edition, Environment Overview dashboard. When you log into Foglight for Virtualization, Enterprise Edition for the first time, the **Environment Overview** dashboard > **Overview** tab is displayed.

Figure 2. FVE Environment Overview dashboard > Overview tab



The **Overview** tab shows the overall status of your virtual environment, and highlights various objects that need further exploration. You can select to view all or specific domains in your virtual environment, by clicking the **All**, **VMware**, **Hyper-V**, or **OpenStack** button, respectively, located on the top right corner of the tab. The **Overview** tab includes the following views:

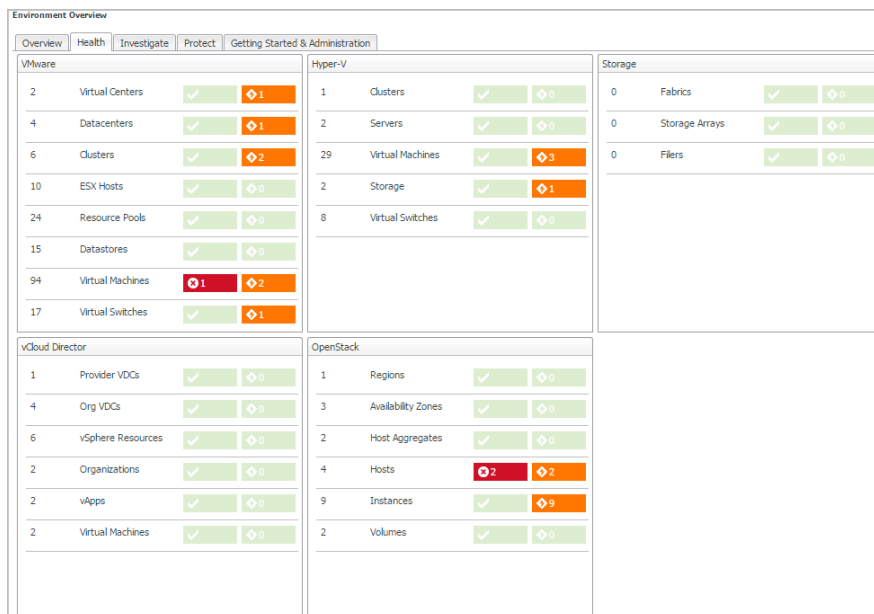
- **Overall Environment Summary.** Provides a summary of your virtual environment.
- **Monitoring.** Highlights the alarms that need immediate attention, for each monitored domain. Drill down into the available links, to review the alarms in more detail.
- **Virtual Machine Health.** Provides a list of virtual machine with the lowest health score in your environment. To investigate the potential problems affecting the health of a resource, click the virtual machine name or the performance icon.
- **Plan.** Provides a list of projections about when and what additional resources may be required to support the existing and planned deployments. Click any virtual object to drill down and explore that object in more detail.

- **Tune.** Provides a list of suggestions for making your virtual environment more efficient. Clicking the **Fix Now** link opens the **Optimizer Main View** dashboard, which allows you to optimize your environment, as necessary.
- **Machine Connectivity.** Shows the connectivity state of machines protected and replicated on the monitored Rapid Recovery core. It also shows connectivity for data on recovery points-only machine.
- **Top 6 Repositories with Least Days Remaining.** Shows the top six repositories with the least days remaining on the monitored Rapid Recovery core. Drill down into the server names, to navigate to the *Protection > Repositories Capacity Planning* dashboard.
- **Unprotected Machines.** Shows the amount of unprotected machines. Drill down into the unprotected machines, to navigate to the *Protection > Protected Status* dashboard.
- **Core Servers.** Lists the monitored Rapid Recovery Core Servers. Drill down into the server names, to navigate to the *Protection > Rapid Recovery Infrastructure* dashboard.

The Environment Overview dashboard also includes a **Health** tab, which allows you to review the health of your virtual environment. This tab includes the following views:

- **VMware.** Highlights the alarms that need immediate attention, in your VMware® environment. Drill down into the available links, to review the alarms in more detail.
- **Hyper-V.** Highlights the alarms that need immediate attention, in your Hyper-V® environment. Drill down into the available links, to review the alarms in more detail.
- **Storage.** Highlights the alarms that need immediate attention, in your Storage Management environment. Drill down into the available links, to review the alarms in more detail.
- **vCloud Director.** Highlights the alarms that need immediate attention, in your vCloud environment. Drill down into the available links, to review the alarms in more detail.
- **OpenStack.** Highlights the alarms that need immediate attention, in your OpenStack environment. Drill down into the available links, to review the alarms in more detail.

