Moab Viewpoint

Reference Guide 9.1.1

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Welcome

Welcome to the *Moab Viewpoint Reference Guide* for version 9.1.1.

Viewpoint is a web application that, interacting with Moab Workload Manager, lets users manage jobs and resources without the complexities of maintaining Moab via the command line. Viewpoint uses a customizable portal that enables users to view and configure jobs and to compute node resources, principals, and roles. Viewpoint permissions allow system administrators to specify which pages, tools, and settings certain users or groups are permitted to use, manage, and view.

This guide is intended as a reference for system administrators *and* users. This guide is broken up into functional chapters to help you quickly navigate and use Viewpoint.

This guide contains all functional chapters. The actual functions that are available to you will vary depending on the rights and privileges associated with your user profile.

In this guide:

- <u>Chapter 1 Viewpoint Configuration on page 3</u> Provides the necessary information for you to set up and configure your Viewpoint portal.
- <u>Chapter 2 Viewpoint Basics on page 51</u> Gives an overview of the Viewpoint portal, including logging in/signing out and general navigation information.
- <u>Chapter 3 Viewpoint Workload Overview on page 57</u> Gives an overview of the Workload page and provides information on viewing and managing workloads.
- <u>Chapter 4 Application Templates on page 89</u> Gives an overview of the Application Templates page and provides information on managing the application templates that are used to define job settings and options available to users when creating jobs.
- <u>Chapter 5 Nodes on page 241</u> Gives an overview of the Nodes page and provides information on viewing and managing nodes for your workload.
- <u>Chapter 6 File Manager on page 253</u> Gives an overview of the File Manager page and provides information on using the RFS for file management.
- <u>Chapter 7 Remote Visualization Sessions on page 261</u> Gives an overview of the Sessions page and how you can view important aspects of your jobs while also freeing up valuable resources that could be used for other tasks.

 <u>Chapter 8 Reporting on page 267</u> – Gives an overview of the Reporting page and provides information on creating and generating workload reports and dashboards.

Chapter 1 Viewpoint Configuration

Configuring Viewpoint requires several setup and configuration procedures before you can run Viewpoint:

Some Viewpoint functionality requires individual licenses. See Licensing for more information.

- 1. Initial setup and configuration procedures crucial to the functionality of Viewpoint; performed when you first installed and configured Viewpoint. See <u>Installing Moab Viewpoint</u> in the *Moab Installation and Configuration Guide*.
- 2. Initial setup and configuration of RLM. Required if using Remote Visualization and/or Nitro Web Services. See <u>Installing RLM Server</u> in the *Moab Installation and Configuration Guide*.
- 3. Initial setup and configuration of Remote Visualization (if part of your system configuration). See <u>Installing Remote Visualization</u> in the *Moab Installation and Configuration Guide*.
- 4. Initial setup and configuration of Nitro and Nitro Web Services (if part of your system configuration). See <u>Nitro Integration</u> in the *Moab Installation and Configuration Guide*.

Once the initial setup and and configuration steps have been completed, Viewpoint provides a Configuration page that lets you complete set up and configuration of your Viewpoint portal. See <u>Configuration Page on page 4</u> for more information.

In this chapter:

- Basic Configuration Page on page 6
- File Manager Configuration Page on page 9
- About Roles on page 11
- About Principals on page 24
- <u>Reporting Configuration Page on page 34</u>
- <u>Remote Visualization Configuration Page on page 31</u>
- Nitro Services Configuration Page on page 33
- Application Templates Configuration Page on page 35
- Licensed Features Page on page 37
- Chapter 1 Viewpoint Configuration

Configuration Page

Only privileged users can see the Configuration page. In addition, the user's credentials determine which configuration functions are available.

The Configuration page lets you perform administrative functions for Viewpoint.

This topic describes the Configuration page information after Viewpoint has been installed or upgraded.

To access this page, click **Configuration** in the menu bar. You can also click next to where you sign out.

The Configuration page has these functional pages:

• **Basic Configuration** – This is the default view when you access the Configuration page.

This page is primarily used only when installing or upgrading Viewpoint. See <u>Installing Moab Viewpoint</u> or <u>Upgrading Moab Viewpoint (RPM)</u> in the *Moab Installation and Configuration Guide* for more information.

However, you can reset the default roles using this page. See <u>Resetting</u> <u>Default Roles on page 22</u> for more information.

See <u>Basic Configuration Page on page 6</u> for more information about this page.

- File Manager Configuration Available when you click File Manager from the left pane. This page lets you configure servers and paths available in the File Manager. See <u>File Manager Configuration Page on page 9</u> for more information about this page.
- **Roles** Available when you click **Roles** from the left pane. This page lets you manage roles and role permissions. See <u>Role Management Page on page 11</u> for more information about this page.
- **Principals** Available when you click **Principals** from the left pane. This page lets you assign users, groups, *or* OUs to roles. See <u>Principal</u> <u>Management Page on page 25</u> for more information about this page.
- Remote Visualization Services Available when your system includes Remote Visualization. Click Remote Visualization Services from the left pane to view this page.

This page is primarily used only when installing and configuring Remote Visualization. See <u>Installing Remote Visualization</u> in the *Moab Installation and Configuration Guide* for more information.

See <u>Remote Visualization Configuration Page on page 31</u> for more information about this page.

• **Nitro Services** – Available when your system includes Nitro Web Services. Click **Nitro Services** from the left pane to view this page.

This page is primarily used only when installing and configuring Nitro Web Services. See <u>Installing Nitro Web Services</u> (manual install method) or <u>Installing Nitro Web Services</u> (RPM install method) in the *Moab Installation and Configuration Guide* for more information

See <u>Nitro Services Configuration Page on page 33</u> for more information about this page.

- **Reporting Configuration** Available when you click **Reporting** from the left pane. This page lets you configure the reporting service. See <u>Reporting Configuration Page on page 34</u> for more information.
- Application Templates Available when you click Application Templates from the left pane. This page lets you import and export application templates for creating jobs. See <u>Application Templates</u> <u>Configuration Page on page 35</u> for more information.
- Licensed Features Available when you click Licensed Features from the left pane. This page lets you view the features available on your Moab license. See <u>Licensed Features Page on page 37</u> for more information about this page.

Related Topics

- Basic Configuration Page on page 6
- File Manager Configuration Page on page 9
- Role Management Page on page 11
- Principal Management Page on page 25
- <u>Remote Visualization Configuration Page on page 31</u>
- Nitro Services Configuration Page on page 33
- <u>Reporting Configuration Page on page 34</u>
- Application Templates Configuration Page on page 35
- Licensed Features Page on page 37
- Chapter 1 Viewpoint Configuration on page 3

Basic Configuration Page

This topic provides an example of the Basic Configuration page and describes its layout and available information.

This page is primarily used only after Viewpoint is installed or upgraded.This page also lets you, at any time, reset the default roles.

To access this page click **Configuration** from the menu.

In this topic:

- Page Example on page 6
- Available Fields on page 7
- Page Actions on page 8

Page Example

The following image is an example of the Basic Configuration page.

HOME	WORKLOAD	TEMPLATES	NODE	5	SESSIONS	CONFIGURATION
Basic Configuration	n	Ba	sic Conf	igurati	ion	
File Manager Con	figuration	M	1WS Conf	figurati	on	
Roles				Server	http://10.2.185.160:8	080
Principals			Us	ername	moab-admin	
Remote Visualizat	ion Services		Pa	assword	•••••	
Nitro Services				Path	/mws/	
Reporting Configuration			(Client Id	viewpoint	
Application Templ	ates		Clien	t Secret	•••••	
Licensed Features			🗌 Reset	Permissions	s	
		M	Misc Options			
			Node Names to	gnore	DEFAULT,GLOBAL	
			🕑 Use G	ioogle Analy	tics to help improve th	his product
						TEST SAVE
		Vie	wpoint Build	I Informat	tion	
			Version	9.1		
			Revision	fcb977a87	7228f372dfa3f0ef4a9	94f3bd7b4a75b4
			Branch	remotes/o	origin/9.1.x	
			Build Date	2017-02-0	02 19:33:38 UTC	

Available Fields

The following table describes the fields on the Basic Configuration page.

