

Foglight[®] Capacity Director 5.8.1 **User Guide**



© 2019 Quest Software Inc.

ALL RIGHTS RESERVED.

This guide contains proprietary information protected by copyright. The software described in this guide is furnished under a software license or nondisclosure agreement. This software may be used or copied only in accordance with the terms of the applicable agreement. No part of this guide may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of Quest Software Inc.

The information in this document is provided in connection with Quest Software products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of Quest Software products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, QUEST SOFTWARE ASSUMES NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL QUEST SOFTWARE BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF QUEST SOFTWARE HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Quest Software makes no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Quest Software does not make any commitment to update the information contained in this document.

If you have any questions regarding your potential use of this material, contact:

Quest Software Inc. Attn: LEGAL Dept. 4 Polaris Way Aliso Viejo, CA 92656

Refer to our website (https://www.quest.com) for regional and international office information.

Patents

Quest Software is proud of our advanced technology. Patents and pending patents may apply to this product. For the most current information about applicable patents for this product, please visit our website at https://www.quest.com/legal.

Trademarks

Quest, the Quest logo, and Join the Innovation are trademarks and registered trademarks of Quest Software Inc. For a complete list of Quest marks, visit https://www.quest.com/legal/trademark-information.aspx. "Apache HTTP Server", Apache, "Apache Tomcat" and "Tomcat" are trademarks of the Apache Software Foundation. Google is a registered trademark of Google Inc. Android, Chrome, Google Play, and Nexus are trademarks of Google Inc. Red Hat, JBoss, the JBoss logo, and Red Hat Enterprise Linux are registered trademarks of Red Hat, Inc. in the U.S. and other countries. CentOS is a trademark of Red Hat, Inc. in the U.S. and other countries. Fedora and the Infinity design logo are trademarks of Red Hat, Inc. Microsoft, .NET, Active Directory, Internet Explorer, Hyper-V, Office 365, SharePoint, Silverlight, SQL Server, Visual Basic, Windows, Windows Vista and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. AIX, IBM, PowerPC, PowerVM, and WebSphere are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide. Java, Oracle, Oracle Solaris, PeopleSoft, Siebel, Sun, WebLogic, and ZFS are trademarks or registered trademarks of Oracle and/or its affiliates in the United States and other countries. SPARC is a registered trademark of SPARC International, Inc. in the United States and other countries. Products bearing the SPARC trademarks are based on an architecture developed by Oracle Corporation. OpenLDAP is a registered trademark of the OpenLDAP Foundation. HP is a registered trademark that belongs to Hewlett-Packard Development Company, L.P. Linux is a registered trademark of Linux Torvalds in the United States, other countries, or both. MySQL is a registered trademark of MySQL AB in the United States, the European Union and other countries. Novell and eDirectory are registered trademarks of Novell, Inc., in the United States and other countries. VMware, ESX, ESX, vSphere, vCenter, vMotion, and vCloud Director are registered trademarks or trademarks of VMware, Inc. VMware, ESX, ESXI, VSphere, VCenter, VMotion, and VCloud Director are registered trademarks of trademarks of VMware, Inc. in the United States and/or other jurisdictions. Sybase is a registered trademark of Sybase, Inc. The X Window System and UNIX are registered trademarks of The Open Group. Mozilla and Firefox are registered trademarks of the Mozilla Foundation. "Eclipse", "Eclipse Foundation Member", "EclipseCon", "Eclipse Summit", "Built on Eclipse", "Eclipse Ready" "Eclipse Incubation", and "Eclipse Proposals" are trademarks of Eclipse Foundation, Inc. IOS is a registered trademark or trademark of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries. Apple, iPad, iPhone, Mac OS, Safari, Swift, and Xcode are trademarks of Apple Inc., registered in the U.S. and other countries. Ubuntu is a registered trademark of Canonical Ltd. Symantec and Vortes are trademarks of eclipser of Symantec Corporation or tis affiliates in the U.S. and other countries. and Veritas are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. OpenSUSE, SUSE, and YAST are registered trademarks of SUSE LCC in the United States and other countries. Citrix, AppFlow, NetScaler, XenApp, and XenDesktop are trademarks of Citrix Systems, Inc. and/or one or more of its subsidiaries, and may be registered in the United States Patent and Trademark Office and in other countries. AlertSite and DéjàClick are either trademarks or registered trademarks of Boca Internet Technologies, Inc. Samsung, Galaxy S, and Galaxy Note are registered trademarks of Samsung Electronics America, Inc. and/or its related entities. MOTOROLA is a registered trademarks of Motorola Trademark Holdings, LLC. The Trademark BlackBerry Bold is owned by Research In Motion Limited and is registered in the United States and may be pending or registered in other countries. Quest is not endorsed, sponsored, affiliated with or otherwise authorized by Research In Motion Limited. Ixia and the Ixia four-petal logo are registered trademarks or trademarks of Ixia. Opera, Opera Mini, and the O logo are trademarks of Opera Software ASA. Tevron, the Tevron logo, and CitraTest are registered trademarks of Tevron, LLC. PostgreSQL is a registered trademark of the PostgreSQL Global Development Group. MariaDB is a trademark or registered trademark of MariaDB Corporation Ab in the European Union and United States of America and/or other countries. Vormetric is a registered trademark of Vormetric, Inc. Intel, Itanium, Pentium, and Xeon are trademarks of Intel Corporation in the U.S. and/or other countries. Debian is a registered trademark of Software in the Public Interest, Inc. OpenStack is a trademark of the OpenStack Foundation. Amazon Web Services, the "Powered by Amazon Web Services" logo, and "Amazon RDS" are trademarks of Amazon.com, Inc. or its affiliates in the United States and/or other countries. Infobright, Infobright Community Edition and Infobright Enterprise Edition are trademarks of Infobright Inc. POLYCOM®, RealPresence® Collaboration Server, and RMX® are registered trademarks of Polycom, Inc. All other trademarks and registered trademarks are property of their respective

owners.

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.

Foglight Capacity Director User Guide Updated - December 2019 Software Version - 5.8.1

Contents

Using Foglight Capacity Director
Installation requirements
Performance Agent Configuration for Foglight Capacity Director
Hyper-V Agent Configuration for Foglight Capacity Director
Dashboard location and UI elements
Group selector
Actions bar
Menu bar
Quick view
Getting Started Tab
Capacity Planning
Capacity Allocation
Capacity Optimization
Capacity Maintenance
Current Capacity Tab
Planned Changes pane
VirtualCenter/Hosts Overview pane
Calculating Slot Size Based on VM
Calculating Slot Size Using Custom Size
Resource Utilization Tab
Planned Changes pane
Clusters/Hosts and Workload pane
Calculating Host Size based on specific host
Resource Utilization related views
Scenario Modeler Tab
Optimal Placement
Balance Score
Modeling Placement
Deploying Placement
Manual Placement
Hog Score
Server Purchase Tab
Replace Existing Servers
Purchase Additional Servers
Managing Server List
Adding a new server
Editing existing servers
Deleting existing servers

Importing server list 41 Exporting server list 42
Report Tab
Printing Reports from Current Capacity
Hosts Report
Clusters Report
Printing Reports from Resource Utilization
Clusters Report
Hosts and Workload Report
Performance Tuning Tab
Select a Cluster pane
·
Select a Host pane
Performance Tuning pane
Changes and DRS Rules Tab
Adding a Planned Change
Modeling a Cluster Addition
Modeling a Host Addition
Adding Virtual Machines
Modeling a Host Decommission55
Decommissioning Virtual Machines56
Modeling a Host Movement
Moving Virtual Machines
Adding a Datastore (Preview)
Modeling a Datastore Decommission (Preview)
Modeling a Datastore Expansion (Preview)60
Modeling a Datastore Shrink (Preview)
Editing a Planned Change61
Deleting a Planned Change
Infrastructure Organizations Tab
Organizations tab
Adding a new organization63
Editing existing organizations63
Removing existing organizations63
Clusters tab
About Us
We are more than just a name
Our brand, our vision. Together
-
Contacting Quest
Technical support resources

Using Foglight Capacity Director

Foglight[®] Capacity Director delivers complete virtual infrastructure capacity life cycle management. Get deep insight into your environment, including the availability and estimated time left for CPU, memory, storage, and Input/Output Operations Per Second (IOPs). Use historical trends to better forecast resource requirements for clusters, hosts, and workloads—and proactively predict and budget for capital expenditures. Optimize resource utilization and reduce operational expenses by re-balancing the distribution of clusters and workloads. Model your infrastructure changes (add, move, or remove clusters, hosts, and virtual machines) before deployment, to avoid bottlenecks, performance issues, or reaching the system's capacity limits.

The Foglight Capacity Director User Guide is intended for:

- VMware: users who have been assigned the System Administrator, Advanced Operator, Capacity Management Administrator, VMware Administrator, or VMware QuickView User role.
- *Hyper-V*: users who is a member of a local group administrators.

This section introduces you to the Foglight Capacity Director environment, and provides you with essential information.

For more information, see the following topics:

- Installation requirements
- Performance Agent Configuration for Foglight Capacity Director
- Hyper-V Agent Configuration for Foglight Capacity Director
- Dashboard location and UI elements

Installation requirements

Foglight Capacity Director comes installed on Foglight Evolve and can be installed on a Foglight Management Server.

Foglight Capacity Director requires the following cartridges for data collection:

- 1 vUsage-Feedback-5.8.1.car
- 2 DRP-5.8.1.car
- 3 Virtual-VMware-5.8.1.car
 - **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.
- 4 Virtual-VMware-Admin-5.8.1.car
- 5 Virtual-HyperV-5.8.1.car
- 6 SCVMM.car (optional)
- 7 OptimizerAutomation-5.8.1.car
- 8 CommonAnalytics-5.8.1.car
- 9 Capacity-Director-5.8.1.car

6

While 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 Capacity Director, and for details about system requirements and version compatibility, see the *Foglight Capacity Director Release Notes*.

Performance Agent Configuration for Foglight Capacity Director

Each VMware Performance Agent monitors a single vCenter[®]. When you create a VMware Performance Agent instance, the Performance Agent starts importing historical data into Foglight Capacity Director. To fully enable Foglight Capacity Director functionalities in the VMware Environment and to enable the configuration of the **Automated** attribute when you create a planned change using the Add/Move/Decommission wizard in Foglight Capacity Director, a user with sufficient privileges must be configured.

On the vCenter[®] server, create a new role with the following privileges:

- Datastore > Allocate space
- Datastore > Browse Datastore
- Datastore > Low-level file operations
- Scheduled Task > Create task
- Scheduled Task > Delete task
- Scheduled Task > Run task
- Network > Assign network
- Resource > Assign Virtual machine to resource pool
- Resource > Migrate Powered off Virtual Machine
- Resource > Migrate Powered on Virtual Machine
- Virtual Machine > Configuration > Add existing disk
- Virtual Machine > Configuration > Add new disk
- Virtual Machine > Configuration > Add or remove device
- Virtual Machine > Configuration > Advanced
- Virtual Machine > Configuration > Change CPU count
- Virtual Machine > Configuration > Change resource
- Virtual Machine > Configuration > Extend virtual disk
- Virtual Machine > Configuration > Memory
- Virtual Machine > Configuration > Modify device settings
- Virtual Machine > Configuration > Remove disk
- Virtual Machine > Configuration > Settings
- Virtual Machine > Interaction > Configure CD Media
- Virtual Machine > Interaction > Device Connection
- Virtual Machine > Interaction > Power Off
- Virtual Machine > Interaction > Power On
- Virtual Machine > Inventory > Create from existing

- Virtual Machine > Inventory > Create new
- Virtual Machine > Provisioning > Deploy template

Refer to "Configuring monitoring agents for data collection" in the Using Foglight for VMware guide for instructions about configuring agent privileges.

Hyper-V Agent Configuration for Foglight Capacity Director

Each Hyper-V Agent monitors a single virtual machine. When you create a Hyper-V Agent instance, the agent starts importing historical data into Foglight Capacity Director. To fully enable Foglight Capacity Director functionalities in the Hyper-V environment and to enable the configuration of the **Automated** attribute when you create a planned change using the Add/Move/Decommission wizard in Foglight Capacity Director, the user must be a member of a local group administrators.

Dashboard location and UI elements

After installing Foglight Capacity Director, the **Capacity Director** dashboard appears in the Foglight Management Server.

To access the Capacity Director dashboard:

- 1 Log in to the Foglight browser interface.
- 2 Ensure that the navigation panel is open.

To open the navigation panel, click the right-facing arrow 🕨 on the left.

3 On the navigation panel, under *Dashboards*, click **Capacity Director**.

The Capacity Director dashboard opens.



Capacity Director			Actions Bar		G+ Tuesday, July	9, 2019 9:02:22 AM - 10:	02:22 AM 60 minutes 👻	🖪 Reports 👻
VMware Hype	r-V 🔅 Setti	ings 🔮 Recalci	ulate					
Datacenter_Datacenter	Group S	elector						
Getting Started	ity Resource Utilization	Scenario Modeler	Server Purchase	Reports	Performance Tuning	Changes and DRS Rules	Infrastructure Organizations	Menu Bar
				Capacity	Planning			
	Capacity Planning			li 🗠	Trend and Forecast Hos Forecast number of servers planned changes.		to support Virtual Ma	chines based on
		,	•		Trend and Forecast Res			
Capacity Maintenance		Capacity	Allocation		Trend the resource consum	—Quick View	precast the resources	utilization based
					Capacity and Time Remain Calculate the remaining cap		I Memory Storage	and IOPs
	Capacity Optimization)		conconvectoric remaining ca		y rishory storage,	and tot di

The Capacity Director dashboard consists of the following UI elements:

- Group selector
- Actions bar
- Menu bar
- Settings Menu

Group selector

The Group selector is located at the top of the dashboard and allows you to select the virtual environment that you want to monitor.

Figure 2. Group Selector

VMware	-
Datacenter_	-
Datacenter_	
Datacenter_	
Datacenter_	
Datacenter	
Datacenter_	
Datacenter_	
OME_ESX_F	
VirtualCente	
VirtualCente	
VMware	

Actions bar

The actions bar at the top of the screens contains the following options, Settings Menu and Recalculating Results.

Figure 3. Actions bar



Settings Menu

Click the Settings icon on the actions bar to open the Settings dialog box. For details about the settings that you can configure in this dialog, see the "Configuring Analysis" and "Configuring Notifications" sections.