Figure 3. FVE Environment Overview dashboard > Health tab

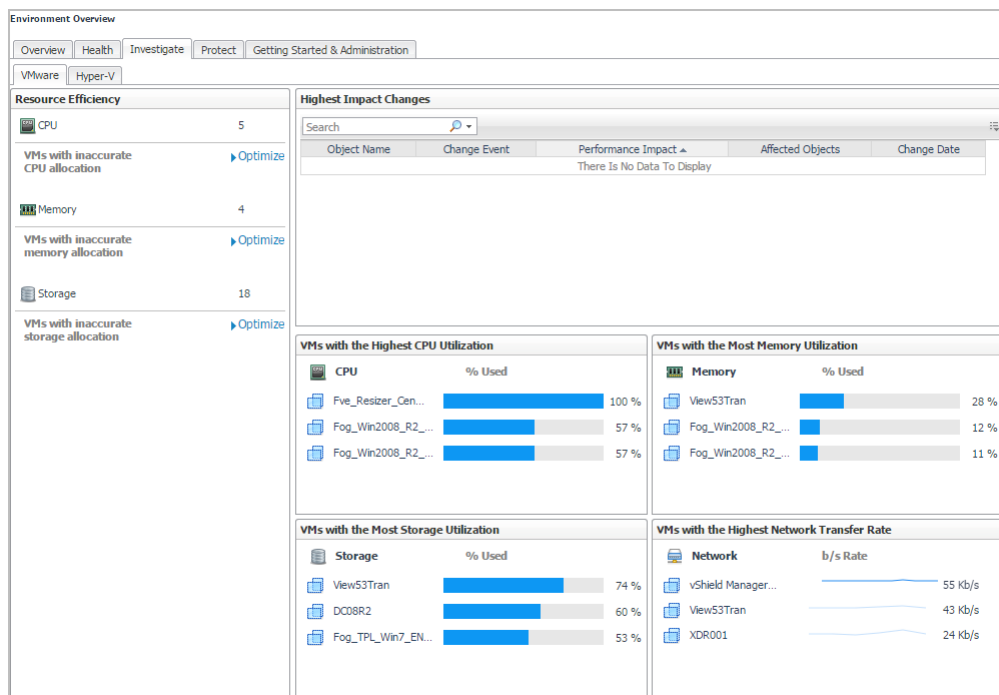


The Environment Overview dashboard also includes an **Investigate** tab, which provides a quick way to investigate the resource efficiency in your environment and to optimize VMs with incorrect resource allocations, as necessary. The **Investigate** tab includes the **VMware** and **Hyper-V** tabs, with the following views:

- **VMware** tab:

- **Resource Efficiency.** Provides a list of suggestions for making your virtual environment more efficient, for each type of virtual object (CPU, Memory, and Storage). Clicking the **Optimize** links opens the **Optimizer Main View** dashboard, which allows you to optimize your environment, as necessary.
- **Highest Impact Changes.** Provides an overview of changes with the highest impact on your environment.
- **VMs with the Highest CPU Utilization.** Provides a list of virtual machines experiencing the highest CPU utilization. Clicking a virtual object to drill down and investigate the issues in more details.
- **VMs with the Most Memory Utilization.** Provides a list of virtual machines experiencing the highest memory utilization. Clicking a virtual object to drill down and investigate the issues in more details.
- **VMs with the Highest Network Transfer Rate.** Provides a list of virtual machines experiencing the highest network transfer rate. Clicking a virtual object to drill down and investigate the issues in more details.
- **VMs with the Most Storage Utilization.** Provides a list of virtual machines experiencing the highest storage utilization. Clicking a virtual object to drill down and investigate the issues in more details.
- **Hyper-V tab:**
 - **Resource Efficiency.** Provides a list of suggestions for making your virtual environment more efficient, for each type of virtual object (CPU and Memory). Clicking the **Optimize** links opens the **Optimizer Main View** dashboard, which allows you to optimize your environment, as necessary.
 - **VMs with the Highest CPU Utilization.** Provides a list of virtual machines experiencing the highest CPU utilization. Clicking a virtual object to drill down and investigate the issues in more details.
 - **VMs with the Most Memory Load.** Provides a list of virtual machines experiencing the highest memory utilization. Clicking a virtual object to drill down and investigate the issues in more details.
 - **VMs with the Highest Network Transfer Rate.** Provides a list of virtual machines experiencing the highest network transfer rate. Clicking a virtual object to drill down and investigate the issues in more details.
 - **VMs with the Most Storage Utilization.** Provides a list of virtual machines experiencing the highest storage utilization. Clicking a virtual object to drill down and investigate the issues in more details.

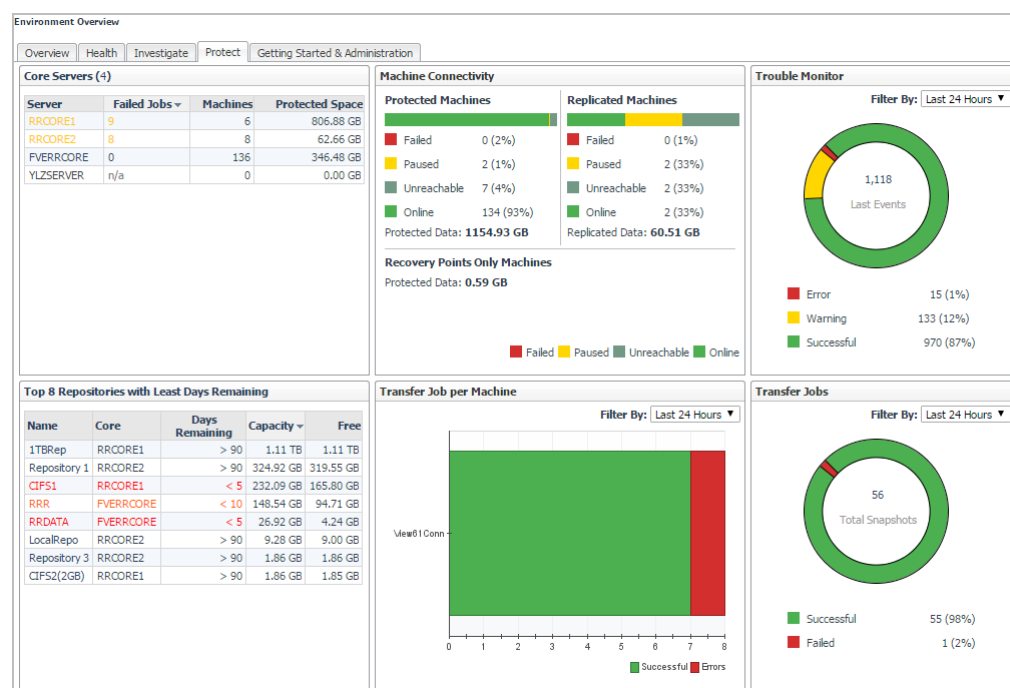
Figure 4. FVE Environment Overview dashboard > Investigate tab