Field	Description
MWS Configura	ation
Server	The URL for MWS on the Moab Server Host. For example: http://server:8080. If your configuration uses a secure the connection between Viewpoint and MWS, the URL must contain "https" and the secure port. See <u>1.1 Securing the Connection between Viewpoint and MWS</u> for more information.

Field	Description
Username	Name of the admin user (for example, "moab-admin"). This is the user who is given MWS access and access to all Viewpoint pages as the default. However, this user is typically not a LDAP/PAM user and does not have operating system permissions (like creating application templates). This user can assign users to roles, including the HPCAdmin role (for LDAP/PAM users). This is the "auth.defaultUser.username"specified when MWS Server was installed. This information is stored in the /opt/mws/etc/mws-config.groovy file.
Password	Password authentication for the admin user. This is the "auth.defaultUser.password" specified when MWS Server was installed. This information is stored in the /opt/mws/etc/mws-config.groovy file.
Path	Path prefix of the Moab Web Services URL. This will almost always be "/mws/".
Client ID	ID used to authorize Viewpoint as a client in MWS. This is the "OAuth clientId" specified when Viewpoint was installed. This information is stored in the /opt/mws/etc/mws-config.groovy file.
Client Secret	Permission (secret) used to authorize Viewpoint as client in MWS. This is the "OAuth clientSecret" specified when Viewpoint was installed. This information is stored in the /opt/mws/etc/mws-config.groovy file.
Reset Per- missions	Resets the default roles (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, and RemoteVisUser) back to their default settings. See <u>Resetting Default Roles on page 22</u> for more information about this check box.
Misc Options	
Node Names to Ignore	Names of nodes for which you want to be ignored when submitting jobs. Separate names with a comma. For example, to prevent jobs from accessing the DEFAUT and GLOBAL nodes, type "DEFAULT,GLOBAL".
Use Google Analytics to help improve this product	Indicates whether you want to track usage through Google Analytics.

Page Actions

These buttons let you perform actions on this page:

- **TEST** Confirms the settings are correct.
- **SAVE** Submits your settings.

Related Topics

- Configuration Page on page 4
- File Manager Configuration Page on page 9
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

File Manager Configuration Page

To access this page, click **Configuration** in the menu bar and then click **File Manager** in the left pane.

This topic provides an example of the File Manager page and describes its layout and available information.

In this topic:

- Page Example on page 9
- Available Fields on page 10
- Page Actions on page 11

Page Example

The following image is an example of the File Manager Configuration page.

Basic Configuration	File Manager Co	File Manager Configuration		
File Manager Configuration	Server URL	https://127.0.0.1:8443		
Licensed Features	Server Verify SSL			
	SSL Certificate File	/opt/viewpoint/lib/viewpoint/webdav_client/client-cer		
	SSL Certificate Key	/opt/viewpoint/lib/viewpoint/webdav_client/client-key		
	CA Bundle File	/opt/viewpoint/lib/viewpoint/webdav_client/ca-cert.pt		
	Server Root Path	/		
	Accessible Roots	/home:/tmp		
	Maximum Upload Size(bytes)	-1		
		TEST SAVE		

Available Fields

The following table describes the fields on the File Manager Configuration page.

Field	Description
Server URL	The name of the Moab Server host on which you installed the File Manager Service and the port number for the File Manager Service (for example, "https://server:8001").
Server Verify SSL	When enabled:The client SSL certificate will be verified.Viewpoint will use the given certificate when connecting to File Manager Service.
SSL Cer- tificate File	The location of the SSL certificate file on the Viewpoint Server. Usually, /op-t/viewpoint/lib/viewpoint/webdav_client/client-cert.pem.
SSL Cer- tificate Key	The location of the SSL certificate key on the Viewpoint Server. Usually, /op-t/viewpoint/lib/viewpoint/webdav_client/client-key.pem.
CA Bundle File	The location of the CA bundle file on the Viewpoint Server. Usually, /op-t/viewpoint/lib/viewpoint/webdav_client/ca-cert.pem.
Server Root Path	The root URL path where File Manager Service publishes its API (usually it is simply "/").
Accessible Roots	The root folders that users can access from the File Manager page. This can be used to limit users' access to certain directories, without giving them access to the "/" folder on the remote file system (RFS). Separate root folders with a colon (for example, /home:/usr/share/groups). For example, if you define /home and /usr/share/groups as accessible roots, although users will be able to see a tree similar to the following, the users will not be able to see (access) anything inside /usr other than "share" and anything inside "share" other than "groups".

Field	Description
Maximum Upload Size (bytes)	Total amount of data that can be uploaded in a single file. A value of '-1' means unlimited.

Page Actions

These buttons let you perform actions on this page:

- **TEST** Confirms the settings are correct.
- **SAVE** Submits your settings.

Related Topics

- Chapter 6 File Manager on page 253
- Chapter 1 Viewpoint Configuration on page 3

About Roles

A role in Viewpoint is simply a collection of permissions. Once permissions are assigned, a role is assigned to users or user groups in a principal. This means that each user in the principal will be bound by the role permissions.

This section describes the features and functions available to manage roles.

In this section:

- <u>Role Management Page on page 11</u>
- Roles Page on page 12
- Role Permissions on page 14
- Default Roles on page 19
- <u>Creating or Editing Roles on page 21</u>
- Deleting Roles on page 22

Role Management Page

The Role Management page displays the default and custom roles available for your Viewpoint configuration. Using this page you can create, edit, and delete roles. Click at any time to refresh the page display.

To access this page, click **Configuration** in the menu bar and then click **Roles** from the left pane.

The following image is an example of the Role Management page.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION
Basic Configura	tion		Role Management	0	CREATE
File Manager Co	onfiguration		Role Name	Description	
<u>Roles</u>			EmptyRole	An empty role	
Principals			HPCAdmin	Administrative user,	with privileges for all features and jobs
Trincipulo			HPCUser	Basic user, with perm	nission to create and manage their own jobs
Remote Visualiz	ation Services		NitroAdmin	Administrative user, Nitro jobs	with permission to create Nitro application templates and manage other user's
Nitro Services			NitroUser	Basic user, with perm	nission to create and manage their own Nitro jobs
Reporting Confi	guration		RemoteVizAdmin	Administrative user, other user's remote	with permission to create remote visualization application templates and manage visualization jobs
Application Tem	plates		RemoteVizUser	Basic user, with pern	nission to create and manage their own remote visualization jobs
Licensed Featur	es		ReportingAdmin	Administrative user, other user's aggrega	with permission to create aggregated views / reports / dashboards and manage ted views / reports / dashboards
			ReportingConsumer	Basic user, with pern	nission to consume reports / dashboards
			ReportingManager	Basic user, with pern	nission to create and manage their own reports / dashboards
			Show 10 • entries		← prev 1 next →

Related Topics

- About Roles on page 11
- Creating or Editing Roles on page 21
- Deleting Roles on page 22
- Chapter 1 Viewpoint Configuration on page 3

Roles Page

The Roles page lets you manage the permissions for the specified role.

To access this page, click **Configuration** in the menu bar, click **Roles** in the left pane, and then click either **Create** to add a new role *or* click the name of the role you want to edit.

The Roles page will display Create Role or Update Role depending on whether you are creating or editing, respectively.

This topic provides an example of the Roles page and describes its layout and available information.

In this topic:

- Page Example on page 13
- Available Fields on page 13
- Page Actions on page 14

Page Example

The following image is an example of the Roles page.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION
Basic Configura	tion		Update Role		
File Manager Co	onfiguration		Name	HPCUser	
<u>Roles</u>			Description	Basic user, with perm	ission to create and manage
Principals				their own jobs	
Remote Visualiz	ation Services				
Nitro Services			Viewpoint Permissions:		
Reporting Confi	guration		Select All		
Application Tem	plates		Home		
Licensed Featur	es		Workload Workload Workload Workload	Summary Widget mary Widget sources Widget	
			Job Detail	s lit Admin	
			Job Vi	ew All	
			Remot	e Visualization Detail	ls Widget
			Nitro S	Statistics Details Widg	get
			- Nitro S	Statistics Details Widg	get Admin
			🗕 👻 Create Job		
			📃 Create Rei	mote Visualization Jol	bs
			Create Nit	ro Jobs	
			Keporting Dashboarda V	low	
			- Dashboards V	ds Consumer	
			- Dashboard	ds Manager	-

Available Fields

The following table identifies fields in the Roles page.