Configuring Analysis

The Settings menu > Analysis tab allows you to configure the settings to be taken into calculation by Foglight Capacity Director for analyzing the current capacity and resource utilization, and for predicting future resource requirements.

To configure the analysis settings:

1 In the Settings dialog box, click the Analysis tab.

nalysis Notifications		
Baseline For Forecasting	30 Days Trending	*
Time Frame	Next 30 Days	*
Average Analysis Period	Last 7 Days	•
Changing the evaluation period requires a da	ta recalculation. This recalcu	lation may take several minutes.
Show G	Getting Started (Use Cases)	
Baseline for Forecasting defines the historical peri ecommended resources in the Resource Utilization vi Time Frame defines the predicted period for calculat he Resource Utilization view. Average Analysis Period defines the historical perio Current Capacity view: Slot Size, Slot Available an Scenario Modeler view: Resource Utilization, Bala Schow Getting Started (Use Cases) Select this che	ew. ing metric views, current cap od used for the calculations o id Constraint nce Score and Hog Score	acity, and recommended resources in

- 2 Specify the following values as needed.
 - Baseline For Forecasting: Defines the historical period used for the calculations of metric views, current capacity, and recommended resources in the Resource Utilization view. The following options are available: 30 Days Trending (default option), 180 Days Trending, and 365 Days Trending.
 - Time Frame: Defines the predicted period for calculating metric views, current capacity, and recommended resources in the Resource Utilization view. The following options are available: Next 30 Days (default option), Next 60 Days, Next 90 Days, and Next 180 Days.

For example, when Next 30 Days is selected, the Resource Utilization view displays metric views, recommended resources, and additional servers required in next 30 days.

- Average Analysis Period: Defines the historical period used for the calculations of:
 - Current Capacity view: Slot Size, Slot Available, and Constraint
 - Scenario Modeler view: Resource Utilization, Balance Score, and Hog Score

For details about Balance Score and Hog Score, see the "Threshhold of Balance Score" and "Threshhold of Hog Score" sections.

The following options are available: Last 1 Day, Last 3 Days, Last 7 Days (default option), Last 30 Days, Last 90 Days, and Last 180 Days.

- Show Getting Started (Use Cases): Select this check box to show the Getting Started tab, or clear this check box to hide the Getting Started tab.
- 3 Click Save.

The settings are saved and applied next time when Foglight Capacity Director performs calculations.

Configuring Notifications

The Settings menu > Notifications tab allows you to configure the settings to be taken into calculation by Foglight Capacity Director when sending notifications.

To configure the notifications settings:

1 In the Settings dialog box, click the Notifications tab.

ngs	
Analysis Notifications	
end notification if	
Reserved VM capacity exceeds remaining capacity	
☑ Upcoming reserved VM deployment dates	
First notification in advance of due date 1 Days	
Second notification in advance of due date 1 Days	
Third notification in advance of due date 1 Days	
Report Name test	
O Add Oelete	
Email Address	
	*
	-

- 2 Select either or both of the following options, as needed:
 - Reserved VM capacity exceeds remaining capacity: Sends a notification email when the reserved VM capacity exceeds the remaining capacity.
 - Upcoming reserve VM deployment dates: Sends a notification email when the reserved VM deployment date gets closer.
- 3 Specify the first notification due date, if needed.
- 4 Specify the second notification due date, if needed.
- 5 Specify the third notification due date, if needed.
- 6 Name the report name in the **Report Name** field. For more information, see Report Tab on page 43.
- 7 Click Add, type the email address in the prompted dialog, and click Add.

Or

Select one or more email address(es) as needed, and click Delete.

8 Click Save.

The settings are saved and applied next time when Foglight Capacity Director performs calculations.

Recalculating Results

Foglight Capacity Director allows you to get the latest analytical results for the Current Capacity view, the Resource Utilization view, and the Scenario Modeler view, based on the data collected by the VMware Performance Agents. To get the latest analytic results, click the **Recalculate** menu on the actions bar, and click Recalculate in the Recalculate Confirmation dialog box.

i NOTE: Results populated in Current Capacity > Clusters, Resource Utilization > Clusters, Resource Utilization > Hosts and Workload, and Scenario Modeler are impacted if the High Availability (HA) policy is enabled in the vCenter[®].

The Recalculation Results dialog box includes the following recalculating results:

- Current Capacity: Capacity of the vCenter[®] or datacenter, average/maximum slot size for clusters, available slots, and constraint.
- · Resource Utilization: History data and forecasting data
- Scenario Modeler: Average utilization data of resources, including CPU, Memory, and Storage .

Menu bar

The Menu bar contains the following tabs: Getting Started Tab, Current Capacity Tab, Resource Utilization Tab, Scenario Modeler Tab, Server Purchase Tab, Report Tab, Performance Tuning Tab, Changes and DRS Rules Tab, and Infrastructure Organizations Tab.

Figure 4. Menu bar



Quick view

The quick view is located on the lower part of the Capacity Director dashboard, which is updated based on the tab selected on the Menu bar.

Figure 5. Quick view in the Capacity Director Dashboard

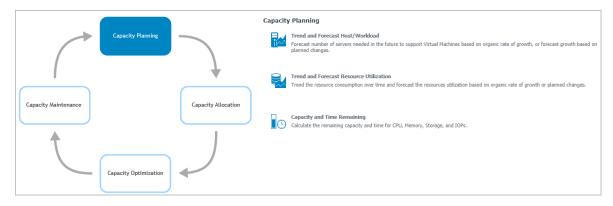
📸 Plan a Change 🛛 🕜 Edit 🗍 🎹 Delete	Overview - Datacenter_CD-test								
Exclude All Changes Select Target Deployment Date	12% Current Capacity	y Coi	istraint			atastore(s)			_
09/23/16 11:29:49 PM A Reservation for VM Test on Cluster dev-cluster and	Running VMs Available VMs	2 15	Cluster Nam Time to Full	e Cluster-51 66 Days	In	ot Size	All Datastores	Edit Slot :	Size
09/29/16 12:00:00 AM 🚱 Nove VM test v1 from Cluster dev-cluster to Cluster	Total VMs	17		00 Days			Analysis Period 1 Da		
09/30/16 12:00:00 AM Nove VM cd1529 from Cluster dev-cluster to Cluster	Clusters Hosts								
10/02/16 12:00:00 AM 🚱 Nove VM Fog_CD-002_RHEL_6.0_EN_x64 from Cluster							Search		p.
10/02/16 12:00:00 AM 6 Nove VM RHEL_56_x86_vc51_01 from Cluster dev-	Cluster Name	ESX Hosts	Slot Size	Running VMs	S Now 🕶	lots Available After Change		After Changes	H
1 10/02/16 12:00:00 AM love VM cd1529 from Cluster dev-cluster to Cluster	Cluster-51-Dev	1	CPU: 13 MHz Memory: 253 MB Storage: 32 GB	2	15	15	Storage	Storage	3
1 10/02/16 12:00:00 AM love VM test v3 from Cluster dev-cluster to Cluster	al dev-cluster	0	Throughput: 297 B/s	-		-	-	-	
love vinitest vo noni cluster devicluster to cluster									

Ζ

This section provides an overview of the *Capacity Director dashboard* > *Getting Started* view, which walks you through the typical tasks performed in a datacenter for managing the system's capacity.

The *Getting Started* view consists of two panes. The left pane includes a diagram showing the typical workflow for managing the capacity in a datacenter. The right pane displays the *Capacity Planning* view, *Capacity Allocation* view, *Capacity Optimization* view, or *Capacity Maintenance* view, depending on the element selected on the left pane.

Figure 6. Getting Started tab



For more information, see the following topics:

- Capacity Planning
- Capacity Allocation
- Capacity Optimization
- Capacity Maintenance

Capacity Planning

Capacity planning is the first step in capacity life cycle management. It provides a long-term view of resource requirements, and allows you to build an effective capacity management strategy.

To access the Capacity Planning view:

1 On the navigation panel, under *Dashboards*, click **Capacity Director**.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Getting Started tab.

The Getting Started view appears at the bottom of the Capacity Director dashboard.

4 On the *Getting Started view > left pane*, click **Capacity Planning**.

The Capacity Planning view appears on the right pane of the Getting Started view.

The *Capacity Planning* view provides a list of tasks that system administrators typically perform when planning the capacity of a virtual environment. Clicking a task directs you to the view where you can perform the selected task:

- Trend and Forecast Host/Workload: Allows you to forecast number of servers needed in the future to support Virtual Machines based on organic rate of growth, or to forecast growth based on planned changes. Click this link to navigate to the *Resource Utilization view > Hosts and Workload* tab. For more information, see Clusters/Hosts and Workload pane on page 23.
- Trend and Forecast Resource Utilization: Allows you to trend the resource consumption over time and forecast the resources utilization based on organic rate of growth or planned changes. Click this link to navigate to the Resource Utilization view > Clusters tab. For more information, see Clusters/Hosts and Workload pane on page 23.
- Capacity and Time Remaining: Allows you to calculate the remaining capacity and time for CPU, Memory, Storage, and IOPs. Click this link to navigate to the Resource Utilization view > Clusters tab. For more information, see Clusters/Hosts and Workload pane on page 23.

Capacity Allocation

When the resources are in place, the next step is to create the environment and to allocate the available capacity to support the workloads.

To access the Capacity Allocation view:

1 On the navigation panel, under *Dashboards*, click **Capacity Director**.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Getting Started tab.

The Getting Started view appears at the bottom of the Capacity Director dashboard.

4 On the Getting Started view > left pane, click Capacity Allocation.

The Capacity Allocation view appears on the right pane of the Getting Started view.

The *Capacity Allocation* view provides a list of tasks that system administrators typically perform when allocating resources in a virtual environment. Clicking a task directs you to the view where you can perform the selected task:

- Plan Infrastructure Changes: Walks you through the process of modeling future changes (add, move, or remove virtual machines, hosts, and clusters) or plan infrastructure changes (add, move, or decommission virtual machines). Click this link to navigate to the *Planned Changes* view. For more information, see Changes and DRS Rules Tab on page 51.
- Manage Scheduled Infrastructure Changes: Allows you to review the status of upcoming planned changes and modify the deployment date. Click this link to navigate to the *Planned Changes* view. For more information, see Changes and DRS Rules Tab on page 51.
- Deploy Virtual Machines: Walks you through the process of creating and deploying a virtual machine. Click this link to navigate to the Add Virtual Machines Wizard. For more information, see Adding Virtual Machines on page 54.
- Decommission Virtual Machines: Walks you through the process of decommissioning virtual machines that are no longer needed in your environment. The virtual machines are just turned off, but not deleted from the inventory. Click this link to navigate to the *Decommission Virtual Machines Wizard*. For more information, see Decommissioning Virtual Machines on page 56.

Capacity Optimization

Resource utilization can easily become unbalanced, as organizations and virtual environments grow over time. This leads to some clusters that are over-utilized, while others are under-utilized. The result is poor performance on the over-utilized clusters, and wasted resources and investment on clusters that are under-utilized. Optimal workload placement is critical to Return on Investment (ROI) in the virtual infrastructure. Foglight Capacity Director provides methods for both automatic and manual rebalancing of existing workloads, to ensure optimal resource utilization.

To access the Capacity Optimization view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Getting Started tab.

The Getting Started view appears at the bottom of the Capacity Director dashboard.

4 On the Getting Started view > left pane, click Capacity Optimization.

The Capacity Optimization view appears on the right pane of the Getting Started view.

The Capacity Optimization view provides a list of tasks that system administrators typically perform for optimizing virtual environments. Clicking a task directs you to the view where you can perform the selected task:

- Optimal Placement: Allows you to automatically rebalance the workload from clusters, by using an
 automatic algorithm that calculates and recommends the optimal distribution of virtual machines across
 clusters. Click this link to navigate to the Scenario Modeler > Optimal Placement view. For more
 information, see Optimal Placement on page 29.
- Manual Placement: Allows you to manually rebalance the workload from clusters, by moving virtual
 machines between clusters. Click this link to navigate to the Scenario Modeler > Manual Placement view.
 For more information, see Manual Placement on page 34.

Capacity Maintenance

Foglight Capacity Director allows you to monitor fully functional and optimized datacenters, and proactively identify any short-term resource requirements, to ensure the system's continuous availability.

To access the Capacity Maintenance view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Getting Started tab.

The Getting Started view appears at the bottom of the Capacity Director dashboard.

4 On the Getting Started view > left pane, click Capacity Maintenance.

The Capacity Maintenance view appears on the right pane of the Getting Started view.

The Capacity Maintenance view provides a list of tasks that system administrators typically perform for monitoring virtual environments. Clicking a task directs you to the view where you can perform the selected task:

 Available Capacity: Allows you to review the available capacity on the system and identify any potential bottlenecks. Click this link to navigate to the Current Capacity view. For more information, see Current Capacity Tab on page 18.

- Resource Utilization: Allows you to review the resources currently available in the system and identify
 potential bottlenecks. Click this link to navigate to the Resource Utilization view > Clusters tab. For more
 information, see Clusters/Hosts and Workload pane on page 23.
- *Slot Size*: Allows you to configure the size of the virtual machine (the slot size) that Foglight Capacity Director uses in calculations for future planned changes. Click this link to navigate to the Current Capacity view. For more information, see Current Capacity Tab on page 18.

Current Capacity Tab

The Current Capacity view displays information about the current capacity of a selected virtual center or datacenter. It includes the following three panes:

- Planned Changes pane: Lists all valid planned changes before the deployment date, and provides the capability to create/edit/remove one or more planned changes.
- VirtualCenter/Hosts Overview pane: Provides details about Current Capacity and Constraint, and allows you to select the Datastore information and Slot Size.
- Clusters/Hosts pane: Consists of two tabs: ٠
 - Clusters: Provides detailed information about clusters that are available in the selected virtual . center or datacenter.
 - . Hosts: Provides detailed information about hosts that are available in the selected cluster.

To access the Current Capacity view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Current Capacity tab.

The Current Capacity view appears at the bottom of the Capacity Director dashboard.