The Environment Overview dashboard also includes a **Protect** tab, which allows you to review the of your virtual environment. This tab includes the following views:

- **Core Servers.** Lists the monitored Rapid Recovery Core Servers. Drill down into the server names, to navigate to the *Protection > Rapid Recovery Infrastructure* dashboard.
- **Machine Connectivity.** Shows the connectivity state of machines protected and replicated on the monitored Rapid Recovery core. It also shows connectivity for data on recovery points-only machine.
- **Trouble Monitor.** Shows job activity, connections with the license portal, and transfer activity to detect early on the monitored Rapid Recovery core. The time range is configurable, defaulting to last 24 hours. Click this view to navigate to the *Protection > Events > Journal* dashboard.
- **Top 8 Repositories with Least Days Remaining.** Shows the top eight repositories with the least days remaining on the monitored Rapid Recovery core. Drill down into the server names, to navigate to the *Protection > Repositories Capacity Planning* dashboard.
- **Transfer Job per Machine.** This table shows, by protected machine of which the latest transfer job is failed, the number of successful and failed transfer jobs in the specified time range. There is no data displayed if all transfer jobs are successful. Click this view to navigate to the *Protection > Events > Tasks* dashboard.
- **Transfer Job.** Shows all snapshot data transfers (including base images and incremental snapshots) that completed in the specified time range. The time range is configurable, defaulting to last 24 hours. Click this view to navigate to the *Protection > Events > Tasks* dashboard.

Figure 5. FVE Environment Overview dashboard > Protect tab



The Environment Overview dashboard also includes a **Getting Started & Administration** tab, which allows you to perform the following activities:

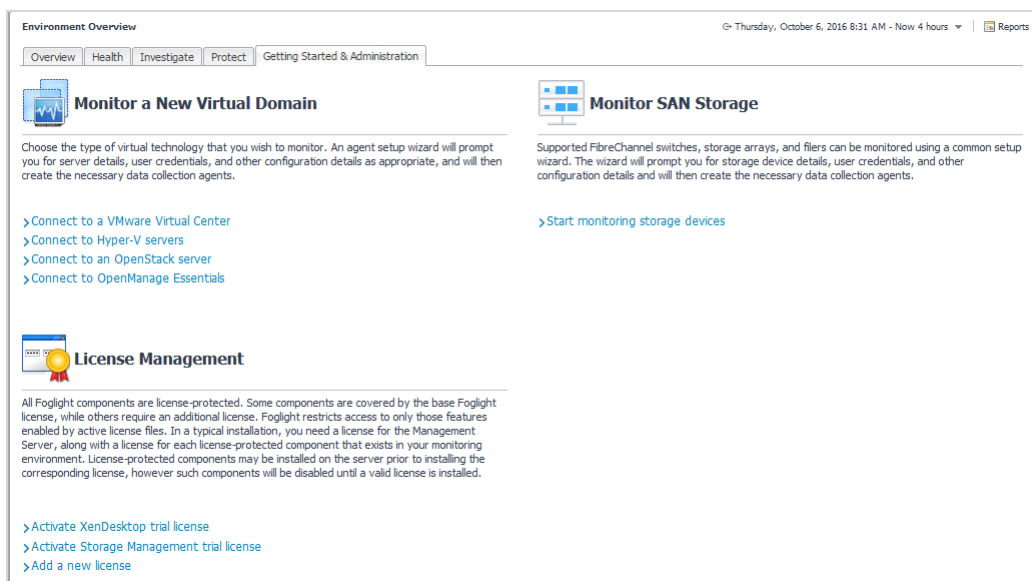
- **Monitor a new virtual domain.** Depending on the virtual technology that you want to monitor, select one of the following options:
 - **Connect to a VMware Virtual Center.** Launches a wizard to start the creation and configuration of a VMware Performance agent.
 - **Connect to Hyper-V servers.** Launches a wizard to start the creation and configuration of one Hyper-V agent or more Hyper-V agents of all servers (for target environment by batch).
 - **Connect to an OpenStack server.** Launches a wizard to start the creation and configuration of an OpenStack agent.

- **Connect to OpenManage Essentials.** Launches a wizard to start the creation and configuration of an OpenManage Essentials (OME) agent.
- **Monitor SAN Storage.** Allows you to monitor the SAN Storage, provided that the Storage Management license trial has been activated.
 - **Start monitoring storage devices.** Launches a wizard to start creating Storage Management agents. For more information, see the *Foglight for Storage Management User and Reference Guide*.
- **License Management.** Allows you to manage the licenses for components installed with Foglight or Foglight for Virtualization, Enterprise Edition, but not enabled.

NOTE: Foglight for Virtualization, Enterprise Edition version 8.5 and Foglight for Storage Management 4.3.5 have a common installer.

- **Activate XenDesktop trial license.** Activates the 40-day trial version of Foglight for Citrix XenDesktop and XenApp. For more information, see the *Foglight for Citrix XenDesktop and XenApp* documentation.
- **Activate Storage Management trial license.** Activates the 45-day trial version of Foglight for Storage Management. After the trial is activated, you can start creating Storage Management agents using the **Start monitoring storage devices** link. For more information, see the *Foglight for Storage Management User and Reference Guide*.
- **Add a new license.** Allows you to quickly access the Manage Licenses dashboard. For more information on licenses, see the *Foglight Administration and Configuration Guide*.