Field	Description
Name	Lets you specify the name of the role. The name you specify appears in the list of roles on the Role Management page and in the list of role options when you edit a principal. Role names are case sensitive and may include letters, numbers, dashes (-), periods (.), and underscores (_).
	i You cannot modify the role name after creating a role.
Description	Lets you specify/modify the text description of the role. This description appears in the list of roles on the Role Management page.
Viewpoint Permissions	These fields let you specify the Viewpoint page permissions you want to set for the role. See <u>Role</u> <u>Permissions</u> for more information.

Page Actions

These buttons let you perform actions on this page:

- CANCEL Closes the page without saving any changes.
- **DONE** Saves the changes and closes the page.
- **APPLY** Saves the changes but does not close the page.
- **RESET** Displayed only when editing one of the default roles (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, and RemoteVisUser). Resets the role back to the default settings and stays on the page. This does *not* remove principals from the role. The "Reset Permissions" check box on the Basic Configuration page will reset the role back to the default settings and remove all principals assigned to the role. See <u>Resetting</u> <u>Default Roles on page 22</u> for more information.

Related Topics

- About Roles on page 11
- Role Management Page on page 11
- Role Permissions on page 14
- <u>Creating or Editing Roles on page 21</u>
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

Role Permissions

Viewpoint organizes roles based on Viewpoint pages, as grouped by the Menu bar. For example, the Home View permission enables a user to access the Viewpoint Home page. Other permissions enable the user to access various widgets on the Home page. This topic describes the different permissions you can manage for a role.

In this topic:

- About Permissions on page 15
- Viewpoint Permissions on page 15

About Permissions

Viewpoint uses permissions to enable you to control user access. For example, you can grant a user the ability to see a feature, but not edit it. The Viewpoint permissions control access to the various pages and specific functions on that page.

Some permissions are dependent on other permissions. For example, the Job Edit Admin permission enables you to manage jobs created by other users. When you grant this permission, Viewpoint also automatically grants the Job Details permission, which enables you to view details for your own jobs, and the Workload View permission, which enables you to access the Workload page.

Viewpoint Permissions

The following table describes each of the Viewpoint permissions. For ease of use, the permissions are listed in this topic in alphabetical order.

Permission	Description
Home View	Enables you to view the home page.
Node Sum- mary Wid- get	Enables you to view the node summary widget, which provides a graphical overview of the total nodes within your Viewpoint configuration and their status.
System Resources Widget	Enables you to view the global system resources widget, which provides a graphical ratio of resources dedicated to jobs compared to total resources. The graphical result is displayed based activity within the last 24 hours.
Workload Summary Widget	Enables you to view the workload summary widget, which provides a graphical overview of the total jobs within your Viewpoint configuration and their status.

Home Permissions

Workload Permissions

Permission	Description
Create Job	Enables you to access the Create Job page and to create jobs.
Create Nitro Jobs	Enables you to create Nitro jobs, if the Nitro feature is licensed.
Create Remote Visu- alization Jobs	Enables you to create Remote Visualization jobs, if the Remote Visualization feature is licensed.
Job Details	Enables you to access the Job Details page to view job details for your own jobs (or others in your principal). The Job Edit Admin permission is required to actually change job information.
Job Details - Priority Ana- lysis	Enables you to see or modify the priority of a job while the job is waiting to be scheduled. See <u>Priority on page 66</u> for more information about the priority information for a job. Also requires the Job Details and Job Edit Admin permissions.
Job Details - Scheduling Analysis	Enables you to view the available nodes for job scheduling. When applied, the "More Inform- ation" button appears on the Job Details page. Click this button to view the Scheduling Analysis pop-up window. See <u>Scheduler Analysis on page 64</u> for more information on the window. Also requires the Job Details and Job Edit-admin permissions.
Job Edit Admin	Enables you to edit job information for any job, not just the jobs you (or others in your principal) submitted. Also requires the Job Details permission.
Job View All	Enables you to see all jobs in the workload, not just the jobs you (or others in your principal) sub- mitted.
Nitro Stat- istics Details Widget	Enables you to the Nitro Details section to view job statistics for your Nitro Jobs. Without this per- mission, Nitro jobs will not display statistics when viewing job details.
Nitro Stat- istics Details Widget Admin	Enables access to the Nitro Details section to view job statistics for other users' Nitro jobs.
Remote Visu- alization Details Wid- get	Enables access to your Remote Visualization jobs.

Permission	Description
Remote Visu- alization Details Wid- gets Admin	Enables access to Remote Visualization jobs for all users.
Workload View	Enables you to view the Workload page. Admins will see all jobs; non-admins will only see their jobs, or the jobs within their principal (user group).

Reporting Permissions

Permission	Description
Aggregated Views View	Enables you to view the Aggregated Views page.
Aggregated Views Admin	Enables you to create aggregated views and administer other users' aggregated views.
Aggregated Views Con- sumer	Enables you to access the Aggregated Views page and view aggregated view data.
Aggregated Views Manager	Enables you to create aggregated views and administer your own aggregated views.
Dashboards View	Enables you to view the Dashboards page.
Dashboards Admin	Enables you to create dashboards and administer other users' dashboards.
Dashboards Consumer	Enables you to access the Dashboards page and run dashboards.
Dashboards Manager	Enables you to create dashboards and administer your own dashboards.
Reports View	Enables you to view the Reports page.
Reports Admin	Enables you to create reports and administer other users' reports.
Reports Consumer	Enables you to access the Reports page and run reports.
Reports Manager	Enables you to create reports and administer your own reports.

Nodes Permissions

Permission	Description
Nodes View	Enables you to view the Nodes page.

Templates Permissions

Permission	Description			
Nitro Templates	Enables you to manage Nitro application templates.			
Remote Visualization Templates	Enables you to manage Remote Visualization application templates.			
Templates Admin	Enables you to manage other users' application templates.			
Templates View	Enables you to manage your own application templates.			

File Manager Permissions

Permission	Description			
File Manager View	Enables you to access the File Manager page.			

Sessions Permissions

Permission	Description
Sessions Admin	Enables you to manage all Remote Visualizationsessions on the Sessions page and launch on- demand Remote Visualization sessions.
Sessions View	Enables you to access the Sessions page.

Configuration Permissions

Permission	Description
Application Templates	Enables you to access the Application Templates tab on the Configuration to view, deploy, export, and restore the provided application templates.

Permission	Description
Basic Con- figuration	Enables you to access the Basic Configuration tab on the Configuration page.
File Manager Configuration	Enables you to access the File Manager tab on the Configuration page to upload or download files.
Licensed Features	Enables you to access the Licensed Features tab on the Configuration page to view license information.
Nitro Services	Enables you to access the Nitro Services tab on the Configuration page to configure Nitro services.
Principals	Enables you to access the Principals tab of the Configuration page to view and manage roles and principals. This permission should only be set for administrators.
Remote Visu- alization Ser- vices	Enables you to access the Remote Visualization Services tab on the Configuration page to con- figure Remote Visualization services.
Reporting Con- figuration	Enables you to access the Reporting Configuration tab on the Configuration page to configure Reporting Web Services.
Roles	Enables you to access the Roles tab on the Configuration page to view and manage roles and permissions. This permission should only be set for administrators.

Related Topics

- About Roles on page 11
- Roles Page on page 12
- Chapter 1 Viewpoint Configuration on page 3

Default Roles

Viewpoint is delivered with these default roles:

- HPCAdmin Global administrative role that grants users all Viewpoint permissions.
- **HPCUser** Global user role that enables permissions for users to perform non-administrative workload tasks.

- **NitroAdmin** Administrative user role with permissions to create Nitro application templates and manage other users' Nitro jobs
- NitroUser Basic user role with permission to create and manage their own Nitro jobs.
- RemoteVizAdmin Administrative user role with permissions to create remote visualization application templates and manage other users' Remote Visualization jobs
- **RemoteVizUser** Basic user role with permissions to create and manage their own Remote Visualization jobs.

If a Reporting license is installed, the following reporting roles are included in the base roles.

- **Reporting Admin** Administrative user role with permissions to create aggregated views, reports, and dashboards and manage aggregated views, reports, and dashboards created by other users.
- **Reporting Manager** Basic user with permissions to create and manage reports and dashboards.
- **Reporting Consumer** Basic user, with permissions to use reports and dashboards.