📸 Plan a Change 🛛 🔐 Edit 🛛 🔟 Delete 🛛 🔿	Dverview - Datacenter_I	Datacenter			
Exclude All Changes Select Target Deployment Date There're no changes scheduled. You can plan one with action above.	100% Current Running Availabl Total VI	le VMs -3	Constraint Cluster Name five Time to Full 0 Day	Storage(s) Included All Slot Size Cluster Average Analysis Period 7 Da	▼ Edit Slot Size
, Ck	Clusters Hosts Alam Juster Name In fre Inte cluster has per	erity Time Source Alarm Mes 11/26/19 fve Insufficien 11:59 have suffi AM the remai	sage It Cluster Redundancy Resources. CPU Reserve - 77 %; J Guert redundant capacity to handle the failure of a single E ang servers will be bait be shandle the increased works servers would be 34.7 % and the combined memory utiliz	SX server. If an ESX Server in this cluster fails, oad. The combined CPU utilization on the	

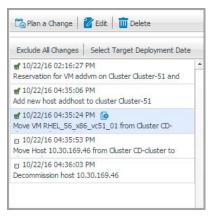
i NOTE: Enabling or disabling the HA policy, which is configured in vCenter[®], is only applicable for the **Clusters** tab in the Current Capacity view. If the HA policy is enabled for a cluster, Foglight Capacity Director calculates the cluster resources and reserve the cluster resources that are required to satisfy the HA policy. A green check mark appears in the HA column when the HA policy is enabled.

NOTE: When performance issues are prompted, click the message to open the *Alarm* view and check the detailed information.

Planned Changes pane

The Planned Changes pane on the left bottom of the Capacity Director dashboard offers the following menus:

- Plan a Change menu: Allows you to add a new planned change. For more information, see Changes and DRS Rules Tab on page 51.
- Edit menu: Allows you to make changes to existing planned changes. For more information, see Changes and DRS Rules Tab on page 51.
- Delete menu: Allows you to delete any existing planned changes if needed. For more information, see Changes and DRS Rules Tab on page 51.
- Exclude All Changes menu: Allows you to clear the selected planned changes in the Planned Changes table at a time.
- Select Target Deployment Date menu: Allows you to select the deployment date until which the information is displayed in the Planned Changes table.
- Planned Changes table: Includes a list of valid planned changes sorted chronologically up to the deployment date, which unifies the user interface and enables you to observe the result expected after executing planned changes. If you set the value of **Automated** to Yes when creating a planned change with the Add/Move/Decommission wizard, an icon is appears, indicating that the change is planned to be automatically deployed.



To identify the valid planned changes before a target deployment date:

- 1 Click Select Target Deployment Date.
- 2 In the **Select a Planned Deployment Date** dialog box, click the date icon and select the deployment date as needed.
- 3 Click Select.

The Select a Planned Deployment Date dialog box closes and the Planned Changes table is updated to indicate all valid changes planned before the selected deployment date (the check box for these changes is selected).

OR

In the Planned Changes table, select the check box in front of a planned change.

The Planned Changes table is updated to indicate all valid changes planned before the deployment date associated with the selected change (the check box for these changes is selected).

For details about how to edit or delete existing change(s), refer to Changes and DRS Rules Tab on page 51.

VirtualCenter/Hosts Overview pane

After selecting a virtual center or datacenter by using the Group selector located at the top of the dashboard, Foglight Capacity Director calculates the capacity of the selected center in the background and displays the following information on the VirtualCenter/Hosts *Overview* pane:

- Current Capacity: Includes information about the following metrics: Running VMs, Available VMs, and Total VMs.
- Constraint. Includes information about the following metrics: Cluster Name and Time to Full.
- Datastore(s) Included: Allows you to select from the drop-down list the datastores that Foglight Capacity Director should use in calculations for future planned changes.

The following options are available: All Datastores (default option) and particular datastores that varies depending on the virtual center/datacenter selected by the group selector.

- All Datastores: The Slot Size and available slots are calculated based on all available datastores.
- Particular datastore: The Slot Size and available slots are calculated based on the cluster/host connected to the selected datastore.
- **NOTE:** The Clusters/Hosts pane is automatically updated to reflect the selection made.
- *Slot Size*: Allows you to select from the drop-down list the size of the virtual machine (the slot size) that Foglight Capacity Director should use in calculations for future planned changes.

The following options are available: Based on VM, Cluster Average (default option), Cluster Maximum, and Custom Size.

For details, see the "Calculating Slot Size Based on VM" and "Calculating Slot Size Using Custom Size" sections.

i NOTE: The *Clusters/Hosts* pane is automatically updated to reflect the selection made.

Calculating Slot Size Based on VM

To recalculate the slot size Based on VM:

1 In the VirtualCenter/Hosts Overview pane, select Based on VM from the Slot Size drop-down list.

The Select a VM button appears on the right side of the Slot Size drop-down list.

Datastore(s) Included	All Datastores	Ŧ	
Slot Size	Based on VM	Ŧ	Select a VM
	Analysis Period 7 Days		

2 Click Select a VM.

The VM Selection Dialog box appears.

3 Select a virtual machine from the table, or by typing its name in the Search box.

4 Click OK.

The VM Selection Dialog box closes and the Clusters/Hosts pane is updated to reflect this change.

Calculating Slot Size Using Custom Size

To recalculate the slot size based on a custom size:

1 In the VirtualCenter/Hosts Overview pane, select Custom Size from the Slot Size drop-down list.

The Edit Slot Size button appears on the right side of the Slot Size drop-down list.

Datastore(s)			
Included	All Datastores	•	
Slot Size	Custom Size	•	Edit Slot Size

2 Click Edit Slot Size.

The Enter custom values dialog box appears.

- 3 Specify the values for CPU, Memory, Storage, and Throughput for the custom virtual machine.
- 4 Click Save.

The Enter custom values dialog box closes and the Clusters/Hosts pane is updated to reflect this change.

Clusters/Hosts pane

The *Clusters/Hosts* pane displays the details related to the selected virtual center or datacenter. This information is automatically updated when the Slot Size settings are modified and when including/applying planned changes. For more information, see Calculating Slot Size Based on VM on page 20 and Calculating Slot Size Using Custom Size on page 21.

The Clusters/Hosts pane includes the following capacity data:

- Filtered by cluster (Hosts tab only): Filter the hosts that contain the selected cluster.
- Cluster Name (Clusters tab) or Name (Hosts tab): Name of the selected cluster or host.
- ESX Hosts (Clusters tab only): Number of ESX[®] hosts in the selected cluster.
- Slot Size: CPU, Memory, Storage, and Throughput resources available on the virtual machine.
- Running VMs: Number of running virtual machines in the selected cluster or host.
- Slots Available:
 - · Now: Number of available slots in the selected cluster or host
 - After Changes: Number of available slots after including/excluding planned changes. This value should be identical to the value of Now if there is no planned change selected on the Planned Changes pane. For more information, see Changes and DRS Rules Tab on page 51.
- Constraint:
 - · Now: Available Constraint in the selected cluster or host
 - After Changes: Available slots after including/excluding planned changes.
- HA (Clusters tab only): If the HA policy is enabled for a cluster, Foglight Capacity Director calculates the cluster resources and reserves the cluster resources that are required to satisfy the HA policy. A green check mark appears in the HA column when the HA policy is enabled.

Resource Utilization Tab

The *Resource Utilization* view displays information about the resource utilization of a selected virtual center or datacenter. It includes the following panes:

- Planned Changes pane: Lists all valid planned changes before the deployment date, and provides the capability to create/edit/remove one or more planned changes.
- Clusters/Hosts and Workload pane: Consists of the following two tabs:
 - Clusters: Provides detailed information about clusters that are available in the selected virtual center or datacenter.
 - Hosts and Workload: Provides detailed information about hosts that are available in the selected cluster.

To access the Resource Utilization view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Resource Utilization tab.

The Resource Utilization view appears at the bottom of the Capacity Director dashboard.

i NOTE: Enabling or disabling the HA policy, which is configured in vCenter[®], is applicable for both the **Clusters** tab and the Hosts and Workload tab in the Resource Utilization view. If the HA policy is enabled for a cluster, Foglight Capacity Director calculates the cluster resources and reserve the cluster resources that are required to satisfy the HA policy. A green check mark appears in the HA column when the HA policy is enabled.



Planned Changes pane

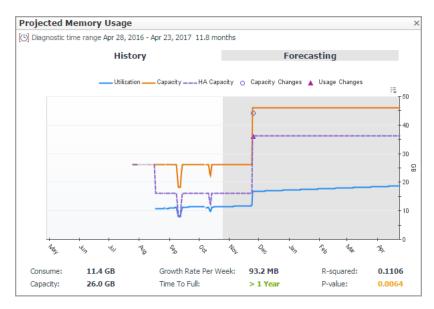
For more information, see Planned Changes pane on page 19.

Clusters/Hosts and Workload pane

The **Clusters** tab and the **Hosts and Workload** tab display the details related to the selected virtual center or datacenter. This information is automatically updated after selecting a cluster and when including/applying planned changes.

The Clusters tab includes the following data:

- Select a Cluster. Lists available clusters in the selected virtual center or datacenter.
- Resource Utilization
 - Current Capacity: Displays the current capacity of the selected cluster, which includes the following data: CPU, Memory, Storage, Hypervisors, and VMs and Templates. These values are not affected by including/excluding planned changes on the Planned Changes pane.
 - Peak CPU Performance: Displays the current CPU data of the selected cluster, which includes the following data: vCPU/Core Ratio, Physical CPU Cores, Powered On vCPUs, and Average % Ready. These values are not affected by including/excluding planned changes.
 - Recommendations: Displays recommendations on the resources (CPU, Memory, and Storage) to be added in the future to ensure that the resource utilization is balanced. Use the **Settings** dialog box to edit the Baseline for Forecasting. For more information, see on page 17. These values are automatically updated when including/applying planned changes.
- Resource utilization related views: Projected CPU Usage view, Projected Memory Usage view, Projected Storage Usage view, and Projected Storage IOPs Usage view. The metric line in the white area is the history data, while the metric line in the gray area is the predicted data. These views are refreshed automatically after including planned changes. The following is an example of the Projected Memory Usage view. For more information, see Resource Utilization related views on page 25.



Click • or • on the Projected Memory Usage view to display the **Planned Changes Summary** dialog box that summarizes the planned changes.

	Search	P-	12
Deploy Date	Description		Г
9/30/16 12:00 AM	Move VM cd1529 from Cluster dev-cluster to Cluster Cluster-51-Dev		

The Hosts and Workload tab includes the following data:

- Select a Cluster: Lists available clusters in the selected virtual center or datacenter.
- Overview: Summarizes the CPU capacity and memory capacity of the selected cluster. Both capacities are
 calculated based on the value selected from the Host Size drop-down list. The Host Size drop-down list
 includes the following options: average host size (default value) and based on specific host. The Host
 Requirement Average Host Size view is refreshed automatically after changing the Host Size value. For
 more information, see Calculating Host Size based on specific host on page 24.

The value of Baseline for Forecasting on the display area can be edited using the **Settings** dialog box. For more information, see Settings Menu on page 10.

- Recommendation on Additional Servers: Displays how many new servers should be added in the future (namely the value of Time Frame). This value is calculated based on the selected planned changes and the projected resource usage. Use the **Settings** dialog box to edit Time Frame. For more information, see on page 17.
- **NOTE:** The new servers need to be added in the **Server Purchase** tab. Click **>>Link to Server Purchase** to add a new server. For more information, see Server Purchase Tab on page 38.
 - Host Requirement Average Host Size: Displays the number of Required Hosts and Available Hosts, if the existing server is used as the calculation benchmark.
 - Required Hosts: Shows with the blue line, indicating how many hosts are required to support the current number of virtual machines. This number is populated based on the value selected from the Host Size drop-down list.
 - Available Hosts: Shows with the amber line, indicating the number of hosts, available in the selected cluster.
 - Host Requirement <New Servers>: Displays the number of Required Hosts and Available Hosts, if the new server is used as the calculation benchmark.
 - *Required Hosts:* Indicates how many hosts are required to support the usage of virtual machines. This number is populated based on the *Server Details*.
 - Available Hosts: Indicates the number of hosts, available in the selected cluster.

Calculating Host Size based on specific host

To recalculate the host size based on specific host:

1 In the Hosts and Workload Overview pane, select based on specific host from the Host Size drop-down list.

The Browse button becomes available on the right side of the Host Size drop-down list.

Host Size		
Baseline for Foreca	sting - 30 days	
based on spec	ific host 🔹	
		Browse
CPU	0.0 Hz	
Memory	0.0 MB	

2 Click Browse to select a host in the Specific Host Selector dialog box, and click OK.

The Specific Host Selector dialog box closes and the Host Requirement - Average Host Size view is refreshed automatically.

Resource Utilization related views

This section provides a detailed description of the following metrics presented in the embedded views in the Resource Utilization > Clusters tab.

- Projected CPU Usage view
- Projected Memory Usage view
- Projected Storage Usage view
- Projected Storage IOPs Usage view

Projected CPU Usage view

This embedded view is part of the Resource Utilization > Clusters view. To display this view, click the Clusters tab in the Resource Utilization view, and select a cluster from the Cluster Name table.

Table 1. Projected CPU Usage view

Data displayed

Description This view displays CPU utilization metrics on the selected cluster.

- Utilization: This chart shows the actual CPU usage (in GHz).
- Capacity: This chart shows the total CPU capacity (in GHz).
- HA Capacity: If the HA policy is enabled on the selected cluster, this chart is plotted to show the actual CPU usage (in GHz).
- Capacity Changes: Shows the changes on CPU capacity (in GHz) after including planned changes.
- Usage Changes: Shows the changes on CPU usage (in GHz) after including planned changes.
- Used Hz: Shows the current CPU usage (in GHz).
- Growth Rate Per Week: Shows the growth rate of CPU capacity per week.
- R-squared: Indicates the accuracy of the forecasting data. This value is ranged from 0 to 1, and a higher value indicates that the forecasting data of utilization is more accurate.
- Total Hz: Shows the current CPU capacity (in GHz).
- Time To Full:
 - HA enabled: Shows the period when the actual CPU usage (the Utilization metric) exceeds the HA capacity metric. This metric is calculated based on the Growth Rate Per Week.
 - HA disabled: Shows the period when the actual CPU usage (the Utilization metric) exceeds the total CPU capacity (the Capacity metric). This metric is calculated based on the Growth Rate Per Week.
- P-value: Indicates the dependency between the utilization and history time. This value is ranged from 0 to 1, and a lower value indicates that the utilization has a more significant dependency with the history time.