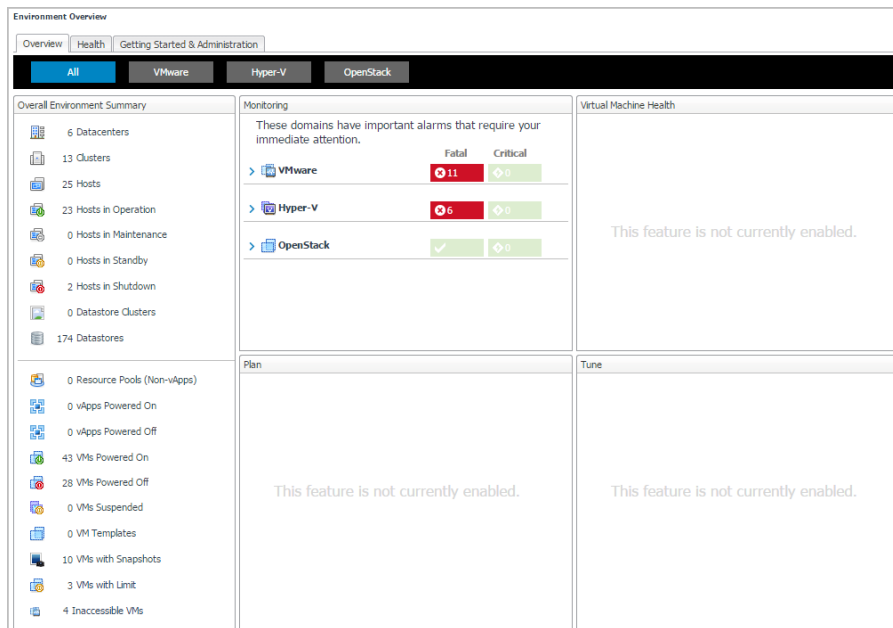
Figure 6. FVE Environment Overview dashboard > Getting Started & Administration tab



Foglight for Storage Management Environment Overview

This section provides an introduction to the Foglight for Storage Management, Environment Overview dashboard. When you log into Foglight for Storage Management for the first time, the **Environment Overview** dashboard > **Overview** tab is displayed.

Figure 7. FSM Environment Overview dashboard > Overview tab



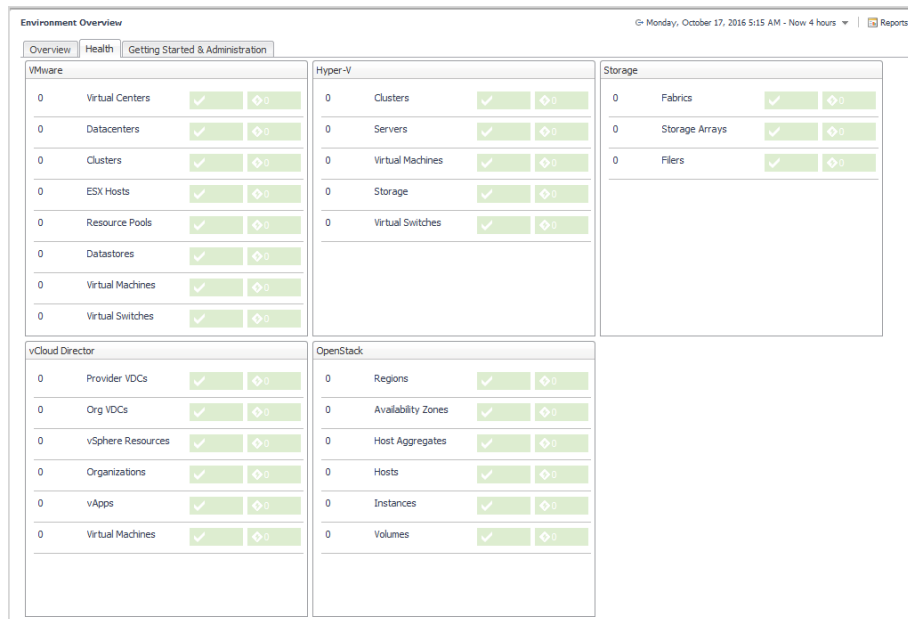
The **Overview** tab shows the overall status of your virtual environment, and highlights various objects that need further exploration. You can select to view all or specific domains in your virtual environment, by clicking the **All**, **VMware**, **Hyper-V**, or **OpenStack** button, respectively, located on the top right corner of the tab. The Overview tab includes the following views:

- **Overall Environment Summary.** Provides a summary of your virtual environment.
- **Monitoring.** Highlights the alarms that need immediate attention, for each monitored domain. Drill down into the available links, to review the alarms in more detail.
- **Virtual Machine Health.** This functionality is currently unavailable.
- **Plan.** This functionality is currently unavailable.
- **Tune.** This functionality is currently unavailable.

The Environment Overview dashboard also includes a **Health** tab, which allows you to review the health of your virtual environment. This tab includes the following views:

- **VMware.** Highlights the alarms that need immediate attention, in your VMware® environment. Drill down into the available links, to review the alarms in more detail.
- **Hyper-V.** Highlights the alarms that need immediate attention, in your Hyper-V® environment. Drill down into the available links, to review the alarms in more detail.
- **Storage.** Highlights the alarms that need immediate attention, in your Storage Management environment. Drill down into the available links, to review the alarms in more detail.
- **vCloud Director.** Highlights the alarms that need immediate attention, in your vCloud environment. Drill down into the available links, to review the alarms in more detail.
- **OpenStack.** Highlights the alarms that need immediate attention, in your OpenStack environment. Drill down into the available links, to review the alarms in more detail.