Viewpoint lets you reset permissions for the default roles and restore the default roles if deleted. See <u>Resetting Default Roles on page 22</u> and <u>Restoring Default Roles on page 23</u>, respectively.

Related Topics

- About Roles on page 11
- Resetting Default Roles on page 22
- Restoring Default Roles on page 23
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

Creating or Editing Roles

Use the Role Management page to create new roles or edit existing roles and their permissions. The only user that is allowed to modify roles is the special 'moab-admin' user set up in the MWS configuration file (/opt/mws/etc/mws-config.groovy). No other users are allowed to modify roles, including users with administrative permissions.

Do the following:

- 1. If you have not already done so, access the Role Management page. (Click **Configuration** in the menu bar, then click **Roles** in the left pane.)
- 2. Click **Create** to add a new role *or* click the name of the role you want to edit.

The Roles page displays.

- 3. If you are creating a role, enter the name of the role and the role description.
- 4. If you are editing an existing role, change the role name and/or description, if desired.
- 5. Select and/or clear permissions for the role's purpose and use. See <u>Role</u> <u>Permissions on page 14</u> for permission descriptions.
- 6. When finished, click **DONE** to save your changes and close the page; otherwise, click **CANCEL** to discard the changes and close the page. Clicking **APPLY** will save your changes, but does not close the page.
 - If you are editing a default role (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, or RemoteVisUser), the **Reset** button displays. Click this button to reset the role back to the default settings. This will not close the page. In addition, this will *not* remove principals from the role. The "Reset Permissions" check box on the Basic Configuration page will reset the role back to the default settings and remove all principals assigned to the role. See <u>Resetting Default Roles on page 22</u> for more information.

Related Topics

- About Roles on page 11
- Roles Page on page 12
- Role Permissions on page 14
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

Deleting Roles

Use the Role Management page to delete existing roles.

You cannot delete roles if the roles have been selected in principals.

To delete roles, do the following:

- 1. If you have not already done so, access the Role Management page. (Click **Configuration** in the menu bar, then click **Roles** in the left pane.)
- 3. When the window appears asking you to confirm the delete, click **OK** to delete the role; otherwise, click **Cancel**.

If you removed a default role (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, or RemoteVisUser), a RECREATE BASE ROLES button appears on this page. You can click this button to restore the default role (with its default permissions); *however*, this action also affects the other default roles. This action resets the permissions for *all* default roles (but not the assigned principals for the existing roles).

Related Topics

- About Roles on page 11
- Role Management Page on page 11
- Chapter 1 Viewpoint Configuration on page 3

Resetting Default Roles

Viewpoint comes configured with several default roles (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, and RemoteVisUser) and offers the ability to reset these roles back to their original default settings at any time.

You can choose whether to:

- reset the permissions and remove principals.
- reset the permissions only.

This topic provides the information on the different options available to reset the default roles.

Reset Permissions and Remove Principals

Do the following:

- 1. If you have not already done so, log in to the Viewpoint portal. This can be the moab-admin user or any user granted permission to reset roles from the Roles page.
- 2. Click **Configuration** in the menu bar. The Basic Configuration page displays.
- 3. In the MWS Configuration area, click the **Reset Permissions** check box. A warning appears informing you that this will reset the defaults.
- 4. Click **Save**. Once the permissions have finished resetting, you will be logged out of the Viewpoint portal and will need to log in again.
- 5. Go to the Principals page and reassign the principals to the default roles, as needed.

Reset Permissions Only

Do the following:

- 1. If you have not already done so, log in to the Viewpoint portal. This can be the moab-admin user or any user granted permission to reset roles from the Roles page.
- 2. If you have not already done so, access the Role Management page. (Click **Configuration** in the menu bar, then click **Roles** in the left pane.)
- 3. Click the name of the default role for which you want to reset permissions.

The Roles page displays.

- 4. Click **RESET** at the bottom of the page.
- 5. When a message appears asking to your confirm the reset, click **OK**; otherwise, click **Cancel**.

Related Topics

- About Roles on page 11
- Default Roles on page 19
- <u>Restoring Default Roles on page 23</u>
- Chapter 1 Viewpoint Configuration on page 3

Restoring Default Roles

In addition to being able to reset the default permissions for the default roles (HPCAdmin, HPCUser, NitroAdmin, NitroUser, RemoteVizAdmin, and

RemoteVisUser), Viewpoint lets you restore the role if it was deleted. Restoring a default role, automatically restores it with the default permissions.

Do the following:

- 1. If you have not already done so, access the Role Management page. (Click **Configuration** in the menu bar, then click **Roles** from the left pane.)
- 2. Click
- A Recreate Base Roles

. (Button does not appear unless one of the

default roles has been deleted.)

Related Topics

- About Roles on page 11
- Default Roles on page 19
- Resetting Default Roles on page 22
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

About Principals

Principals is the term used to describe the assignment of users to roles. Users, groups, *or* OUs are assigned to one or more roles to create a principal.

LDAP or PAM must be configured in MWS. See LDAP Configuration Using /opt/mws/etc/mws-config.groovy or PAM (Pluggable Authentication Module) Configuration Using /opt/mws/etc/mws-config.groovy in the Moab Web Services Reference Guide for details.

This section describes the features and functions available to manage principals.

In this section:

- Principal Management Page on page 25
- Principals Page on page 25
- Edit Users/Groups Pop-up on page 27
- <u>Creating or Editing Principals on page 30</u>
- Deleting Principals on page 30

Principal Management Page

The Principal Management page displays the defined principals for your Viewpoint configuration. Using this page you can create, edit, and delete principals.

This page also provides access to the Principals page that lets you specify the users, groups, *or* OUs and their applicable roles for a principal configuration.

To access this page, click **Configuration** in the menu bar and then click **Principals** in the left pane.

The following image is an example of the Principal Management page.

Click at any time to refresh the page display.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION		
Basic Configuration			Principal Management 😕				CREATE
File Manager Config	uration	Pr	incipal Name	Description			
Roles		Gr	yffindor	Gryffindor House			
Principals		Ha	arryPrincipal	N/A			
Remote Visualizatio	n Services	s	ihow 10 v ent	ries		-	prev 1 next
Nitro Services							
Reporting Configura	ation						
Application Templat	es						
Licensed Features							

Related Topics

- About Principals on page 24
- Creating or Editing Principals on page 30
- Deleting Principals on page 30
- Chapter 1 Viewpoint Configuration on page 3

Principals Page

The Principals page lets you specify the users, groups, *or* organizational units and their applicable roles for a principal configuration.

To access this page click **Configuration** in the menu bar, click **Principals** in the left pane, and then click either **Create** to add a new principal *or* click reate next

to the principal you want to edit.

This topic provides an example of the Principals page and describes its layout and available information.

In this topic:

- Page Example on page 26
- Available Fields on page 26
- Page Actions on page 27

Page Example

The following image is an example of the Principals page.

HOME WORKLO	AD TEMPLATE	S NODES	SESSIONS	CONFIGURATION		
Basic Configuration		Update Principa	l			
File Manager Configuration		A principal's resources and access is based on the role(s) they are granted. Each role has a list of permissions that can be configured in the Roles tab.				
Roles		Name	HarryPrincipal			
<u>Principals</u>		Description				
Remote Visualization Services						
Nitro Services						
Reporting Configuration		Roles	HPCAdmin	*		
Application Templates			HPCUser NitroAdmin			
Licensed Features			NitroUser			
			RemoteVizAdmin	1		
			RemoteVizUser			
			ReportingAdmin			
			ReportingConsum	ner		
			ReportingManage	er v		
		Users/Groups	Principal Entity	Type		
		🖍 Edit	hpotter	LDAP Username		
				APPLY		

Available Fields

The following table identifies fields in the Principals page.

Field	Description
Name	Lets you specify the name of the principal. The name you specify appears in the list of principals on the Principal Management page.
	You cannot modify the principal name after creating a principal.

Field	Description			
Description	(Optional) Lets you specify a text description of the principal.			
Roles	Lets you select which roles are assigned to the principal. Only roles defined for your Viewpoint configuration will appear in the selection list. See Creating or Editing Roles for details on creating roles.			
Principal Entity	Lets you specify an LDAP or PAM entity with this principal. If this principal entity is listed under an LDAP group or organizational unit, you must provide the entire distinguished name; PAM group names represent the UNIX group on the underlying server. Click to add or click to remove entities. 			
Туре	Specifies whether the principal entity is an LDAP user name, group, or organizational unit <i>or</i> a PAM user name or group.			