Projected Memory Usage view

This embedded view is part of the Resource Utilization > Clusters view. To display this view, click the Clusters tab in the Resource Utilization view, and select a cluster from the Cluster Name table.

Table 2. Projected Memory Usage view

Data displayed

This view displays memory utilization metrics on the selected cluster.

Description NOTE: Unless otherwise indicated, the units of measurement for the following metrics are automatically converted for better plotting.

- Utilization: This chart shows the actual memory usage.
- Capacity: This chart shows the total memory capacity.
- HA Capacity: If the HA policy is enabled on the selected cluster, this chart is plotted to show the actual memory usage.
- Capacity Changes: Shows the changes on memory capacity after including planned changes.
- Usage Changes: Shows the changes on memory usage after including planned changes.
- Consume: Shows the current memory usage.
- Growth Rate Per Week: Shows the growth rate of memory capacity per week.
- R-squared: Indicates the accuracy of the forecasting data. This value is ranged from 0 to 1, and a higher value indicates that the forecasting data of utilization is more accurate.
- · Capacity: Shows the current memory capacity.
- Time To Full:

HA enabled: Shows the period when the actual memory usage (the Utilization metric) exceeds the HA capacity metric. This metric is calculated based on the Growth Rate Per Week.

HA disabled: Shows the period when the actual memory usage (the Utilization metric) exceeds the total memory capacity (the Capacity metric). This metric is calculated based on the Growth Rate Per Week.

• P-value: Indicates the dependency between the utilization and history time. This value is ranged from 0 to 1, and a lower value indicates that the utilization has a more significant dependency with the history time.

Projected Storage Usage view

This embedded view is part of the Resource Utilization > Clusters view. To display this view, click the Clusters tab in the Resource Utilization view, and select a cluster from the Cluster Name table.

Table 3. Projected Storage Usage view

This view displays storage utilization metrics on the selected cluster.

Description NOTE: Unless otherwise indicated, the units of measurement for the following metrics are automatically converted for better plotting.

- Utilization: This chart shows the actual storage usage.
- Capacity: This chart shows the total storage capacity.
- Capacity Changes: Shows the changes on storage capacity after including planned changes.
- Usage Changes: Shows the changes on storage usage after including planned changes.
- Consume: Shows the current Storage usage.
- Growth Rate Per Week: Shows the growth rate of storage capacity per week.
- R-squared: Indicates the accuracy of the forecasting data. This value is ranged from 0 to 1, and a higher value indicates that the forecasting data of utilization is more accurate.
 - Capacity: Shows the current Storage capacity.
 - Time To Full: Shows the period when the actual storage usage (the Utilization metric) exceeds the total storage capacity (the Capacity metric). This metric is calculated based on the Growth Rate Per Week.
 - P-value: Indicates the dependency between the utilization and history time. This value is ranged from 0 to 1, and a lower value indicates that the utilization has a more significant dependency with the history time.

Projected Storage IOPs Usage view

This embedded view is part of the Resource Utilization > Clusters view. To display this view, click the Clusters tab in the Resource Utilization view, and select a cluster from the Cluster Name table.

Table 4. Projected Storage IOPS Usage view

Description	This view displays storage Input/Output Operations Per Second (IOPs) utilization metrics on the selected cluster.
	• IOPs: This chart shows the actual storage IOPs in the unit of connections per second (c/s).
	 Usage Changes: Shows the changes on storage IOPs usage (in c/s) after including planned changes.
	 Consumed: Shows the current storage IOPs (in c/s).
	Growth Rate Per Week: Shows the growth rate of storage IOPs usage per week.
Data displayed	 R-squared: Indicates the accuracy of the forecasting data. This value is ranged from 0 to 1, and a higher value indicates that the forecasting data of utilization is more accurate.
	Capacity: This metric is not collected for the Projected Storage IOPs Usage view.
	Time To Full: This metric is not collected for the Projected Storage IOPs Usage view.
	• P-value: Indicates the dependency between the utilization and history time. This value is ranged from 0 to 1, and a lower value indicates that the utilization has a more significant dependency with the history time.

Scenario Modeler Tab

The Scenario Modeler view is intended to rebalance the workload among virtual centers or datacenters, to achieve optimal resource utilization. The balance metrics include CPU utilization, Memory utilization, and Storage Capacity utilization. A metric is defined as 'balanced' if the resource utilization is averagely distributed across all clusters and standalone nodes; otherwise this metric can be regarded as 'non-balanced'. Foglight Capacity Director provides two methods to help you optimize the use of clusters resources, by using the Scenario Modeler view:

- Optimal Placement: Automatically rebalances the workload from clusters, by using an automatic algorithm that calculates and recommends the optimal distribution of virtual machines across clusters.
- Manual Placement: Manually rebalances the workload from clusters, by moving virtual machines between clusters.
- **NOTE:** Results populated in the **Scenario Modeler** view are impacted if the HA policy is enabled in a virtual center.

To access the Scenario Modeler view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Scenario Modeler tab.

The Scenario Modeler view appears at the bottom of the Capacity Director dashboard.

The left side of the Scenario Modeler view includes the **Planned Changes pane** and the right side is the Scenario Modeler pane that walks you through the placement procedure.

📸 Plan a Change 🛛 📸 Edit 🛛 🛅 Delete	Balance Scores 🚺 - Dat	acenter_CD-test	Rebalar	aced Scores	
Exclude All Changes Select Target Deployment Dz # 10/22/16 02:37:01 PM Reservation for VM addvm on Cluster Cluster-51	CPU 59 Mer	mory 37 Storage	100 CPU	↑ 96 Memory ↑ 84	Storage →100
	Source Clusters 🔺	Number of moved VMs	Mov	ed VMs	Target Clusters
	🔐 Cluster-51	9			🗐 CD-duster
	Yielding Metrics Conflicts Cluster Name	Resource Type	Percent of Resource Increase +	Utilization (Before)	Utilization (After)
	CD-duster	Memory	+ 71.91%	18.07%	89.98%
	CD-duster	CPU	+ 22.58%	4.07%	26.64%
	CD-duster	Storage	+ 3.97%	60.86%	64.82%

Optimal Placement

To perform an optimal placement:

1 In the Scenario Modeler pane, select a resource that you want to balance under Step 1: Select a resource for balance.

Balance Scores		irtualCo	ntor									
Step 1: Select a r	-											
CPU 74	4 M	emory	98	Storage	74							
	- 1 -											
Select a scope	for bala	ance										
Step 2: Select a p	blacemer	nt approa	ch									
 Optimal Placeme 												
Step 3: Select an	-			activicture Orea	nizationa							
Step 3: Select an	organiza	ation >> L	JUK CO TUIL	astructure orga	Inizations							
									Search			<u>></u> -
Organizations							Balance Scores		Clus	ters ESX Ho	sts	VMs
 Unassigned 						CPU 74		-		3	6	66
Onassigned						/-	90	/1		3	0	00
Char de Calant at			to be be	- la man al								
Step 4: Select at	least two	o clusters	to be ba	alanceu								
									Search			<u>,</u>
Ouster Name						Utilization		Datacenters	ESX Hosts	VMs	F	HA
					CPU	Memory	Storage					
VSAN55					30.07%	71.05%		VSAN55	3	14		2
🔲 🔬 cluster55					22.60%	72.81%		DC55	2	40		
🔲 🚮 XD					2.92%	57.57%	17.05%	₽ XD	1	12		•

- 2 Select Optimal Placement under Step 2: Select a placement approach.
- 3 Select an organization from the available organizations.

Or

Click >> Link to Infrastructure Organizations to add a new organization as needed. For more information, see Infrastructure Organizations Tab on page 62.

The available clusters list is refreshed automatically.

- 4 Select the cluster(s) that you want to rebalance at the bottom of the page, and click Next.
- **i** NOTE: A minimum of two clusters must be selected so that the rebalancing and the VM replacement take effects. The Next button is disabled when only one cluster is available, which means the current organization cannot be rebalanced.
 - 5 Foglight for VMware calculates in the background and displays the following optimal placement recommendations:

	- VirtualCenter_		Reba	lanced Score	S	
CPU 68	Memory 44	Storage 9	7 CPU	↑ 77	Memory 100	Storage 🔶 97
ebalance Summa	ry					
Source Clusters 🔺	Number of	fmoved VMs	Moved	VMs		Target Clusters
Guster-51-Dev		9	imp Fog_CD-002_RHEL_60_EN_J64 imp Fog_CD-003_WH2008_RUT_SP1 imp RHEL_56_W66_Vc51_01 imp imp imp imp	_x86_64		ត្អ] Guster-51-QA
Yiekling Metrics Conf			Derrart of Descurs Torrows		IHilitation (Before)	It direction / AB-wi
luster Name	Resource Type	2	Percent of Resource Increase + + 34.60%		Utilization (Before) 18,24%	
Yielding Metrics Conf Juster Name Cluster-S1-QA Cluster-S1-QA		9				Utilization (After 52.849 11.512

- *Balance Scores*: The original Balance Score before the optimal placement. For more information, see Balance Score on page 30.
- Rebalance Scores: The updated Balance Score if the optimal placement is deployed.
- Source Clusters: The clusters from which virtual machines are moved.
- Number of moved VMs: The number of the virtual machines to be moved to the Target Clusters.
- Moved VMs: The list of virtual machines to be moved to the Target Clusters.
- Target Clusters: The clusters to which virtual machines are moved.
- Yielding Metrics: The resource utilization before/after the optimal placement, and the increase percent of resources.
- Conflicts: The list of conflicts to occur if the optimal placement is deployed. The types of conflicts include affinity rules violation, organization conflicts, and unavailable network accesses.
- 6 Click Start Over if you want to redo the resource rebalance.

Click **Model Change** to model the optimal placement. For more information, see Modeling Placement on page 31.

Click **Deploy Change** to execute the optimal placement as Foglight Capacity Director recommended. For more information, see Deploying Placement on page 33.

i NOTE: The Edit Assignment button is disabled for the Optimal Placement method.

Balance Score

Balance Score is scaled from 0 (non-balanced) to 100 (balanced). The same resource utilizations across all containers achieve a perfect Balance Score, for example, **Balance Score** is 100 if the CPU/Memory/Storage Capacity utilizations are 30% for all clusters. The **Balance Score** is approximately 0 if the resource utilization is 100% for cluster 1 and cluster 2, while resource utilization for cluster 3 is 0%.

Balance Score is divided into the following four ranges:

Table 5. Threshhold of Balance Score

Balance Score state	Default range	Default threshhold
Fatal (in red)	0~25	Default value is 25. To change this value, search for and edit <i>CapacityHealthScoreFatal</i> from Dashboards > Administration > Rules & Notifications > Manage Registry Variables .
Critical (in orange)	26 ~ 50	Default value is 50. To change this value, search for and edit CapacityHealthScoreCritical from Dashboards > Administration > Rules & Notifications > Manage Registry Variables.
Warning (in yellow)	51 ~ 75	Default value is 75. To change this value, search for and edit CapacityHealthScoreWarning from Dashboards > Administration > Rules & Notifications > Manage Registry Variables.
Normal (in green)	76 ~ 100	N/A

Modeling Placement

After Foglight Capacity Director calculates the result of optimal placement or manual placement, you can only model the virtual machines movement without deploying the movement in the realtime environment.

To model an optimal placement:

1 After Step 5 in To perform an optimal placement: or Step 7 in To perform a manual placement:, the placement recommendations appear in the Scenario Modeler pane.

			Rebuildinged	Scores	
CPU 68	Memory 44 St	orage 97	CPU 🕇	77 Memory 10	0 Storage -> 97
ebalance Summar	у				
Source Clusters 🔺	Number of move	d VMs	Moved VMs		Target Clusters
Guster-51-Dev	9	fog_CD-00 fog_CD-00 fog RHEL_56_x fog test v1 fog test v3	2_RHEL_6.0_EN_x64 3_Win2008_R2_ENT_SP1_x86_64 86_vc51_01		🔊 Cluster-51-QA
		 Cost test4 Cost test4 Cost test/M Cost test/M12 			
Yielding Metrics Confli		• (@ tested • (@ test/M • (@ test/M2	Resource Increase +	Utilization (Before)	Utilization (A
Duster Name	cts Resource Type Memory	• (@ tested • (@ test/M • (@ test/M2	Resource Increase → + 34.60%	Utilization (Before) 18.24%	Utilization (A
Yielding Metrics Confli Juster Name Cluster 51-QA Cluster 51-QA	Resource Type	• (@ tested • (@ test/M • (@ test/M2			

2 Click Model Change.

The Schedule Scenario Deployment dialog box appears.

	enario Deployment				
eploymer	nt Date Dec 10, 2016	12:00:00 AM			
View	Source Cluster	Virtual Machine(s)	Count	Target Cluster	
Details	Cluster-51-Dev	Fog_CD-002_RHEL_6.0_EN_x6, tested, testVM, testVM2	9	Cluster-51-QA	

3 (Optional) In the Schedule Scenario Deployment dialog box, click **Details** to view details of Virtual Machine Movements. Click Close and return to the Schedule Scenario Deployment dialog box.

View Source Cluster Details Cluster-51-Dev Fog_Cl	Virtual Machine(s) D-002_RHEL_6.0_EN_x6, tested, te	estVM, testVM2	Count Target Cluste 9 Cluster-51-QA	er :
etails of Virtual Machine Movements				
Move 9 VM(s) from Cluster Cluster-51-De	v to Cluster Cluster-51-QA			
		Search	ب 0	1
Virtual Machine	Curre	ent Status	Target Storage	
Fog_CD-002_RHEL_6.0_EN_x64	Powered Off		VC51-iSCSI-1	
Fog_CD-003_Win2008_R2_ENT_SP1_x	86_64 Powered On		VC51-iSCSI-1	
RHEL_56_x86_vc51_01	Powered On		VC51-iSCSI-2	
test v1	Powered On		VC51-iSCSI-1	
test v3	Powered On		VC51-iSCSI-2	
test4	Powered On		VC51-iSCSI-2	
tested	Powered On		VC51-iSCSI-1	
testVM	Powered On		VC51-iSCSI-2	
testVM2	Powered On		VC51-iSCSI-2	

4 In the Schedule Scenario Deployment dialog box, select the Deployment Date, and click Schedule Scenario Deployment.

The Planned Changes pane is automatically updated to include the new modeled deployment.