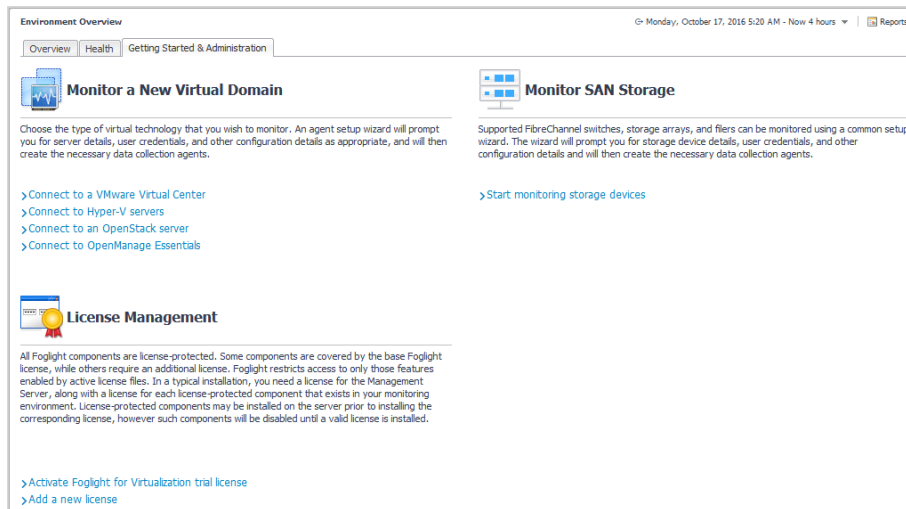
Figure 8. FSM Environment Overview dashboard > Health tab



The Environment Overview dashboard also includes a **Getting Started and Administration** tab, which allows you to perform the following activities:

- **Monitor a New Virtual Domain.** Depending on the virtual technology that you want to monitor, select one of the following options:
 - **Connect to a VMware Virtual Center.** Launches a wizard to start the creation and configuration of a VMware Performance agent.
 - **Connect to Hyper-V servers.** Launches a wizard to start the creation and configuration of one Hyper-V agent or more Hyper-V agents of all servers (for target environment by batch).
 - **Connect to an OpenStack server.** Launches a wizard to start the creation and configuration of an OpenStack agent.
 - **Connect to OpenManage Essentials.** Launches a wizard to start the creation and configuration of an OpenManage Essentials (OME) agent.
- **Monitor SAN Storage.** Allows you to monitor the SAN Storage, provided that the Storage Management license trial has been activated.
 - **Start monitoring storage devices.** Launches a wizard to start creating Storage Management agents. For more information, see the *Foglight for Storage Management User and Reference Guide*.
- **License Management.** Allows you to manage the licenses for components installed with Foglight or Foglight for Storage Management, but not enabled.
 - **NOTE:** Foglight for Virtualization, Enterprise Edition version 8.5 (or later) and Foglight for Storage Management 4.3.5 (or later) have a common installer.
 - **Activate Foglight for Virtualization trial license.** Activates the 45-day trial version of Foglight for Virtualization, Enterprise Edition. When the activation process completes, Foglight for Virtualization, Enterprise Edition (with Storage functionality) becomes the main entry point for monitoring your environment. For more information, see the *Foglight User Guide* and the *Foglight Administration and Configuration Guide*.
 - **Add a new license.** Allows you to quickly access the Manage Licenses dashboard. For more information on licenses, see the *Foglight Administration and Configuration Guide*.

Figure 9. FSM Environment Overview dashboard > Getting Started and Administration tab



Foglight Operator's Welcome page

This section provides an introduction to the Foglight Operator's version of the Welcome page. For details about this page, see the *User Guide*.

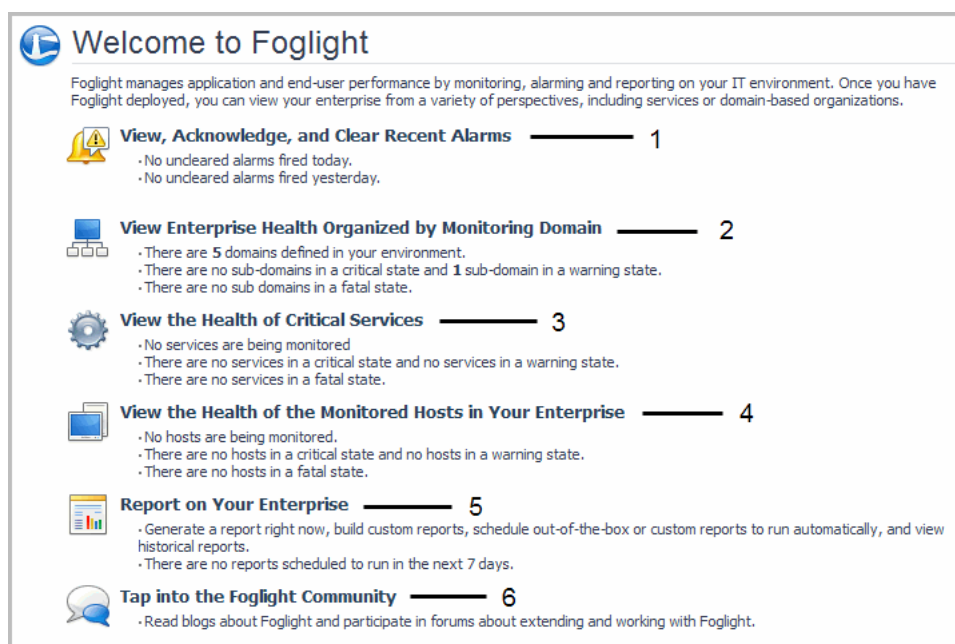
i | NOTE: This page is not available in Foglight for Virtualization, Enterprise Edition systems.