Page Actions

These buttons let you perform actions on this page:

- **CANCEL** Closes the page without saving any changes.
- **DONE** Saves any changes and closes the page.
- **APPLY** Saves the changes but does not close the page.

Related Topics

- Creating or Editing Principals on page 30
- Principal Management Page on page 25
- About Principals on page 24
- Chapter 1 Viewpoint Configuration on page 3

Edit Users/Groups Pop-up

- Page Example on page 28
- Editing Users/Groups on page 29
- Page Actions on page 29

Page Example

The following image is an example of the Edit Users/Groups pop-up.

Edit users/groups		×
Principal Entity	Туре	
hpotter	LDAP Username	×
ou=hogwarts,ou=people,dc=testl	LDAP Group 🔻	×
Add Entity	Close	SAVE

Editing Users/Groups

Use the Edit Users/Groups pop-up to add users or groups to principal assignments.

Do the following:

- 1. If you have not already done so, access the Edit Users/Groups pop-up. (Click **Configuration** in the menu bar, then click **Principals** in the left pane.)
- 2. Click **CREATE** to add a new principal *or* click the name of the principal you want to edit.

The Principals page displays. See <u>Principals Page on page 25</u> for more information.

- 3. Click Edit under Users/Groups to open the Edit Users/Groups pop-up.
- 4. To *add* a new principal assignment, do the following:
 - a. Click 重 to add a new line.
 - b. Enter the LDAP group, organizational unit, or user name associated with this principal.

If the entity is an LDAP group or organizational unit, you must provide the entire distinguished name. If the entity is an LDAP user, you may provide just the user name.

- c. Select the type that reflects the entity you just entered.
- 5. To *delete* a principal entity, click **•** next to the entity you wish to remove.
- 6. When finished, click **SAVE** to save the changes and close the page; otherwise, click **CLOSE** to discard the changes and close the page.

D APPLY will save the changes, but does not close the page.

Page Actions

These buttons let you perform actions on this page:

- **CLOSE** Closes the page without saving any changes.
- **SAVE** Saves the changes and closes the page.

Related Topics

- Creating or Editing Principals on page 30
- Principal Management Page on page 25
- About Principals on page 24
- Chapter 1 Viewpoint Configuration on page 3

Creating or Editing Principals

Use the Update Principal or Create Principal pages to create new principals or edit existing principals.

Do the following:

- 1. If you have not already done so, access the Update Principal or Create Principal page. (Click **Configuration** in the menu bar, then click **Principals** in the left pane.)
- 2. Click **CREATE** to add a new principal *or* click the name of the principal you want to edit.

The Principals page displays. See <u>Principals Page on page 25</u> for more information.

- 3. If you are creating a principal, enter the name of the principal.
- 4. Add or modify the principal description if needed.
- 5. Select and/or clear the roles assigned to this principal.
- 6. Add or delete users or groups associated with the principal. See <u>Edit</u> <u>Users/Groups Pop-up on page 27</u> for more information.
- 7. When finished, click **DONE** to save the changes and close the page; otherwise, click **CANCEL** to discard the changes and close the page.

O APPLY will save the changes, but does not close the page.

Related Topics

- About Principals on page 24
- Principal Management Page on page 25
- Principals Page on page 25
- Edit Users/Groups Pop-up on page 27
- Chapter 1 Viewpoint Configuration on page 3

Deleting Principals

Use the Principal Management page to delete existing principals.

Do the following:

 If you have not already done so, access the Principal Management page. (Click **Configuration** in the menu bar, then click **Principals** in the left pane.)
- 2. Hover the mouse over the name of the principal you want to remove, click the menu icon 🔳 that appears, and click **Delete**
- 3. When the window appears asking you to confirm the delete, click **OK** to delete the principal; otherwise, click **Cancel**.

Related Topics

- About Principals on page 24
- Principal Management Page on page 25
- Chapter 1 Viewpoint Configuration on page 3

Remote Visualization Configuration Page

Remote Visualization uses the FastX product.

This topic is provided for reference only as the actual Remote Visualization configuration is set up when installing Remote Visualization. See <u>Installing Remote Visualization</u> in the *Moab Installation and Configuration Guide* for detailed instructions.

Once you have configured Remote Visualization, the Sessions page is available to maintain sessions used to display the job details in the Job Details page. See <u>Sessions Page on page 261</u> for more information.

To access this page, click **Configuration** in the menu bar and then click **Remote Visualization Services** in the left pane.

This topic provides an example of the Remote Visualization page and describes its layout and available information.

In this topic:

- Page Example on page 31
- Available Fields on page 32
- Page Actions on page 32

Page Example

The following image is an example of the Remote Visualization Configuration page.

HOME	WORKLOAD	TEMPLATES	NODES	FILE MANAGER	SESSIONS	CONFIGURATION
Basic Configuration	on	Remo	te Visualiz	ation Configurati	on	
File Manager Con	figuration		Gateway Server	https://10.2.184.227:3443		
Roles			Trust Self Signed			
Principals			Username	ace		
Remote Visualiza	ition Services	Auther	ntication Method	Password Based Authentication	•	
Nitro Services			Password	•••		
Application Temp	lates					
Licensed Features	5			TEST	SAVE	

Available Fields

The following table describes the fields on the Remote Visualization page.

Field	Description
Gateway Server	Hostname (or IP address) and port number for the FastX gateway server. For example, https:// <i><server></server></i> :3443.
Trust Self Signed	Indicates whether the Remote Visualization was set up using self-signed certificates.
Username	User name to log into FastX.
Authentication Method	 Specifies whether a password or shared secret key is required to authenticate. If using password-based, enter the FastX admin user's password in the Password filed. If using key-based, click UPLOAD KEY and and navigate to the copy of the generated .ssh/id_rsa file.

Page Actions

These buttons let you perform actions on this page:

- **TEST** Tests the connection to the Remote Visualization (gateway) Server.
- **SAVE** Saves the changes.

Related Topics

- 1.1 Authenticating Remote Visualization
- Sessions Page on page 261

• Chapter 1 Viewpoint Configuration on page 3

Nitro Services Configuration Page

This topic is provided for reference only as the actual Nitro Services configuration is set up when installing Nitro Web Services. See <u>Installing</u> <u>Nitro Web Services</u> (manual install method) or <u>Installing Nitro Web</u> <u>Services</u> (RPM install method) in the *Moab Installation and Configuration Guide* for detailed instructions.

Once you have configured Nitro Services, you can view your Nitro job information in the Job Details page. See <u>Nitro Details on page 73</u> for more information.

To access this page, click **Configuration** in the menu bar and then click **Nitro Services** in the left pane.

This topic provides an example of the Nitro Services page and describes its layout and available information.

In this topic:

- Page Example on page 33
- Available Fields on page 34
- Page Actions on page 34

Page Example

The following image is an example of the Nitro Services page.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION
Basic Configuration	n	Ni	tro Services C	onfiguratio	n
File Manager Configuration			Nitro WS URL	https://10.2.185.37:	9443
Roles			Username	nitro-readonly-user	
Principals			Password	•••••	
Remote Visualizati	on Services		Trust Self Signed		
<u>Nitro Services</u>				ТЕ	SAVE
Reporting Configur	ration				
Application Templa	ites				
Licensed Features					

Available Fields

The following table identifies fields in the Nitro Services page.

Field	Description
Nitro WS URL	Hostname (or IP address) and port number for the host on which you installed Nitro Web Services. For example, https:// <i><hostname></hostname></i> :9443
Username	Name of the user. This typically nitro-readonly-user.
Password	The user's password.
Trust Self Signed	Indicates whether Nitro Web Services was set up using self-signed certificates.

Page Actions

These buttons let you perform actions on this page:

- **TEST** Tests the connection to Nitro Web Services.
- **SAVE** Saves the changes.

Related Topics

• Chapter 1 Viewpoint Configuration on page 3

Reporting Configuration Page

Reporting configuration involves establishing a connection with Reporting Web Services (RWS). Once you have configured Reporting, you can use Viewpoint's reporting features to create and display reports, dashboards, and aggregated views. See for more information.

To access this page, click **Configuration** in the menu bar and then click **Reporting Configuration** in the left pane.