Deploying Placement

After Foglight Capacity Director calculates the result of optimal placement or manual placement, you can deploy the virtual machines movement in the realtime environment, as needed.

To deploy an optimal placement:

1 After Step 5 in To perform an optimal placement: or Step 7 in To perform a manual placement:, the placement recommendations appear in the Scenario Modeler pane.

CPU 68	Mem	ory 44	Storage	97 CPI	J ↑ 77 Memory ↑10) Storage → 97
ebalance Sumn	nary					
Source Cluster	rs 🔺	Number of	moved VMs	Move	d VMs	Target Clusters
Gluster-51-Dev			9	Fog_CD-002_RHEL_6.0_EN_x64 Fog_CD-003_Win2008_R2_ENT_SP: KREL_56_x86_vc51_01 Ket v1 Ko test v1 Ko test v1	L_x86_64	🛐 Cluster-51-QA
				 i@ test4 i@ test4 i@ testM i@ testVM i@ testVM2 		
-	Conflicts	Resource Type		(2) est4 (2) ested (2) est/M (2) test/M2	Utilization (Before)	Utilization (Afte
	Conflicts	Resource Type Memory		test4 tested testVM	Utilization (Before) 18.24%	Utilization (Afra 52.04
Yielding Metrics C Juster Name Custer 51-QA Juster 51-QA	Conflicts			Constant Constant		

2 Click Deploy Change.

The Schedule Scenario Deployment dialog box appears.

enk	ovment Date	ec 10, 2016 12:00:00	AM T					
-pic		50 10, 2010 12:00:00	An <u>I</u>					
dit	Source Cluster		Virtual Machine(s)	Count	Target Cluster	Resource	e Pool
1	Cluster-51- Dev	Fog_CD-002_RHEL_6	5.0_EN_x6, teste	d, testVM, testVM2	9	Cluster-51- QA	Root Of Clus QA	ter-51

3 (Optional) In the Schedule Scenario Deployment dialog box, click the Edit icon to open the Edit Movable VM(s) dialog box, and then click Browse next to Resource Pool to make changes as needed. Click Close to save changes and return to the Schedule Scenario Deployment dialog box.

Cluster-51- Dev Fog_CD-002_RHEL_6.0_EN_x6, tested, testVM, testVM2 9 Cluster-51 QA Interview Interview Interview 1 Interview Interview 1 1	I- Root Of Cluster-51- QA
dit Movable VM(s)	
Move 9 VM(s) from Cluster Cluster-51-Dev to Cluster Cluster-51-QA	
Resource Pool Root Of Cluster-51-QA Browse	
Search	Ø •
Virtual Machine Ourrent Status Target Host	Target Storage
	51-iSCSI-1
Fog_CD-003_Win2008_R2_ENT_SP1_x86_64 Powered On 10.30.169.128 VC	C51-iSCSI-1
RHEL_56_x86_vc51_01 Powered On 10.30.169.144 VC	C51-iSCSI-2
test v1 Powered On 10.30.169.144 VC	C51-iSCSI-1
test v3 Powered On 10.30.169.144 V0	51-iSCSI-2
test4 Powered On 10.30.169.144 VC	C51-iSCSI-2
tested Powered On 10.30.169.144 VC	51-iSCSI-1
	51-iSCSI-2
testVM Powered On 10.30.169.144 VC	

4 In the Schedule Scenario Deployment dialog box, select the Deployment Date, and click Schedule & Deploy Scenario Deployment.

The placement is executed in the realtime environment, and Planned Changes pane is automatically updated to include the new modeled deployment.

Manual Placement

To perform a manual placement:

1 In the Scenario Modeler pane, select a resource that you want to balance under Step 1: Select a resource for balance.

CPU	68	Memory	44	Storage	97						
elect a s	cope for	balance									
ep 2: Sel	ect a place	ement approa	ach								
) Optimal I	lacement	Manual Place	ement								
ep 3: Sel	ect an ord	anization >>	Link to Inf	rastructure Org	anizations						
									Search		<u>></u> -
						D-h			Search		<i>p</i> +
Organiz	ations					CPU	Ince Scores Memory	Storage	Clusten	s ESX Hosts	VM
Unassig	ned					68	44	97	3	6	6
Test_1						100	100	100	1	. 0	
ep 4: Sel	ect a Clust	ter for balanc	ting						Search		<u></u>
		ter for balanc	ing			Utilization			Search		<i>•</i>
Cluster I	Name		ing		CPU	Utilization			Search ESX Hosts	VMs	Р • НА
Cluster I			cing		CPU 27.88%			Datacenters 096 IIII CD-test		VMs 24	
Cluster I	Name ter-51-Dev		ting			Memo	% 83.	age	ESX Hosts		HA

- 2 Select Manual Placement under Step 2: Select a placement approach.
- 3 Select an organization from the available organizations.

Or

Click >> Link to Infrastructure Organizations to add a new organization as needed. For more information, see Infrastructure Organizations Tab on page 62.

The available clusters list is refreshed automatically.

4 Select a cluster that you want to rebalance as needed, and click Next.

The Scenario Modeler pane is updated to display the following information:

Balance Scores () - Datacenter_CD-test					Rebalanced Scores			
CPU 65	Memory 72	Storage 100			CPU 个 99	Memory 🕇 82	Storage →100	
Manual Virtual Machine Assignment								
Select Movable VM(s) from Cluster-51					Select Target Cluster			
Auto select		Search	,		CD-cluster	*		
Name		Hog Score 🔺			Plan to Move 2 VM	1(s)		
🔲 📸 test2			83 🔺	Move In		Movements		Conflicts 😳
🔲 👩 auto3			94	\gg	CD-duster(2)			*
mc_test			95	//	test v1			
RC2			95		Fog_CD	-003_Win2008_R2_ENT_9	P1_X86_64	
auto2			96					
auto5			96	Move out				
cd 1529			96	«				
60 Fog_CD-002_RHEL_6.0_EN_x64 96				~~				
auto6			97					
mc_test2			100					
🔲 🐻 test1			100	Reset				
			•	5				-
Utilization (Before/After) of Cluster-51					Utilization (Before/After) of CD-cluster			
СРО	Memor	Y	Storage		СРО	Mem	ory	Storage
-6.45%	-28.719		0.00%		+19.82%	+63.2		0.00%
39.05% 32.61%	70.38% 41	1.67% 57	.34% 57.34%		4.07% 23.88%	18.07%	81.32%	60.86% 60.86%
							8	
Before / After	Before / A	fter I	Before / After		Before / After	Before /	After	Before / After

- Balance Scores: The original Balance Score before the manual placement. For more information, see Balance Score on page 30.
- Rebalance Scores: The updated Balance Score if the manual placement is deployed.
- List of virtual machines available in the source cluster. For more information, see Hog Score on page 36.
- Resource utilization before/after the movement in the source cluster.
- List of virtual machines available in the target cluster.
- Resource utilization before/after the movement in the target cluster.
- 5 From the list of virtual machines available in the source cluster, select the virtual machines that you want to move to the target cluster, and click **Move In**.

Or

From the list of virtual machines available in the target cluster, select the virtual machines that you want to move back to the source cluster, and click **Move Out**.

6 Click Proceed to Summary.

- 7 The Scenario Modeler pane is updated to display the following information:
 - The Rebalance Summary view
 - Balance Scores: The original Balance Score before the manual placement.
 - Rebalance Scores: The updated Balance Score if the manual placement is deployed.
 - Source Clusters: The clusters from which virtual machines are moved.
 - Number of moved VMs: The number of the virtual machines to be moved to the Target Clusters.
 - Moved VMs: The list of virtual machines to be moved to the Target Clusters.
 - Target Clusters: The clusters to which virtual machines are moved.
 - *Yielding Metrics*: The resource utilization before/after the manual placement, and the increase percent of resources.
 - Conflicts: The list of conflicts that will be occurred if the manual placement is deployed. The types of conflicts include affinity rules violation, organization conflicts, and unavailable network accesses.
- 8 Click **Start Over** if you want to redo the resource rebalance.

Click **Model Change** to model the manual placement. For more information, see Modeling Placement on page 31.

Click **Deploy Change** to execute the manual placement as Foglight Capacity Director recommends. For more information, see Deploying Placement on page 33.

Click Edit Assignment to return the Manual Virtual Machine Assignment view, and redo the manual placement from Step 4.

Hog Score

Hog Score can be regarded as the health score. It is scaled from 0 to 100 and helps achieve more predictable results when performing the rebalance. If Hog Score of a virtual machine is too low and is displayed in red, Foglight for VMware recommends moving this virtual machine to other clusters.

Resource utilization of a virtual machine and free capacity of a cluster are two factors that impact the **Hog Score**. For example, the **Hog Score** is low (unhealthy) if CPU utilization of a virtual machine is much higher than other resource utilizations in the same cluster. The **Hog Score** is high (healthy) if the CPU utilization of a virtual machine is much lower than the free capacity of a cluster on which this virtual machine is deployed.

Hog Score is divided into the following four ranges:

Table 6.	Threshhold	of Hog Score
----------	------------	--------------

Hog Score state	Default range	Default threshhold
Fatal (in red)	0 ~ 25	Default value is 25. To change this value, search for and edit CapacityHealthScoreFatal from Dashboards > Administration > Rules & Notifications > Manage Registry Variables.
Critical (in orange)	26 ~ 50	Default value is 50. To change this value, search for and edit CapacityHealthScoreCritical from Dashboards > Administration > Rules & Notifications > Manage Registry Variables.
Warning (in yellow)	51 ~ 75	Default value is 75. To change this value, search for and edit CapacityHealthScoreWarning from Dashboards > Administration > Rules & Notifications > Manage Registry Variables.
Normal (in green)	76 ~ 100	N/A

Server Purchase Tab

The Server Purchase view is intended to review the cost of replacing the existing infrastructure with new servers, and identify how many additional servers should be purchased in the specified Time Frame. The Server Purchase view contains two panes:

- Planned Changes (left pane): Lists all valid planned changes before the deployment date, and provides the capability to create/edit/remove one or more planned changes. For more information, see Scenario Modeler Tab on page 28.
- Server Purchase (right pane): Includes the following elements:
 - Select a Cluster: Lists available clusters in the selected virtual center or datacenter.
 - Weighting Options: Includes the following weighting options to be used when calculating the cost of replacing the infrastructure: Cost Weight, Power Weight, and Space Weight. Click Recalculate button to perform the calculation.
 - Replace Existing Servers tab: Displays details about how many new severs are required to replace the existing servers, without including the planned changes.
 - Purchase Additional Servers tab: Displays details about how many new servers should be purchased, based on the calculation of resource utilization and planned changes in the specified Time Frame. For details about how to edit the Time Frame, see Settings Menu on page 10.
 - **NOTE:** Servers must be added or imported, to make them visible in the **Server List** table. For more information, see Managing Server List on page 40.

To access the Server Purchase view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Server Purchase tab.

The Server Purchase view appears at the bottom of the Capacity Director dashboard.

📸 Plan a Change 🖉 Edit 🏛 Delete	Select a Cluster:	•	Weighting Option	ns: Cost Weight: 8	10	% Power We	eight: 10 %	6 Space Weigh	t: 10 %	Recalculate	
Exclude All Changes Select Target Deployment Date	Replace Existing Serve	rs Purchase Additional	Servers								
ef 11/30/16 03:46:06 PM Add new cluster Cluster_test to datacenter DC51 with 1	Top Recommenda	tion									
			t	est test11111							
				PU			12.0 GHz				
				lemory			16.0 GB				
			F	ower			200.0 W				
	nenenenen			pace			2 U				
		•		ost per Server			\$ 1.0				
				lumber of Servers Re	quired		2				
			1	otal Cost			\$ 2.0				
	Server List										
	🚱 Add 📝 Edit 🤤 D	elete 🛃 Import 🏦 Ex	port								
	Manufacturer	Model Name	Ranking 🔺	Requirement		Total Cost	Unit Cost	CPU	Memory	Power	
	🕑 test	test11111	1		2	\$ 2.0	\$ 1.0	12.0 GHz	16.0 GB	200.0 W	

Replace Existing Servers

After selecting a cluster and specifying the weighting options, Foglight Capacity Director populates the recommendation results for replacing the existing servers.

To get recommendations for replacing existing servers:

- 1 In the Server Purchase pane, click the Replace Existing Servers tab.
- 2 Select a cluster from the Select a Cluster drop-down list.
- 3 Type the percent of **Weighting Options** to be used when calculating the cost of replacing the infrastructure:
 - Cost Weight: The percent of server cost.
 - · Power Weight: The percent of server power.
 - Space Weight: The percent of server space.
 - NOTE: The sum of Cost Weight, Power Weight, and Space Weight must be equal to 100%.
- 4 Click Calculate. This button is changed to Recalculate after executing the calculation the first time.

The **Top Recommendation** area is updated to show the summary of most recommended server, and the **Server List** table is updated to show all server types recommended as replacements.

NOTE: You can review the recommendations provided and customize the results, as needed. For more information, see Managing Server List on page 40.

Purchase Additional Servers

After specifying the *Time Frame* in the **Settings** dialog, Foglight for VMware populates the recommendation about how many new servers should be purchased in order to meet the requirement of planned changes in the specified Time Frame. For details about how to edit the Time Frame, see on page 17.

To get recommendations for purchasing additional servers:

- 1 In the Server Purchase pane, click the Purchase Additional Servers tab.
- 2 Select a cluster from the Select a Cluster drop-down list.
- 3 Type the percent of **Weighting Options** to be used when calculating the cost of replacing the infrastructure:
 - Cost Weight: The percent of server cost.
 - Power Weight: The percent of server power.
 - Space Weight: The percent of server space.
 - NOTE: The sum of Cost Weight, Power Weight, and Space Weight must be equal to 100%.
- 4 Click Calculate. This button is changed to Recalculate after executing the calculation first time.
- 5 The **Top Recommendation** area is updated to show the summary of most recommended server and how many servers should be purchased in the specified Time Frame.

The Server List table is updated to show all server types recommended to be purchased.

NOTE: You can review the recommendations provided and customize the results, as needed. For more information, see Managing Server List on page 40.