The first time you log in to Foglight, the Welcome page appears in the display area. The Welcome page lists commonly performed tasks and provides easy access to typically used dashboards. Most dashboards that can be accessed from this page can also be accessed from Homes in the navigation panel. The dashboards that you can access from the Welcome page depend on the roles associated with your user account. For example, users with the Administrator role have access to a wider range of dashboards than the users with an Operator role. For information about users and roles in Foglight, see the *Administration and Configuration Help*.

Clicking the task links on the Welcome page causes navigation pages or dashboards related to the selected task to appear in the display area. You can use these links as starting points for frequently-performed monitoring activities.

i | NOTE: The Welcome page is your default home page unless you set a different home page. For instructions on changing your home page, see the *User Guide*.

Figure 10. Foglight Operator's Welcome page



1. View, Acknowledge, and Clear Recent Alarms: Navigates to the Alarms dashboard. You can use this dashboard to view the state of all alarms across the entire Foglight installation so you can take immediate action on them. You can also use this dashboard to identify alarm storms or outage events by viewing the alarm count by time. See the *User Guide* for more information.

2. View Enterprise Health Organized by Monitoring Domain: Takes you to the Domains dashboard, from which you can view an end-to-end, top-level summary of all domains in the Domains dashboard and drill down to view their managed instances. See the *User Guide* for more information.

3. View the Health of Critical Services: Causes the Service Operations Console to appear. In the Service Operations Console, you can choose a group of services as a focal point for your monitoring. See [Service Operations Console](#) and the *User Guide* for more information.

4. View the Health of the Monitored Hosts in Your Enterprise: Takes you to the Hosts dashboard. Navigate to the Hosts dashboard if you want to view host-related alarms and a high-level summary of performance on your monitored hosts. See [Hosts dashboard](#) and the *User Guide* for more information.

5. Report on Your Enterprise: Causes the Reports dashboard to appear. Use this dashboard to view reports that are scheduled, run a report using a report template, create a custom report, schedule a report to run at a specific time, and manage reports. See the *User Guide* for more information.

6. Tap into the Foglight Community: Takes you to the Foglight Community (<https://www.quest.com/community/products>), where you can read blogs about Foglight and participate in discussions.

Foglight Administrator's Welcome page

This section provides an introduction to the Foglight Administrator's version of the Welcome page. For details about this page, see the *Administration and Configuration Guide*.

NOTE: This page is not available in Foglight for Virtualization, Enterprise Edition systems.

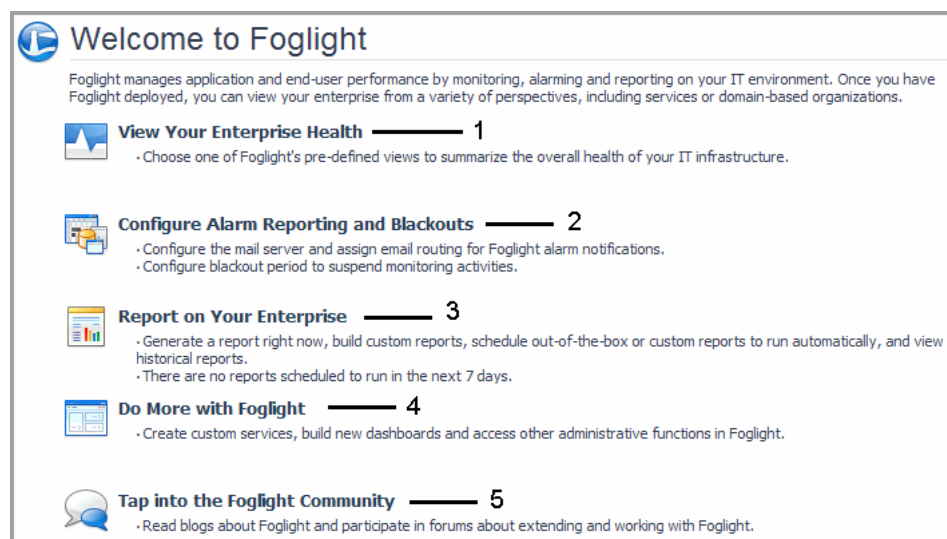
The first time that you log in to Foglight, the Welcome page appears in the display area. If your user account includes the Administrator role, you can access a wider range of dashboards than those with the Operator role only. The Administrator's version of the Welcome page lists several tasks that you can perform by clicking an entry

in the list. Some of these tasks are common administrative tasks that you typically perform upon logging in to Foglight.

Clicking a task link on the Welcome page shows an administrative dashboard related to the selected task in the display area. Most dashboards that can be accessed from this page can also be accessed from the navigation panel.

i | **NOTE:** The Welcome page is your default home page unless you set a different home page. For instructions on changing your home page, see the *User Guide*.

Figure 11. Foglight Administrator's Welcome page



1. View Your Enterprise Health: The View Your Enterprise Health page provides links to dashboards that allow you to observe the overall health of your system by viewing existing alarms and the state of your domains, services, and monitored hosts. See the *Administration and Configuration Guide* for more information.

2. Configure Alarm Reporting and Blackouts: Takes you to the Configure Alarm Reporting and Blackouts page, which contains additional links to the dashboards that show more details about the current email and blackout setup. Use these pages to configure Foglight to send alarm-related email using your email server and to suspend alarms and data collection. See the *Administration and Configuration Guide* for more information.

3. Report on Your Enterprise: Takes you to the Reports dashboard, from which you can view reports that are scheduled, run a report using a report template, create a custom report, schedule a report to run at a specific time, and manage reports. See the *User Guide* for more information.