This topic provides an example of the Reporting Configuration page and describes its layout and available information.

In this topic:

- Page Example on page 35
- Available Fields on page 35
- Page Actions on page 35

Page Example

The following image is an example of the Reporting Configuration page.

Reporting REST	Services Config	uration				
Reporting Service URL	http://10.2.184.118:8085/reporting-rest					
	TEST	SAVE				
	TEST	SAVE				

Available Fields

The following table describes the fields on the Reporting Configuration page.

Field	Description
Reporting Service URL	Hostname (or IP address), port number, and path for the RWS service. For example, https:// <i><server></server></i> :8080/rws.

Page Actions

These buttons let you perform actions on this page:

- **TEST** Tests the connection to the RWS service.
- **SAVE** Saves the changes.

Related Topics

• Chapter 1 Viewpoint Configuration on page 3

Application Templates Configuration Page

The Application Templates Configuration page lets you deploy and export application templates. Application templates are used to predefine the job requirements available to users when creating jobs.

See <u>Chapter 4 Application Templates on page 89</u> for more information about application templates.

To access this page, click **Configuration** on the menu bar and then click **Application Templates** in the left pane.

In this topic:

- Page Example on page 36
- Page Actions on page 36

Page Example

The following image is an example of the Application Templates Configuration page.

HOME	WORKLOAD	REPORTING	TEMPLAT	ES	NODES	FILE MANAGER	SESSION	s	CONFIGUR	ATION
Basic Configuration			Applicatio	n Templa	tes 🛛		Template Type	All		•
File Manager Configu	ration		Name		Description					
Roles			Docker Application	n	Default Docker A	pplication Template				
			Free Form		Default Free Form Application Template					
Fincipais			Nitro Application		Default Nitro Application Template					
Remote Visualization	Services		Remote Viz Applic	ation	Default Remote V	/iz Application Template				
Nitro Services			Show 10	• entries			-	prev	1 next	→
Reporting Configurati	ion									
Application Template	<u>15</u>									
Licensed Features										

The Application Templates Configuration page displays a list of available application templates. Click at any time to refresh the page display. If you have many application templates, you can apply a filter to view templates of a specific type by selecting a template type from the *Template Type* drop-down.

Page controls are available at the bottom of the application template list to let you customize how many application templates appear at a time in the list. These controls also include options for moving between pages of listed application template.

Page Actions

As shown in the following image, hovering the mouse to the left of a template description displays a menu of operations you can perform on a template.

Application Templ	ates 🖻	Template Type	All	•
Name Docker Application Free Form	Description Deploy this template Export Default Free Form Applica	Template tion Template		

Select *Deploy* to make a template available for editing and *Export* to create a template file that can be used to copy a template to another Viewpoint server. You can use *Deploy* to restore one of the provided templates that has been deleted.

Related Topics

- Chapter 4 Application Templates on page 89
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

Licensed Features Page

Instructions on how to obtain and install the licenses are provided during the Viewpoint install or upgrade process. See <u>Installing Moab Viewpoint</u> or <u>Upgrading Moab Viewpoint (RPM)</u> in the *Moab Installation and Configuration Guide* for detailed instructions.

The Licensed Features page shows all of the licensed Viewpoint and Moab features for your system configuration.

To access this page, click **Configuration** in the menu bar and then click **Licensed Features** in the left pane.

The Licensed Features page has two tab options:

- Viewpoint License This is the default view when you access the Licensed Features page. This tab displays a visual listing of the Viewpoint license file. configuration information.
- **Moab License** This tab displays a visual listing of the Moab license file. This license file is populated with a valid connection to MWS.

This topic provides an example of the **Viewpoint License** tab and the **Moab License** tab and describes the layout and available information in the tab.

In this topic:

- Viewpoint License Tab on page 37
- Moab License Tab on page 38

Viewpoint License Tab

The following image is an example of the **Viewpoint License** tab.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION	
Basic Configurat	on		Viewpoint License	Moab License		
File Manager Co	nfiguration					
Roles			License			
Principals			Viewpoint Host ID: fa163e	746764		PLOAD
Remote Visualiza	ition Services		Viewpoint Licensed	Features		
Nitro Services			Product License		Description	Status
Reporting Config	uration		Admin Functionality	E	nables admin functionality in Viewpoint allowing admins to nanage their Moab systems directly from Viewpoint.	Ø
Application Temp	blates 25		User Functionality	E	Enables user-centric functionality in Viewpoint like managing application templates and jobs.	Ø
			Nitro Support	E	Enables Nitro support in Viewpoint, allowing admins and users to manage Nitro applications directly from Viewpoint.	Ø
			Remote Visualization Supp	ort E t	Enables Remote Visualization in Viewpoint, allowing users o manage their remote sessions directly from the browser	Ø
			Moab Pass-Through Suppo	rt E	Enables support for job submission and cluster monitoring of Moab brokered resource managers	Ø
			Elastic Computing	E	Enables Elastic Computing support so resource administrators can view and manage elastic resources	Ø
			Reporting	E	Enables Reporting support so users can use Reporting Framework	Ø
			More Information			

This tab provides a visual representation of the licensed features for your configuration. A green check mark in a circle indicates that feature is licensed; whereas, a red x in a circle indicates a feature is not licensed.

You can expand the **More Information** section to view when the licensed features will expire.

You can also upload a new license by clicking **Browse** and locating the license file to be uploaded, then clicking **Upload**. However, this is typically done only when you install or upgrade Viewpoint.

Moab License Tab

The following image is an example of the **Moab License** tab.

HOME	WORKLOAD	TEMPLATES	NODES	SESSIONS	CONFIGURATION	
Basic Configura	ation		Viewpoint License	Moab License		
File Manager C	Configuration		Expiration Date	2017-07-15 21:14	:54	
Roles			Licensed Processors	2000000 /ont/mosh/etc/mos	sh lic	
Principals			Moah Licensed Fea	tures	aune	
Remote Visuali	zation Services		Product License	luies	Description	Status
Nitro Services			Accounting		Accounting management for usage tracking and charging	Ø
Reporting Con	figuration		Adaptive HPC		Provisioning of Operating Systems	8
Application Ter	nplates		Advanced Resource Mana	gement	Policies and capabilities that control resources	Ø
<u>Licensed Featu</u>	<u>ires</u>		Elastic Computing		Elastically add to or remove resources from a cluster / dynamically provision the OS	Ø
			Grid		Unify management of multiple clusters	Ø
			Group Sharing		Policy management for groups to use and share the cluster	0
			Passthrough		Monitor and pass-through workloads to external schedulers.	۲
			Power Management		Workload-aware power optimization management	Ø
			Workflow		Automate both end-to-end workload and system processes	0
			More information			

This tab provides a visual representation of the licensed features for your configuration. A green check mark in a circle indicates that feature is licensed; whereas, a red x in a circle indicates a feature is not licensed.

You can click the graph icon next to the Elastic Computing license name

to open a graph of Elastic Computing statistics. See <u>Viewing Elastic Computing</u> <u>Statistics on page 44</u> for more information.

You can expand the **More Information** section to view any additional information available about the licensed features.

Related Topics

- <u>Configuration Page on page 4</u>
- <u>Viewing Elastic Computing Statistics on page 44</u>
- Chapter 1 Viewpoint Configuration on page 3

Additional Configuration

Securing the Connection between Viewpoint and MWS

Adaptive Computing strongly recommends using Viewpoint on a secure channel (SSL). See <u>Configuring Viewpoint to Use SSL on page 41</u>.

Optionally, and depending on your system requirements, you can secure the connection between Viewpoint and MWS.

This topic explains how secure the connection between Viewpoint and MWS.

The steps in this topic must be performed before you set up the connection to MWS.

Secure the Connection between Viewpoint and MWS

Do the following:

- 1. Configure the MWS Server for HTTPS. See Securing Client Connections to MWS in the *Moab Web Services Reference Guide* for more information.
- 2. Import the MWS Server Certificate.

If the MWS server is using a certificate signed by a certificate authority, skip this step.

Import the MWS server certificate by running the following command on the Viewpoint server:

```
[root]# openssl s_client -showcerts -connect <hostname>:<secure_port> < /dev/null
2> /dev/null |
sed -n -e '/-BEGIN CERTIFICATE-/,/-END CERTIFICATE-/p' \
>> $(python -m requests.certs)
```

Where *<hostname>* is the MWS host name and *<secure_port>* is the secured port number defined in the certificate.