	CP	U		12.0 GHz				
	Me	mory		16.0 GB				
	Po	wer		200.0 W				
	Sp.	ace		2 U				
- 8 888 888		st per Server		\$ 1.0				
•			I	0				
	То	otal Cost		\$ 0.0				
			Power Space Cost per Server Number of Servers Required Total Cost	Power Space Cost per Server Memory Required Total Cost	Power 200.0 W Space 2 U Cost per Server \$ 1.0 Number of Servers Required 0 Total Cost \$ 0.0	Power 200.0 W Space 2 U Cost per Server \$1.0 Number of Servers Required 0 Total Cost \$0.0	Power 200.0 W Space 2 U Cost per Server \$1.0 Number of Servers Required 0 Total Cost \$0.0	Power 200.0 W Space 2 U Cost per Server \$ 1.0 Number of Servers Required 0 Total Cost \$ 0.0

Managing Server List

Foglight Capacity Director allows you to manage the Server List table as follows:

- Adding a new server
- Editing existing servers
- Deleting existing servers
- Importing server list
- Exporting server list

Adding a new server

Before adding a new server, in the *Server Purchase* pane, click the Replace Existing Servers tab or the Purchase Additional Servers tab, and locate the Server List table at the bottom of the Server Purchase view.

To add a new server:

- 1 In the Server List table, click Add.
- 2 In the Add Host Model dialog box, specify the following values, as needed.
 - Manufacturer: The manufacturer of the new server.
 - Model Name: The model name of the new server.
 - Unit Cost (\$): The unit cost (in dollar) of the new server.
 - Number of CPU Cores: The number of CPU cores of the new server.
 - Physical CPU Speed: The physical CPU speed of the new server. The unit is one of the following: MHz, GHz (default option), and THz.
 - Amount of Physical Memory: The physical memory of the new server. The unit is one of the following: MB, GB (default option), and TB.
 - Power Requirement: The power of the new server. The unit is one of the following: W (default option), kW, and MW.
 - Space Requirement: The space (in U) of the new server.
- 3 Click Save.

The Server List table is updated automatically to show the new server.

Editing existing servers

Before editing an existing server, in the *Server Purchase* pane, click the Replace Existing Servers tab or the Purchase Additional Servers tab, and locate the Server List table at the bottom of the Server Purchase view.

To edit an existing server:

- 1 Select an existing server from the Server List table, and click Edit.
- 2 In the Edit Host Model dialog box, change any of following values, as needed.
 - Manufacturer: The manufacturer of this server.
 - Model Name: The model name of this server.
 - Unit Cost (\$): The unit cost (in dollar) of this server.
 - Number of CPU Cores: The number of CPU cores of this server.
 - Physical CPU Speed: The physical CPU speed of this server. The unit is one of the following: MHz, GHz (default option), and THz.
 - Amount of Physical Memory: The physical memory of this server. The unit is one of the following: MB, GB (default option), and TB.
 - Power Requirement: The power of this server. The unit is one of the following: W (default option), kW, and MW.
 - Space Requirement: The space (in U) of this server.
- 3 Click Save.

The Server List table is updated automatically to show the changes made to this server.

Deleting existing servers

Before deleting existing servers, in the *Server Purchase* pane, click the Replace Existing Servers tab or the Purchase Additional Servers tab, and locate the Server List table at the bottom of the Server Purchase view.

To delete one or more existing server(s):

- 1 In the Server List table, select the sever(s) that you want to remove, and click Delete.
- 2 In the Confirm Delete Host Models dialog box, click Delete.

The server is removed from the Server List table.

Importing server list

Before importing a server list, in the *Server Purchase* pane, click the Replace Existing Servers tab or the Purchase Additional Servers tab, and locate the Server List table at the bottom of the Server Purchase view.

To import an existing server list:

- 1 In the Server List table, click Import.
- 2 In the **Import Host Models** dialog box, select Replace to replace the existing servers with the imported server list.

OR

Select Add to add the imported servers to the existing server list.

3 Click Browse to browse your local drive and select a .csv file, and click Open.

4 Click Import.

The Server List table is updated automatically to include the imported servers.

Exporting server list

Before exporting a server list, in the *Server Purchase* pane, click the Replace Existing Servers tab or the Purchase Additional Servers tab, and locate the Server List table at the bottom of the Server Purchase view.

To export a server list:

- 1 In the Server List table, click Export.
- 2 In the File Download dialog box that appears, choose one of the following options:
 - Open the servers list for viewing.
 - a Click Open.
 - b The server list is opened automatically using Microsoft Excel for viewing.
 - Download the server list as a .csv file to a location of your choice.
 - a Click Save.
 - b In the dialog box that appears, select a location for saving the file, then click Save.

The server list is saved as a .csv file to the selected location.

Report Tab

Foglight Capacity Director includes a report generation ability. This allows you to create reports using a set of predefined templates to report on the various aspects of your cloud environment. Foglight Capacity Director includes a collection of predefined report templates.

You can generate, copy, and edit reports using the Reports tab on the *Report* dashboard, or alternatively the *Reports* dashboard included with the Management Server.

To access the Report dashboard:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Reports tab.

The Reports view appears at the bottom of the Capacity Director dashboard.

1000			Recent Rep	oort History			About Report	S		
22 +	 Create a 	Report		cc1	7/10/19 12:00	AM		nderstanding Templates vs. Instances		
8. 11	Copy Exis	ting Report		cc 👔	7/10/19 12:00	AM	? ? !	/orking With Report Scheduling		
	Edit Exist	ing Report) cc2	7/10/19 12:00	AM	Viewing Report History			
				🛄 cc 7/9/19 12:00 AM		м				
				i cc2	7/9/19 12:00 A	м				
eports										
	Delete							Search	ب 🔍	
	Name	Date	t.	Last Run	History	Schedule	Run Now	Template		
	cc	7/10/19 1	2:00 AM	PDF		Beginning of the day	5	Current Capacity - Clusters Report		
	cc1	7/10/19 1	2:00 AM	PDF	1	Beginning of the day	I	Current Capacity - Clusters Report		
	cc2	7/10/19 1	2:00 AM	PDF	1	Beginning of the day	3	Current Capacity - Clusters Report		

For complete information about this tab, see the *Managing Capacity in Virtual Environments User Guide*. For more information about the *Reports* dashboard, see the *Foglight User Help*.

Foglight Capacity Director allows you to print reports from the *Current Capacity* view and the *Resource Utilization* view. For more information, see the following topics:

- Printing Reports from Current Capacity
- Printing Reports from Resource Utilization

Printing Reports from Current Capacity

Foglight Capacity Director allows you to print the following reports from the Current Capacity view.

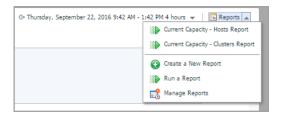
Hosts Report: Walks through the Current Capacity - Hosts Report wizard to print a host report that
includes the information related to Service, Slot Size, Datastore Include, Selected cluster, and selected
Planned Changes.

 Clusters Report: Walks through the Current Capacity - Clusters Report wizard to print a cluster report that includes the information related to Service, Slot Size, Datastore Include, and selected Planned Changes.

Hosts Report

To print a hosts report from the Current Capacity tab:

1 Click Reports on the top right corner of the Foglight dashboard.



2 Click Current Capacity - Hosts Report from the context menu.

The Current Capacity - Hosts Report wizard appears.

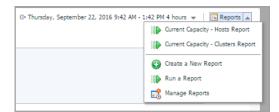
- 3 In the Set Input Parameters page, supply the values for the report input parameters, and click Next.
- 4 In the Set Properties page, select the report properties:
 - Name: Type the name of this new report.
 - Output Format: Select an output format from the drop-down list. The output format includes the following options: PDF (default option), Excel, and XML.
 - Email Recipients: Type the email address, and separate the email addresses using a comma if there are multiple recipients.
 - Schedule This Report: Select this check box to enable this new report.
 - Retain: Type the number of days for which this report is retained. This value is only available after selecting the Schedule This Report option.
- 5 Click Next.
- 6 Select the scheduled date for executing this report, as needed, then click Next. This configuration is only available after selecting the Schedule This Report option.
- 7 Review the Summary page to ensure that the provided information are correct, and click Finish.
- 8 In the File Download dialog box that appears, choose one of the following options:
 - Open the report for viewing.
 - a Click Open.
 - b The report is opened automatically for viewing.
 - Download the report to a location of your choice.
 - a Click Save.
 - b In the dialog box that appears, select a location for saving the file, then click Save.

The report is saved as the output format specified in Step 4 to the selected location.

Clusters Report

To print a clusters report from the Current Capacity view:

1 Click Reports on the top right corner of the Foglight dashboard.



2 Click **Current Capacity - Clusters Report** from the context menu.

The Current Capacity - Cluster Report wizard appears.

- 3 In the Set Input Parameters page, supply the values for the report input parameters, and click Next.
- 4 In the Set Properties page, select the report properties:
 - Name: Type the name of this new report.
 - Output Format: Select an output format from the drop-down list. The output format includes the following options: PDF (default option), Excel, and XML.
 - Email Recipients: Type the email address, and separate the email addresses using a comma if there are multiple recipients.
 - Schedule This Report: Select the check box to enable this new report.
 - Retain: Type the number of days for which this report is retained. This value is only available after selecting the Schedule This Report option.
- 5 Click Next.
- 6 Select the scheduled date for executing this report, as needed, then click Next. This configuration is only available after selecting the Schedule This Report option.
- 7 Review the Summary page to ensure that the provided information are correct, and click **Finish**.
- 8 In the File Download dialog box that appears, choose one of the following options:
 - Open the report for viewing.
 - a Click Open.
 - b The report is opened automatically for viewing.
 - Download the report to a location of your choice.
 - a Click Save.
 - b In the dialog box that appears, select a location for saving the file, then click Save.

The report is saved as the output format specified in Step 4 to the selected location.

Printing Reports from Resource Utilization

Foglight for VMware enables you to print the following reports from the Resource Utilization view.

- Clusters Report: Walks through the Resource Utilization Clusters Report wizard to print a cluster report that includes the information related to Service, selected cluster, and selected Planned Changes.
- Hosts and Workload Report: Walks through the Resource Utilization Hosts and Workload Report wizard to print a host/workload report that includes the information related to Service, Slot Size, Datastore Include, and selected Planned Changes.

Clusters Report

To print a clusters report from the Resource Utilization view:

1 Click **Reports** on the top right of the *Foglight* dashboard.

G• Thursday, September 22, 2	016 9:43 AM - 1:43 PM 4 hours 👻 📔 Reports 🔺
	Resource Utilization - Clusters Report
	Resource Utilization - Hosts and Workload Report
	Create a New Report
	Run a Report
	Manage Reports

2 Click Resource Utilization - Clusters Report from the context menu.

The Resource Utilization - Clusters Report wizard appears.

- 3 In the Set Input Parameters page, supply the values for the report input parameters, and click Next.
- 4 In the Set Properties page, select the report properties:
 - Name: Type the name of this new report.
 - Output Format: Select an output format from the drop-down list. The output format includes the following options: PDF (default option), Excel, and XML.
 - Email Recipients: Type the email address, and separate the email addresses using a comma if there are multiple recipients.
 - Schedule This Report: Select the check box to enable this new report.
 - Retain: Type the number of days for which this report is retained. This value is only available after selecting the Schedule This Report option.
- 5 Click Next.
- 6 Select the scheduled date for executing this report, as needed, then click Next. This configuration is only available after selecting the Schedule This Report option.
- 7 Review the Summary page to ensure that the provided information are correct, and click **Finish**.
- 8 In the File Download dialog box that appears, choose one of the following options:
 - Open the report for viewing.
 - a Click Open.
 - b The report is opened automatically for viewing.
 - Download the report to a location of your choice.
 - a Click Save.
 - b In the dialog box that appears, select a location for saving the file, then click Save.

The report is saved as the output format specified in Step 4 to the selected location.

Hosts and Workload Report

To print a clusters report from the Resource Utilization view:

1 Click **Reports** on the top right of the *Foglight* dashboard.

G+ Thursday, September 22, 2016 9:	43 AM - 1:43 PM 4 hours 👻 📔 Reports 🔺
10	Resource Utilization - Clusters Report
	Resource Utilization - Hosts and Workload Report
0	Create a New Report
	Run a Report
	Manage Reports

2 Click Resource Utilization - Hosts and Workload Report from the context menu.

The Resource Utilization - Hosts and Workload Report wizard appears.

- 3 In the Set Input Parameters page, supply the values for the report input parameters, and click Next.
- 4 In the Set Properties page, select the report properties:
 - Name: Type the name of this new report.
 - Output Format: Select an output format from the drop-down list. The output format includes the following options: PDF (default option), Excel, and XML.
 - Email Recipients: Type the email address.
 - Schedule This Report: Select the check box to enable this new report.
 - Retain: Type the number of days for which this report is retained.
- 5 Click Next.
- 6 Select the scheduled date for executing this report, as needed, then click Next. This configuration is only available after selecting the Schedule This Report option.
- 7 Review the Summary page to ensure that the provided information are correct, and click Finish.
- 8 In the File Download dialog box that appears, choose one of the following options:
 - Open the report for viewing.
 - a Click Open.
 - b The report is opened automatically for viewing.
 - Download the report to a location of your choice.
 - a Click Save.
 - b In the dialog box that appears, select a location for saving the file, then click Save.

The report is saved as the output format specified in Step 4 to the selected location

Performance Tuning Tab

The *Performance Tuning* view helps to identify and resolve performance issues in your virtual environment by analyzing contention as well as the resources assigned to a virtual machine and then automating the recommended changes. It includes the following elements:

- Select a Cluster pane: Lists available clusters in the selected virtual center or datacenter, and provides the capability to search the cluster as needed.
- Select a Host pane: Lists available hosts in the selected cluster, and provides the capability to search the host as needed.
- Information icon: Click this icon to pop up the dialog box with details explaining what is Performance Tuning.
- Performance Tuning pane: Consists of two tabs:
 - VMs Performance: Design to show the virtual machines on the given host or all hosts in a cluster to quickly highlight the worst performing. This data is then used to drive the recommendations in the Resource Optimization tab.
 - Resource Optimization: Provides three automated recommendation engines (Aggressive, Moderate, and Top 10) built to move virtual machines between hosts to reduce the contention and improve the performance.