4. Do More with Foglight: Opens the Do More With Foglight page. This page provides links to dashboards that provide more details about each aspect of your system health. Use these dashboards to define your own custom services, quickly build dashboards, view agent status, and perform other administrative functions. See the *Administration and Configuration Guide* for more information.

5. Tap Into the Foglight Community: Takes you to the Foglight Community (<https://www.quest.com/community/products>), where you can read blogs about Foglight and participate in discussions.

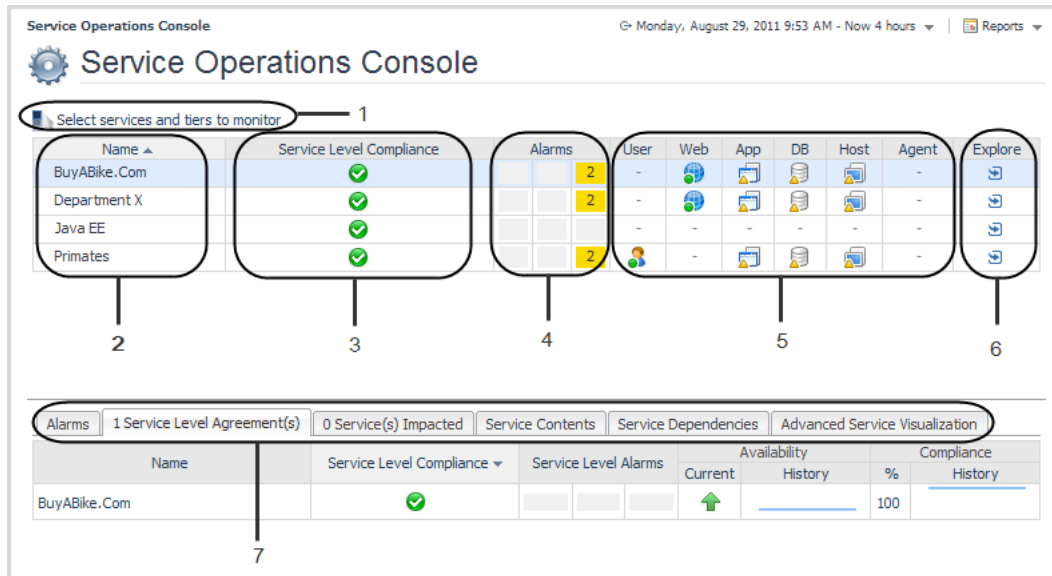
Service Operations Console

This section provides an introduction to the Services Operations Console dashboard. For details about this dashboard and services, see "Monitoring your services" in the *Foglight User Guide*.

The Service Operations Console is the best way to monitor a selected set of services. This dashboard allows you to focus on monitoring a specific group of services by selecting those services and viewing their dependencies. In addition, you can select tiers that are relevant to you and display service breakdowns based on these tiers.

Use this dashboard to view details about the services you want to monitor, such as the state of your services and information about their contents. You can also drill down on this dashboard to see more information about your services. For example, you can drill down on a tier to investigate the state of the monitored components within that tier and see the hosts that are related to it.

Figure 12. Service Operations Console dashboard



1. Select services and tiers to monitor link: Opens the Select services and tiers to monitor dialog box, which you use to select the services and tiers that interest you. Selecting services and tiers causes them to appear in the Service Operations Console dashboard. See the *User Guide* for details.

2. Name column: Lists the services that you select. See the *User Guide* for more information about services.

3. Service Level Compliance column: Shows the service level for each service. Foglight automatically creates a service level for each service. The level of compliance is determined by the component in the most severe state. See the *User Guide* for more information.

TIP: Click an icon in this column to display a popup with more information about the Service Level Agreement for the service. Follow the **Explore > Service Level Agreement(s)** link in the popup to navigate to the Service Levels dashboard populated with information specific to that service. See the online help for the Service Levels dashboard for details.

4. Alarms column: Shows the number of alarms for the services that you select. Clicking one of the icons in this column causes an Outstanding Alarm(s) view to appear with a list of alarms specific to that service.

5. Tier columns: Show performance information for the tiers you chose to display. Tiers help you structure services in a way that represents your monitored environment. By default, Foglight organizes data into tiers such as User, Web, Application, Database, Host, and Agent. See the *User Guide* for more information. The icons in each column show the aggregate state of that tier for that category or service. A tier's state is determined by the most severe state of its monitored components, including related hosts.

TIP: Click an icon in one of these columns to display a popup that lists the monitored components within that tier and their current state, as well as drill-downs for the components.

6. Explore column: Opens the Service Details view for the selected service. The Service Details view provides a breakdown of monitored components, related agents, and their associated outstanding alarms. See the *User Guide* for details.

7. Service Operations Console tabs: Display details for the selected category or service, such as its contents and dependencies. See the *User Guide* for details.