- 3. Proceed with instructions to set up the connection to MWS (see <u>Basic</u> <u>Configuration Page on page 6</u>), noting that:
 - you must use the full secure URL for MWS. For example: https://mws.example.com:8443
 - the host name must match the Common Name (CN) of the MWS server certificate.

 the Viewpoint server must be able to resolve the host name using /etc/hosts or DNS.

Related Topics

- Basic Configuration Page on page 6
- <u>Chapter 1 Viewpoint Configuration on page 3</u>

Configuring Viewpoint to Use SSL

Adaptive Computing strongly recommends using Viewpoint on a secure channel (SSL).

This topic explains how to enable SSL for Viewpoint.

The steps in this topic must be performed before you set up the connection to MWS.

Do the following in order:

- <u>Create a Self-Signed Certificate</u>
- Enable SSL for Viewpoint

Create a Self-Signed Certificate

Do the following:

1. Generate a private key.

```
[root]# openssl genrsa -out server.key 1024
```

This will create an unencrypted private key. It is recommended that this private key has only root privileges.

If you want to encrypt this private key (add a passphrase), do the following:

[root]# openssl genrsa -des3 -out server.key 1024

2. Generate the certificate signing request from the private key (what is used to create a self-signed certificate).

[root]# openssl req -new -key server.key -out server.csr

- a. If you encrypted the private key, enter the passphrase when prompted.
- b. Enter the certificate metadata when prompted. For example:

... Country Name (2 letter code) [XX]:US State or Province Name (full name) []:Utah Locality Name (eg, city) [Default City]:Provo Organization Name (eg, company) [Default Company Ltd]:Adaptive Computing Enterprises, Inc. Organizational Unit Name (eg, section) []:Engineering Common Name (eg, your name or your server's hostname) []:test1.adaptivecomputing.com ...

3. Generate the self-signed certificate from the CSR.

```
[root]# openssl x509 -req -in server.csr -signkey server.key -out server.crt
```

You should have both a private key (server.key) and a certificate (server.crt).

Enable SSL for Viewpoint

Do the following:

- 1. Install the Apache SSL Module.
 - Red Hat 6-based or Red Hat 7-based systems

[root]# yum install mod ssl

2. Install the private key and certificate you generated earlier in this topic.

[root]# chmod 400 server.key server.crt
[root]# chown root:root server.key server.crt
[root]# cp -p server.key server.crt /etc/httpd

3. Edit /etc/httpd/conf.d/viewpoint.conf as follows:

```
Listen 443
LoadModule ssl_module modules/mod_ssl.so
<VirtualHost *:443>
SSLEngine On
SSLCertificateKeyFile /etc/httpd/server.key
SSLCertificateFile /etc/httpd/server.crt
----
```

Viewpoint needs its own VirtualHost on its own port. Therefore, if Apache is serving pages or applications besides Viewpoint over SSL, choose a port for Viewpoint besides 443.

- 4. Start or restart Apache.
 - Red Hat 6-based systems

[root]# service httpd restart

• Red Hat 7-based systems

[root]# systemctl restart httpd.service

Related Topics

• Chapter 1 Viewpoint Configuration on page 3

Authenticating Remote Visualization

Beginning with the 9.0.2 release, Viewpoint supports two Remote Visualization methods: password-based and key-based.

To set up the Remote Visualization authentication, do the following:

- 1. Log into Viewpoint as the MWS administrative user.
- 2. Access the Remote Visualization page. (Click **Configuration** in the menu bar and then click **Remote Visualization Services** in the left pane.)
- 3. Enter the hostname (or IP address) and port number for the FastX gateway server in the Gateway Server field. For example, https://*server*:3443.
- 4. If your Remote Visualization configuration was set up using self-signed certificates, confirm the Trust Self Signed check box is selected.
- 5. Enter the FastX admin user you specified when you installed the Remote Visualization Server in the Username field. For example, ace.
- 6. Do one of the following:
 - If your configuration will authenticate using the password-based method, do the following:
 - a. Select Password Based Authentication from the Authentication Method box.
 - b. Enter the FastX admin user's password in the Password field.

The /etc/ssh/sshd_config file on each Session server must be configured to enable password authentication. See Install Remote Visualization in the <u>Moab HPC Suite Installation and</u> <u>Configuration Guide</u> for more information.

 If your configuration will authenticate using the password-based method, do the following:

- a. Select Key Based Authentication from the Authentication Method box.
- b. Click UPLOAD KEY and navigate to the copy of the generated $_{\tt ssh/id_rsa}$ file.
- 7. Click **TEST** to confirm your settings are correct.
- 8. Click **SAVE** to submit your settings.

Related Topics

- Sessions Page on page 261
- <u>Remote Visualization Configuration Page on page 31</u>
- Chapter 1 Viewpoint Configuration on page 3

Viewing Elastic Computing Statistics

If you have an Elastic Computing Viewpoint license, the Moab Licensed Features tab on the Licensed Features includes an icon that lets you view Elastic Computing statistics.

Do the following:

- 1. If you have not already done so, access the Licensed Features page. (Click **Configuration** from the menu, then click **Licensed Features** from the left pane.)
- 2. Click the Moab License tab to show the list of Moab Licensed Features.
- 3. Click the graph icon next to the Elastic Computing license name to

open a graph of Elastic Computing statistics.

Viewpoint displays the Elastic Computing Usage graph.



The Elastic Computing Usage graph displays current and maximum hours of Elastic Computing usage for the previous day, month, quarter, and year. You can click tabs at the top of the graph to switch between global Elastic Computing usage and usage by quality of service level (QoS).

4. Click the name of one of the statistics in the legend below the graph to remove the statistic from the graphical display.



Removing the tallest bar from the graph causes the vertical axis to recalibrate for the remaining bars. This feature can be used to more precisely compare the hourly values of the remaining bars.

5. Hover the mouse over one of the time period bars to display exact values for the statistics displayed for the time period.



6. Hover the mouse over the name of a selected statistic in the legend below the graph to dim the bars displayed for statistics other than the one selected.



7. Click the QoS tab and a QoS level in the drop-down menu to display all hourly Elastic Computing usage or a selected quality of service level.



See Quality of Service (QoS) Facilities in the Moab Administrator Guide for more information about Moab's Quality of Service facility.

Related Topics

• Chapter 1 Viewpoint Configuration on page 3

Chapter 2 Viewpoint Basics

This chapter provides a brief overview of Viewpoint, including the Viewpoint Home page and general navigation.

In this chapter:

- <u>The Viewpoint Home Page on page 51</u>
- Menu Bar on page 54
- Navigating Viewpoint on page 54
- Logging In/Signing Out on page 55
- Accessing Online Help on page 56

The Viewpoint Home Page

The Home page displays an overview of your system, including system utilization, a workload summary, and resource allocation. Once the Viewpoint portal has been configured, the Home page is the default view when logging in. You can also click **Home** from the menu to view the Home page.

This topic provides an example of the Home page and describes its layout and available information.

In this topic:

- Page Example on page 51
- Widgets on page 52

Page Example

The following image is an example of the Home page.

Moal	• VIEV	VPOINT								Welcome, hgranger	Sign Out 🌣 🥹
HOME	1	WORKLOAD	REPOR	TING	TEMPLATES		NODES	5 FILE	MANAGER	SESSIONS	CONFIGURATION
Search								- Q	Dedic	ated System R	esources
Work	load(Ø		Refres	h Interval 15s	•		CREATE JOB	CPU		MEMORY
Job ID	Job Name	Submitter ID	<u>Start Date</u>	Submit Date	Queue Status	<u>Cores</u>	Nodes	Wall Clock			
<u>ob.303</u>	None	lbeverly	N/A	2017-01-13 09:57:47	ELIGIBLE	8	0	00:00:30:00	50		
ob.303	None	cjackson	N/A	2017-01-13 09:57:15	ELIGIBLE	4	0	00:02:00:00			-~~-
ob.303	None	jsmith	N/A	2017-01-13 09:57:15	ELIGIBLE	8	0	00:00:30:00	0		
ob.303	None	tamaker	N/A	2017-01-13 09:50:30	ELIGIBLE	8	0	00:01:00:00	24h		Current
ob.303	None	jfoote	N/A	2017-01-13 09:48:56	ELIGIBLE	8	0	00:00:15:00	Nodo	Summary	
ob.302	None	eval6	N/A	2017-01-13 09:48:53	ELIGIBLE	2	0	00:00:30:00		ODES	
ob.302	None	armitage	N/A	2017-01-13 09:46:17	ELIGIBLE	8	0	00:00:05:00	2110	ODE3	
ob.302	None	awok	N/A	2017-01-13 09:45:45	ELIGIBLE	8	0	00:01:00:00			BUSY
ob.302	None	jfoote	N/A	2017-01-13 09:45:14	ELIGIBLE	4	0	00:05:33:20			DLE
<u>ob.302</u>	None	sthompsn	2017-01-13 09:57:15	2017-01-13 09:44:42	ACTIVE	4	2	00:00:05:00		20	
Show	10	entries		← prev	1 2 3 4	5 (5 7	next →		View All Node	es 🕨
									Work	load Summary	
									OL 09	DBS	

Widgets

The Home page comes configured with widgets that display different aspects of your system.