To access the Performance Tuning view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Performance Tuning tab.

The Performance Tuning view appears at the bottom of the Capacity Director dashboard.

elect a Cluster			Performance Tuning	- 🚽 XD - 📷						Inform	nation icc	n — (
Search		⊳ - :										
Cluster Name	Performance	Score	VMs Performance Resource	ce Optimization								
xD		96 🔺	Tilter by All VMs							Search		- 🔍
vSAN55		99					CPU			Memory		Virtual Disk
cluster55		86	Virtual Machine	e Performance State	Performance Score	Utilization	Latency	Max Limited	Utilization	Swapped	Balloon	Latency
			🗊 test1	N/A	n/a	0.89 %	0.50 %	0.00 %	4.5 %	275 MB	1.2 GB	0m
			📰 tested	N/A	n/a	0.31 %	0.27 %	0.00 %	0.00 %	0.00 B	0.00 B	0m
Select a Clu	ster nane		Fog_CD-002_RHEL_6.0_E	N_x64 N/A	n/a	99 %	1.6 %	0.00 %	20 %	0.00 B	0.00 B	0m
Ociect a Old.	ster pune		mc_test	N/A	n/a	0.30 %	0.30 %	0.00 %	0.00 %	0.00 B	0.00 B	0m
			CD-Test-Jay-1	N/A	n/a	11 %	5.3 %	0.00 %	5.6 %	32 MB	245 MB	11m
			and the second s	N/A	n/a	4.2 %	1.5 %	0.00 %	6.7 %	11 MB	0.00 B	12m
ielect a Host		•										
		₽ - ₽										
Search	Performan	e Score										
Host Name	- Criorinana	96 ^										
		96 🔺										

Select a Cluster pane

The Select a Cluter pane on the left top of the Capacity Director dashboard offers the following menus:

- · Search menu: Provides the search functionality that helps you easily find the cluster, as needed.
- Select a Cluster table: Lists all clusters that are available in the selected virtual center or datacenter.
 - Description
- selected virtual center or datacenter.

Data displayed

- **Cluster Name**. The name of the cluster.
- Performance Score. The performance score of the cluster.

Lists the name and the performance score of all clusters that are available in the

Select a Host pane

The Select a Host pane on the left bottom of the Capacity Director dashboard offers the following menus:

- Search menu: Provides the search functionality that helps you easily find the host, as needed.
- Select a Host table: Lists all hosts that are available in the selected cluster.

Data displayed

Description

- Host Name. The name of the host.
- Performance Score. The performance score of the host.

Lists the name and the performance score of all hosts that are available in the

Performance Tuning pane

selected cluster.

The VMs Performance tab and Resource Optimization tab provide a view of the selected cluster and hosts.

The VMs Performance tab includes the following elements:

- Filter menu: Allows you to filter the virtual machines based on the following options: All VMs (default option), Good, Degrading, and Bad.
- Virtual Machine: Displays the name of the virtual machine.
- CPU: Shows the CPU Utilization, CPU Latency, and CPU Max Limited in percent for the virtual machine.
- Memory: Shows the memory Utilization, memory Swapped, and memory balloon for the virtual machine.
- · Virtual Disk Latency: Shows the data transfer latency (in ms) of the virtual machine.
- Performance State: Indicates the performance state of the virtual machine, which can be one of the following: Good, Degrading, and Bad.
- Performance Score: Shows the performance score of the virtual machine.

The Resource Optimization tab includes the following elements:

- Select a mode for recommendation: Provides the optimization modes that help you obtain the recommended resource optimization, as needed.
- Resources Optimization table: Lists the resource optimization result of virtual machines, which includes the name of Virtual Machine, Performance Score, Resource Type, Recommendation, and Modify Recommendation.

This table is refreshed automatically after selecting a mode from the **Select a mode for recommendation** drop-down list.

• Migration Recommendation table: Lists the resource migration result of virtual machines, which includes the name of Virtual Machine, Performance Score, Source Host, Destination, and Status.

This table is refreshed automatically after selecting a mode from the **Select a mode for recommendation** drop-down list.

Changes and DRS Rules Tab

The *Changes and DRS Rules* view displays the list of planned changes scheduled before the deployment date, as well as the list of planned changes that have been executed. It includes the following elements:

- Planned Changes tab: Includes the Planned Changes table and Add/Delete menus.
 - Planned Changes table: Includes the following elements:
 - The Edit button: Allows you to edit planned changes. For more information, see Editing a Planned Change on page 61.
 - Deploy Date: The date when the planned change is deployed.
 - Description: The description of the planned change.
 - validation:
 - Automation: Indicates whether the planned change will be deployed automatically or not.
 - **i** NOTE: Foglight Capacity Director does not support the following automated deployments in Hyper-V environments: Add Virtual Machines, Decommission Virtual Machines, and Move Virtual Machines.
 - Performance: Indicates whether the planned change impacts the performance of the selected virtual center or not.
 - Conflict: Indicates whether the planned change has conflicts or not.
 - Add/Delete menus: Allow you to manage planned changes. For more information, see Adding a Planned Change on page 52 and Deleting a Planned Change on page 61.
- · Change History tab: List all the changes committed.
- DRS Rules tab: Allow you to select a cluster to view the DRS status of the selected cluster.

To access the Changes and DRS Rules view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Changes and DRS Rules tab.

The Changes and DRS Rules view appears at the bottom of the Capacity Director dashboard.

lanned C	Changes Change History	DRS Rules				
Add	Gelete					:.
Edit	Deploy Date 👻	Description		Validation		
Eult	Depidy Date +	Description	Automation	Performance	Conflict	
1	8/8/19 3:40 PM	Add new host test to cluster fve	Ø	0	٥	-
2	8/4/19 3:44 PM	Reservation for VM testAddVM on Stantalone Host	0	0	٢	

For more information, see the following topics:

- Adding a Planned Change
- Editing a Planned Change
- Deleting a Planned Change

Adding a Planned Change

To add a planned change, do one of the following:

- Modeling a Cluster Addition
- Modeling a Host Addition
- Adding Virtual Machines
- Modeling a Host Decommission
- Decommissioning Virtual Machines
- Modeling a Host Movement
- Moving Virtual Machines
- Adding a Datastore (Preview)
- Modeling a Datastore Decommission (Preview)
- Modeling a Datastore Expansion (Preview)
- Modeling a Datastore Shrink (Preview)

Modeling a Cluster Addition

Foglight Capacity Director allows you to model a cluster addition without deploying the planned change in the realtime environment.

To schedule a cluster addition:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Model a Cluster Addition, and click Next.
- 3 In the Model a Cluster Addition Wizard dialog box, specify the following fields, as needed.
 - Cluster Name: Type the name of the cluster.
 - Organization: Select an organization from the drop-down list.
 - Deploy Date: Click the icon and select the deployment date.
 - Time: Click the icon
 to select the accurate time on the selected deployment date.
 - Host Quantity: Type the number of host.
 - Host Configuration: Specify the following options:
 - CPU: Type the CPU frequency. The unit is one of the following: GHz (default option), MHz, and THz.
 - Memory: Type the physical memory. The unit is one of the following: GB (default option), MB, and TB.
 - Storage: Type the physical storage. The unit is one of the following: GB (default option), MB, and TB.
 - HA Policy: Specify whether the HA policy is enabled or disabled on clusters, as needed.
 - Host failures the cluster tolerates: Select this option to enable the "Host failures the cluster tolerates" HA policy on clusters, then type the number of host that enables this HA policy.

- Percentage of cluster resources reserved as failover spare capacity: Select this option to enable the "Percentage of cluster resources reserved as failover spare capacity" HA policy on clusters, then type the following percentages:
 - CPU (%): Type the percent of the reserved CPU resource.
 - Memory (%): Type the percent of the reserved Memory resource.
- Disable HA Policy: Select this option to disable the HA policy on clusters.
- Datacenter: Click Browse to select a cluster in the Cluster Datacenter Selector dialog box, and click Save.
- Like Cluster: Select a cluster from the drop-down list. The Average VM Utilization fields are automatically filled in based on your selection.
- Average VM Utilization: Type the average utilization of virtual machines. These fields are automatically filled in after you select a cluster from the Like Cluster drop-down list. You can edit this value if needed.
 - CPU: Type the CPU frequency. The unit is one of the following: GHz (default option), MHz, and THz.
 - Memory: Type the physical memory. The unit is one of the following: GB (default option), MB, and TB.
 - Storage: Type the physical storage. The unit is one of the following: GB (default option), MB, and TB.
 - Throughput: Type the value of throughput. The unit includes the following: MB/s (default option), B/s, KB/s, GB/s, and TB/s.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Host Addition

Foglight Capacity Director allows you to model a host addition without deploying the planned change in the realtime environment.

To schedule a host addition:

1 In the Planned Changes view, click **Add**.

The wizard of scheduled planned changes appears.

- 2 Select Model a Host Addition, and click Next.
- 3 In the **Model a Host Addition Wizard** dialog box, specify the following fields, as needed:
 - Host Name: Type the name of the host.
 - Deploy Date: Click the icon and select the deployment date.
 - Time: Click the icon to select the accurate time on the selected deployment date.
 - Change Type: Includes the following options:
 - Add Host To Cluster: The planned change type is "Add Host To Cluster".
 - Add Standalone Host: The planned change type is "Add Standalone Host".
 - Cluster: Click Browse to select a cluster in the Host Cluster Selector dialog box, then click Select.
 - Like Host: Select a host from the drop-down list. The Configuration fields are automatically filled in based on your selection.

- Configuration: Specify the following options. These fields are automatically filled in after you select a host from the Like Host drop-down list. You can edit them as needed.
 - CPU: Type the CPU frequency. The unit is one of the following: GHz (default option), MHz, and THz.
 - Memory: Type the physical memory. The unit is one of the following: GB (default option), MB, and TB.
 - Storage: Type the physical storage. The unit is one of the following: GB (default option), MB, and TB.

4 Click Finish.

The Planned Changes view is updated to include this new change.

Adding Virtual Machines

Foglight Capacity Director allows you to create and deploy a new change for adding virtual machines in the realtime environment.

To schedule a change for adding virtual machines:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Add Virtual Machines, and click Next.
- 3 In the Add Virtual Machines Wizard dialog box, specify the following fields, as needed:
 - VM Name: Type the name of the virtual machine.
 - **i** NOTE: If the value of Automated is set to Yes when deploying multiple virtual machines in the environment, the VM Name must end with one of the following: #, ##, and ###. In other words, if ten virtual machines are to be deployed to the environment, the VM Name must end with ##. For example, you plan to add 15 virtual machines and define the VM Name as VM_##, the new virtual machines' names will be VM_01, VM_02,... VM_15.
 - Deploy Date: Click the icon and select the deployment date.
 - Time: Click the icon
 to select the accurate time on the selected deployment date.
 - Automated: Specify whether this planned change is deployed automatically or not.
 - VM Quantity: Type the number of virtual machines.
 - **NOTE:** VM Quantity cannot exceed the maximum value of the following customized patterns, if you plan to deploy multiple virtual machines and the value of Automated is set to Yes.
 - #: The value of this customized pattern can be any number from 1 to 9.
 - ##: The value of this customized pattern can be any number from 1 to 99.
 - ###: The value of this customized pattern can be any number from 1 to 500.
 - VM Size (available only if Automated is set to No): Includes the following options:
 - Existing VM (default option): Specify the size of virtual machine based on an existing virtual machine. The Browse button is enabled after selecting this option. Click Browse to select a virtual machine in the VM Selector dialog box, and click Select. The Average Utilization values are filled in automatically after selecting a virtual machine.
 - Default: Set the size of virtual machine to default values (CPU 2.0 GHz, Memory 4.0 GB, Storage 25.0 GB, and Throughput 1.0 MB/s). The Browse button is disabled and the Average Utilization values are filled in automatically after selecting this option.
 - Cluster / Host: Click Browse to select a virtual machine in the VM Cluster / Host Selector dialog box, and click Save.

- Resource Pool (available only if Automated is set to Yes and only available for VMware domain): Click Browse to select a resource pool in the Resource Pool Selector dialog box, and click Select.
- Specific Host (available only if Automated is set to Yes and only available for Hyper-V domain): Click Browse to select a specific host in the Specific Host Selector dialog box, and click Select.
- Storage: Click Browse to select a virtual machine in the VM Storage Selector dialog box, and click Save.
- Template (available only if Automated is set to Yes): Click Browse to select a virtual machine template in the VM - Template Selector dialog box, and click Save.
- Allocation (available only if Automated is set to Yes): These values are automatically filled in after you select a virtual machine template.
 - vCPU: Type the number of vCPU.
 - Memory: Type the physical memory. The unit is one of the following: GB (default option), MB, and TB.
- Average Utilization: These values are automatically filled in after you select a value from the VM Size drop-down list. You can edit these values, if needed.
 - CPU: Type the CPU frequency. The unit is one of the following: GHz (default option), MHz, and THz.
 - Memory: Type the physical memory. The unit is one of the following: GB (default option), MB, and TB.
 - Storage: Type the physical storage. The unit is one of the following: GB (default option), MB, and TB.
 - Throughput: Type the value of throughput. The unit includes the following: MB/s (default option), B/s, KB/s, GB/s, and TB/s.

4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Host Decommission

Foglight Capacity Director allows you to model a host decommission without deploying the planned change in the real-time environment.

To schedule a change for decommissioning a host:

1 In the Planned Changes view, click **Add**.

The wizard of scheduled planned changes appears.

- 2 Select Model a Host Decommission, and click Next.
- 3 In the **Model a Host Decommission Wizard dialog box**, specify the following fields, as needed:
 - Host Name: Click Browse to select the host to be decommissioned in the Host Selector dialog box, and click Select.
 - Decommission Date: Click the icon and select the decommission date.
 - Time: Click the icon to select the accurate time on the selected decommission date.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Decommissioning Virtual Machines

Foglight Capacity Director allows you to create and deploy a new change for decommissioning virtual machines from the real-time environment.