Hosts dashboard

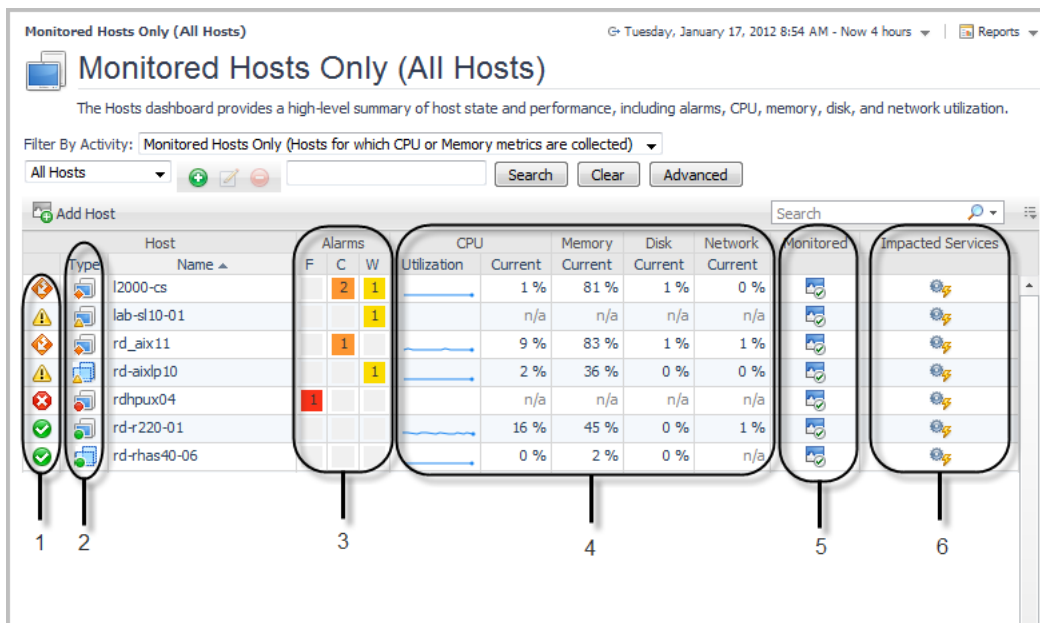
This section provides an introduction to the Hosts dashboard and the views and dashboards to which you can drill down from it.

You can use the Hosts dashboard to monitor problems in your environment by selecting and focusing on a set of hosts. From this dashboard, you can drill down to different dashboards and views, depending on the host type (physical or virtual).




If you are responsible for the availability of a set of hosts and prefer to think in terms of systems, this dashboard helps by presenting a summary of the state and performance of your hosts and allowing you to drill down to see if a host's state has an impact on services.

Filter the list to show all hosts, only monitored hosts (for which Foglight collects CPU and memory metrics), only unmonitored hosts, or only hosts that belong to a specific category (for example, all hosts with a particular operating system). You can also search the list of hosts by name.

Figure 13. Hosts dashboard



1. State indicators: Allow you to see the state of your hosts at a glance. Each state indicator shows the aggregate alarm state of the host, which is determined by the host's most severe alarm. In this dashboard, the indicator represents a state rollup from the host and its children, excluding the state of agents on that host.

2. Type icons: Identify the host as physical or virtual: physical hosts are identified by the icon , VMWare images by the icon , and ESX® servers by the icon .

3. Alarms column: Shows the number of alarms for each host. To investigate alarms, click an icon in this column to display a view with a list of alarms for that host. See "Viewing, acknowledging, and clearing alarms" in the *User Guide* for information about working with alarms.

4. CPU, Memory, Disk, and Network columns: Each column displays recent and current values for that metric category, allowing you to obtain a concise overview of CPU-, memory-, disk-, and network-related performance for each host. The values displayed in the sparkline change with the dashboard's time range. By default, a sparkline is shown only in the CPU Utilization column. See "Viewing a host's performance" in the *User Guide* for more information.

TIP: To investigate a host's CPU-, memory-, disk-, and network-related performance, click the sparkline or current value to drill down to a dashboard with details for that metric category.

5. Monitored column: Identifies whether or not the host is configured for monitoring. If the host is not monitored, click the icon to launch a popup that lets you configure monitoring. If the host is monitored, clicking the icon opens the Agent List popup.

6. Impacted Services icons: Launch a popup that helps you establish whether critical services are affected by problems with one of your hosts. See “Seeing if a host’s state impacts your services” in the *User Guide* for details.

Next steps

Your next steps depend on how you are using this guide and the way you want to use Foglight. Some examples are provided below.

- **If you read this guide prior to installing Foglight:** Select the appropriate platform- and database-specific *Installation and Setup Guide* and follow the instructions for installing and configuring Foglight.
- **If you are an operator responsible for monitoring a large environment:** Follow a service- or host-oriented workflow. For example, if you are responsible for ensuring the availability of your accounting application service, you can follow a service-oriented workflow that begins in the Service Operations Console. If you prefer a less abstract approach, you can follow a host-oriented workflow that begins in the Hosts dashboard. You can correlate these two approaches: the Service Operations Console displays the aggregate state of the hosts in a service and the Hosts dashboard allows you to view the services on which a host’s state has an impact. See the *User Guide* for details.
- **If you are a technical expert interested in monitoring a specific domain:** Start with the documentation included with the Foglight cartridge for monitoring that domain.
- **If you are interested in monitoring services:** You can follow a service-oriented workflow. See the *User Guide* for details about the drilldowns available from the Service Operations Console.
- **If you want to customize aspects of the Foglight browser interface:** Begin by following the instructions in “Customizing Foglight” in the *User Help*.
- **If you are a Foglight administrator:** See the *Administration and Configuration Guide* and the *Command-Line Reference Guide* for information about performing administrative tasks (in addition to those described above) from the Foglight browser interface and from the command line.
- **If you want to create custom dashboards:** Review the information in “Creating a Custom Dashboard” in the *Foglight User Help*. You could then learn more about creating dashboards by following “Tutorial 2: Creating a Dashboard” in the *Web Component Tutorial*.
- **If you want to create custom views:** Begin by following “Tutorial 4: Adding Views” in the *Web Component Tutorial*. After this tutorial, see the *Web Component Guide* and the HTML *Web Component Reference* pages. These resources can help you create new views using the Quest Web Component Framework technology.

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

For sales or other inquiries, visit <https://www.quest.com/company/contact-us.aspx>.

Technical support resources

Technical support is available to Quest customers with a valid maintenance contract and customers who have trial versions. You can access the Quest Support Portal at <https://support.quest.com>.

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.