To schedule a change for decommissioning a virtual machine:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Decommission Virtual Machines, and click Next.
- 3 In the Decommission Virtual Machines Wizard dialog box, specify the following fields, as needed:
 - VM Name: Click Browse to select a virtual machine to be decommissioned in the VM Selector dialog box, and click Select.
 - Automated: Specify whether this planned change is deployed automatically or not.
 - Schedule Decommission: Specify the details about the virtual machine decommission.
 - Now / Later (available only if Automated is set to Yes): Specify this planned change is deployed now or later.
 - Date: Click the icon and select the decommission date.
 - Time: Click the icon to select the accurate time on the selected decommission date.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Host Movement

Foglight Capacity Director allows you to model a host movement without deploying the planned change in the realtime environment.

To schedule a change for moving a host:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Model a Host Movement, and click Next.
- 3 In the Model a Host Movement Wizard dialog box, specify the following fields, as needed:
 - Host Name: Click Browse to select a host to be moved in the Host Selector dialog box, and click Select.
 - Source: This value is the original destination where the host is deployed and is automatically filled in after you select a host.
 - Destination: Click Browse to select a destination to which the host is moved in the Destination Selector dialog box, and click Select.
 - Move Date: Click the icon and select the movement date.
 - Time: Click the icon to select the accurate time on the selected movement date.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Moving Virtual Machines

Foglight Capacity Director allows you to create and deploy a new change for moving virtual machines between various destinations.

To schedule a change for moving a virtual machine:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Move Virtual Machines, and click Next.
- 3 In the Move Virtual Machines Wizard dialog box, specify the following fields, as needed:
 - VM Name: Click Browse to select a virtual machine to be moved in the VM Selector dialog box, and click Select.
 - Source: This value is the original destination where the virtual machine is deployed and is automatically filled in after you select a virtual machine.
 - Automated: Specify whether this planned change is deployed automatically or not.
 - Destination: Click Browse to select a destination to which the virtual machine is moved in the VM Movement - Destination Selector dialog box, and click Save.
 - Specific Host (available only if Automated is set to Yes): Click Browse to select a host in the VM Movement - Specific Host Selector dialog box, and click Save.
 - Resource Pool (available only if Automated is set to Yes): Click Browse to select a resource pool in the Resource Pool Selector dialog box, and click Select.
 - Storage: Click Browse to select a storage in the VM Movement Storage Selector dialog box, and click Save.
 - Move Date: Click the icon and select the movement date.
 - Time: Click the icon
 to select the accurate time on the selected movement date.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

For migrating Hyper-V VMs, please do the following:

1 Set all isInitiator=true for module.com.sun.security.jgss.initiate (For AIX, set the com.ibm.security.jgss.initiate) from FGLAM_HOM\state\default\config\auth.login.config.

10	com.sun.security.jgss.login {<
11	··com.sun.security.auth.module.Krb5LoginModule·required·useTicketCache=false· <mark>isInitiator=true·</mark> debug=false; ^d
12	};¢
13	el de la construcción de la constru
	com.sun.security.jgss.initiate {
	\cdots com.sun.security.auth.module.Krb5LoginModule \cdot required \cdot useTicketCache=false \cdot isInitiator=true \cdot debug=false; \leftarrow
16	4 4
	com.sun.security.jgss.accept·{신
19	\cdots com.sun.security.auth.module.Krb5LoginModule \cdot required \cdot useTicketCache=false \cdot isInitiator=true \cdot debug=false; \leftarrow
20	};

2 Set forwardable=true in libdefaults from FGLAM_HOM\state\default\config\krb5.config.

	Copyright 2018 Quest Software Inc. ALL RIGHTS RESERVED.
[li]	bdefaults]
	default_realm = VFOG.LOCAL forwardable=true
[re:	alms] VFOG.LOCAL = {
	kdc = ZHUVM-FOG-3326.VFOG.LOCAL
	}
[do:	main_realm]
	.vfog.local = VFOG.LOCAL

3 In Hyper-V Manager, select the Hyper-V server and settings. Then, go to Live Migration and Advanced Features. Then, select Use Kerberos under Authentication Protocol.

∎a l		Hyper-V Manager	
File Action View Help			
🗢 🔿 🙍 🖬 🚺			
HV2012R2 HV2012R2 HV2012R2 HV2012R2-1 HV2012R2-2	Manage RemotePX GPUs Manage RemotePX GPUs MuMA Spanning Allow NUMA Spanning Allow NUMA Spanning 2 Smuttaneous Migrations Behanced Session Mode Programme Programme Contract Session Mode Participations Contract Session Mode Programme Programe Progr	henticate live migrations. Support Provider (CredSSP) server to perform a live migration. requires constrained delegation for live migration. 520:34:10 123:26:28	Status

4 In Active Directory Users and Computers, find the Hyper-V server and go to properties. Then, find **Delegation** tab and add CIFS and Microsoft Virtual System Migration Service.

HV2012R2-1 Properties ?												
Loca	ation	Managed By	Object	Se	curity	Dial	in /	Attribu	ute E	ditor		
Gen	General Operating System		Member Of Delegation P			Passw	assword Replication					
	Delegation is a security-sensitive operation, which allows services to act on behalf of another user.											
O Do not trust this computer for delegation												
 Trust this computer for delegation to any service (Kerberos only) 												
 Trust this computer for delegation to specified services only 												
Use Kerberos only												
O Use any authentication protocol												
Services to which this account can present delegated credentials:												
	Servic	е Туре	User or Con	nputer			Por	t				
	cifs		SMBSERVE	ER1.v	fog.local							
	cifs		FileShare.vf									
	cifs		SOFST1.vf	-	al							
	cifs SMBSERVER2											
	cifs HV2012R2-3-CN.vfog.local											
	Microsoft Virtual Syste HV2012R2-3-CN.vfog.local											
	<	111					>					
	Expanded Add Remove											
		(ОК	Car	ncel	A	oply		He	lp		

5 For Live Migration, In Hyper-V Manager, find the VM and go to **properties**. Then, expand **Processor** and select **Compatibility** and check **Migrate to physical computer with a different processor version**.

Adding a Datastore (Preview)

Foglight Capacity Director allows you to add a datastore without deploying the planned change in the realtime environment.

To schedule a datastore addition:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Add a Datastore (Preview), and click Next.
- 3 In the Model a Datastore Addition Wizard dialog box, specify the following fields, as needed.
 - Datastore Name: Type the name of the datastore.
 - Deploy Date: Click the icon <a>[
 and select the deployment date.
 - Time: Click the icon
 to select the accurate time on the selected deployment date.
 - Capacity: Type the number of capacity. The unit is one of the following: GB (default option), B, KB, MB, TB, and b.
 - Select Hosts: Select a host from the Select Hosts table.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Datastore Decommission (Preview)

Foglight Capacity Director allows you to decommission a datastore without deploying the planned change in the real-time environment.

To schedule a datastore decommission:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Model a Datastore Decommission (Preview), and click Next.
- 3 In the Model a Datastore Decommission Wizard dialog box, specify the following fields, as needed.
 - Datastore Name: Click Browse to select a datastore in the Datastore Selector dialog box, and click Select.
 - Deploy Date: Click the icon and select the deployment date.
 - Time: Click the icon to select the accurate time on the selected deployment date.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Datastore Expansion (Preview)

Foglight Capacity Director allows you to expand a datastore without deploying the planned change in the real-time environment.

To schedule a datastore expansion:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Model a Datastore Expansion (Preview), and click Next.
- 3 In the Model a Datastore Expansion Wizard dialog box, specify the following fields, as needed.
 - Datastore Name: Click Browse to select a datastore in the Datastore Selector dialog box, and click Select.
 - Current Utilization: These values are automatically filled in after you select a datastore.
 - Capacity: The capacity of the selected datastore.
 - Allocated: The allocated capacity on the selected datastore and the relevant percent.
 - In Use: The capacity that is being used and the relevant percent.
 - Available Space: The available capacity on the selected datastore.
 - Extent Capacity: Type the number of capacity to be expanded. The unit is one of the following: GB (default option), B, KB, MB, TB, and b.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Modeling a Datastore Shrink (Preview)

Foglight Capacity Director allows you to shrink a datastore without deploying the planned change in the real-time environment.

To schedule a datastore shrink:

1 In the Planned Changes view, click Add.

The wizard of scheduled planned changes appears.

- 2 Select Model a Datastore Shrink (Preview), and click Next.
- 3 In the Model a Datastore Shrink Wizard dialog box, specify the following fields, as needed.
 - Datastore Name: Click Browse to select a datastore in the Datastore Selector dialog box, and click Select.
 - Current Utilization: These values are automatically filled in after you select a datastore.
 - Capacity: The capacity of the selected datastore.
 - Allocated: The allocated capacity on the selected datastore and the relevant percent.
 - In Use: The capacity that is being used and the relevant percent.
 - Available Space: The available capacity on the selected datastore.
 - Shrink Capacity: Type the number of capacity to be shrunk. The unit is one of the following: GB (default option), B, KB, MB, TB, and b.
- 4 Click Finish.

The Planned Changes view is updated to include this new change.

Editing a Planned Change

Foglight Capacity Director allows you to edit the existing planned changes, as needed.

To edit an existing planned change:

- 1 In the Planned Changes view, select a planned change that you want to edit, and click the Edit icon.
- 2 The Settings dialog box appears.
- **i** NOTE: The Settings dialog box varies from the following change types: Model a Cluster Addition, Model a Host Addition, Add Virtual Machines, Model a Host Decommission, Decommission Virtual Machines, Model a Host Movement, and Move Virtual Machines. For more information, see Adding a Planned Change on page 52.
 - 3 Edit the values as needed, and click **Save**. For detailed information about the available fields, refer to Adding a Planned Change on page 52.

The Planned Changes view is updated to show the updates of this planned change.

Deleting a Planned Change

Foglight Capacity Director allows you to remove the existing planned changes that you do not want to deploy.

To delete one or more planned change(s):

- 1 In the Planned Changes view, select one or more planned change(s) that you want to remove, and click **Delete**.
- 2 In the Confirm delete planned changes dialog box, click Confirm.

The selected planned change is removed from the Planned Changes view.

Infrastructure Organizations Tab

The *Infrastructure Organizations* view shows detailed information about organizations and clusters, and provides an approach to manage them. The *Infrastructure Organizations* view contains two tabs:

- Organizations tab: Lists and manages the infrastructure organization.
- Clusters tab: Lists the cluster information and assigns the clusters, as needed.

To access the Infrastructure Organizations view:

1 On the navigation panel, under Dashboards, click Capacity Director.

The Capacity Director dashboard opens.

- 2 Use the Group selector located at the top of the dashboard to select the virtual environment that you want to monitor.
- 3 On the Menu bar, click the Infrastructure Organization tab.

The Infrastructure Organizations view appears at the bottom of the Capacity Director dashboard.

Organizations Ousters											
2 Asign											
Organization	Total Cost Geographical Locatio										
Unassigned	n/a Unassigned										
Unassigned	n/a Unassigned										
Unassigned	n/a Unassigned										
Unassigned	n/a Unassigned										
Unassigned	n/a Unassigned										
	Unassigned Unassigned Unassigned Unassigned										

Organizations tab

The Organizations tab includes:

- A table showing details about the Organizations in your infrastructure. For more information, see Editing existing organizations on page 63.
 - Organization Name: The name of your organization
 - Location: The geographical location of your organization
 - Number of Clusters: The number of clusters existing in your organization
 - CPU Unit Cost: The CPU unit cost
 - Memory Unit Cost: The Memory unit cost
 - Storage Unit Cost: The storage unit cost
 - Host License Fee: The license fee of the host
- Two buttons allow you to manage the organizations in your infrastructure.
 - Add: Allows you to add a new organization. For more information, see Adding a new organization on page 63.
 - Remove: Allows you to remove existing organizations. For more information, see Removing existing organizations on page 63.

Adding a new organization

To add a new organization:

- 1 In the Infrastructure Organizations view, dick Organizations, and click Add.
- 2 In the Add Organization dialog box, specify the following fields, as needed.
 - Organization Name: The name of your organization
 - Geographical Location: The geographical location of your organization
 - Unit Cost (\$):
 - CPU: The unit cost (in dollar) of CPU
 - Memory: The unit cost (in dollar) of memory
 - Storage: The unit cost (in dollar) of storage
 - Host License Fee (\$): The license fee (in dollar) of the host
- 3 Click **Save**. The new organization is added to the Organizations table.
 - Or

Click Save and add another to save the current organization, then add another organization.

The Add Organization dialog box remains open. Continue with Step 2.

Editing existing organizations

To edit an existing organization:

- 1 In the Infrastructure Organizations view, dick Organizations, and select an organization to be updated.
- 2 Click Edit next to Organization Name.
- 3 In the Edit Organization dialog box, change the following fields, as needed.
 - Organization Name: The name of your organization
 - Geographical Location: The geographical location of your organization
 - Unit Cost (\$):
 - CPU: The unit cost (in dollar) of CPU
 - Memory: The unit cost (in dollar) of memory
 - Storage: The unit cost (in dollar) of storage
 - Host License Fee (\$): The license fee (in dollar) of the host
- 4 Click Save. The organization changes are updated in the Organizations table.

Or

Click **Save** and add another. The **Edit Organization** dialog box remains open but all fields become blank. Continue with Step 2 in Adding a new organization on page 63 to add a new organization.

Removing existing organizations

To remove one or more existing organization(s):

1 In the Infrastructure Organizations view, click Organizations, and select the organizations to be removed.

- 2 Click Delete.
- 3 In the Confirm Delete Organization Dialog box, click Delete.

The organization is removed from the Organizations table.

Clusters tab

The *Clusters* tab allows you to assign the available cluster to an organization. Each cluster can be assigned only to one organization. The *Clusters* tab includes:

- A table showing details about the clusters in your infrastructure
 - Name of Host or Cluster: The name of your host or cluster
 - Organization: The name of your organization
 - Total Cost: The cost of your host or cluster
 - Geographical Location: The geographical location of your host or cluster
- An Assign button allowing you to assign a cluster to an organization

To assign a cluster to one organization:

- 1 In the Infrastructure Organizations view, dick Clusters, and select a cluster that you want to assign.
- 2 Click Assign.
- 3 In the Select Organization dialog box, select an organization from the list, and click Save.

The Cluster/Host table is updated to show the updated assignment.

NOTE: After assigning a cluster to an organization, the virtual machine movement between different organizations in the Scenario Modeler pane is not allowed.

NOTE: The cost of cluster is re-calculated when assigning this cluster to an organization.

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 communitydriven 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 www.quest.com/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.