Specifically:

- Workload Widget
- Dedicated System Resources Widget
- <u>Node Summary Widget</u>
- Workload Summary Widget

Workload Widget

The Workload widget displays workload job information for your system. This workload display directly corresponds to the information provided from the Workload page. This widget includes a search bar to let you find specific job ID.

Using this widget lets you manage the workload and view the results in the Workload Summary and Node Summary widgets without having to leave the Home page.

Dedicated System Resources Widget

The Dedicated System Resources widget provides a graphical ratio of resources dedicated to jobs compared to total resources. The graphical result is displayed based activity within the last 24 hours.

This widget uses these criteria:

- **CPU** The percentage of processors dedicated to running jobs over the total processors in the cluster. For example if your cluster has 5,000 processors and 4,500 of those processors are dedicated to jobs, your CPU utilization is 90%.
- **Memory** The percentage of memory dedicated to running jobs over the total amount of memory in the cluster. For example, if your cluster has 1,000 GB of memory and 850 GB of memory is dedicated to jobs, then your memory utilization is 85%.

You can hover the mouse over the graphical display to view additional information.

The user must be assigned to a role with Systems Resources Widget permission selected to view information for this widget.

Node Summary Widget

The Node Summary widget provides a graphical overview of the total nodes within your Viewpoint configuration and their status.

Click on the status line to open the Nodes page to display only the nodes in that status. Using the Home page example provided earlier, click anywhere on the orange line to view the 45 nodes that are busy.

Click **View All Nodes** to open the Nodes page in default view (without specified selection criteria).

The user must be assigned to a role with Node Summary Widget permission selected to view information for this widget.

Workload Summary Widget

The Workload Summary widget provides a graphical overview of the total jobs within your Viewpoint configuration and their status.

Click on the status line to open the Workload page to display only the jobs in that status.

Click **View All Workload** to open the Workload page (without a status filter).

The user must be assigned to a role with Workload Summary Widget permission selected to view information for this widget.

Related Topics

• Chapter 2 Viewpoint Basics on page 51

Menu Bar

The Menu bar appears just above the selected page and displays all of the pages available to the signed in user.

Select a menu item to open directly to that page.

Related Topics

- The Viewpoint Home Page on page 51
- <u>1.1 Workload Page</u>
- <u>Application Templates Page on page 89</u>
- Nodes Page on page 241
- File Manager Page on page 253
- <u>Configuration Page on page 4</u>
- <u>Chapter 2 Viewpoint Basics on page 51</u>

Navigating Viewpoint

The menu bar is fixed at the top of every page.

Moab	/IEWPOINT	Welcome, hgranger	Sign Out 🌣 😧				
HOME	WORKLOAD	REPORTING	SESSIONS	CONFIGURATION			

At any time you can select a menu item to open directly to that page. You can also use the Homepage widgets to navigate to certain pages. See <u>The</u> <u>Viewpoint Home Page</u> for more information.

If the logged-in user does not have permissions to access a particular page, the page link will not appear in the menu. If a user tries to access a page (by entering a URL) that he/she does not have permissions to see, Viewpoint disallows access.

Related Topics

- Menu Bar on page 54
- Chapter 2 Viewpoint Basics on page 51

Logging In/Signing Out

You must log in to Viewpoint from a web browser. For security purposes, it is important to log out (sign out) of Viewpoint after each use.

This topic provides information on how to successfully log in to and sign out of the Viewpoint portal. This topic assumes that the system administrator, or other authorized user, has set up the Viewpoint portal with user roles and permissions as described in <u>Chapter 1 Viewpoint Configuration on page 3</u>.

The Menu options available to a user will vary, depending on the user's credentials.

Log In to Viewpoint

Do the following:

- 1. In a web browser, navigate to the Viewpoint Login page (http://<viewpoint_ host>:8081). Where <viewpoint_host> is the IP address or name of the Viewpoint Host (actual machine on which Viewpoint was installed).
- 2. Enter your Username and Password into the respective fields.
- 3. Click Login.

You will be redirected to the Viewpoint homepage. See <u>The Viewpoint Home</u> Page on page 51.

Sign Out of Viewpoint

Do the following:

1. Locate the Sign Out link in the top right corner of the page.



2. Click Sign Out.

You will be redirected to the login page.

Related Topics

- Menu Bar on page 54
- Chapter 2 Viewpoint Basics on page 51

Accessing Online Help

You can access the Viewpoint online help (documentation) directly from the Viewpoint portal.

Click next to where you sign out to access the Viewpoint online help.

Documentation for the full Moab HPC Suite, including Viewpoint, is available at Adaptive Computing Documentation Index.

Related Topics

- Menu Bar on page 54
- Chapter 2 Viewpoint Basics on page 51

Chapter 3 Viewpoint Workload Overview

The Viewpoint Workload page provides information relating to job metrics. Specifically the Workload page provides access to:

- A detailed list of the jobs in the workload. Using this page you can view information about the job (for example, to see if the job is running correctly), change a job's status, or create a new job (using an application template).
- The Job Details page, which provides additional details about a job.

In this chapter:

- Workload Page on page 57
- Job Details Page on page 60
- Job Details-Functional Areas on page 66
- Job Details-Additional Areas on page 73
- Job Arrays on page 74
- <u>Managing the Workload on page 77</u>
- Creating a Job on page 77
- Creating or Editing a Job Submission Script on page 79
- Viewing Job Details on page 86

Workload Page

The Workload page offers a place to determine the status of jobs in your workload. You can also change a job's status or create a new job (using an application template).

To access this page, click **WORKLOAD** from the menu.

This topic provides an example of the Workload page and describes its layout and available information.

In this topic:

- Page Example on page 57
- Selection Criteria Area on page 58
- Workload View Details on page 59

Page Example

The following image is an example of the Workload page.

Workload 🖻				Refresh	Interval	15s	•	Current Search: 1010 results returned
Job ID 🔶 Job Name 🌲	Submitter ID	Start Date	<u>Submit Date</u>	Queue Status	∉ <u>Cores</u> ∉	<u>Nodes</u>	Uvall Clock	- Select -
✓ Moab.2 ModelArray	hgranger	N/A	2016-07-27 13:24:22	COMPLETE	D 1	0	00:01:00:00	Narrow Search
Job Array	A	ll Subjobs 10	Idle 0 Running (Blocked 0	Hold 0 Remo	ved 0	Completed 10	Filters
Moab.2[1]	Moab.2[4]		Moab.2[7]	1	Moab.2[10]			- Select Queue Status -
Moab.2[2]	Moab.2[5]		Moab.2[8]					- Select Job Type -
Moab.2[3]	Moab.2[6]	1	Moab.2[9]					
<u>*</u>	<u>1</u> <u>≥</u> ⇒							- Select -
nativerm.1008 None	vcrabbe	N/A	2016-07-27 12:31:05	BLOCKED	32	0	00:01:00:00	RESET FILTER
ativerm.1007 None	strelawney	2016-07-27 12:30:34	2016-07-27 12:30:34	ACTIVE	2	1	00:22:13:20	
ativerm.1006 None	vcrabbe	2016-07-27 12:30:03	2016-07-27 12:28:30	ACTIVE	8	5	00:05:33:20	
nativerm.1005 None	cdiggory	2016-07-27 12:27:59	2016-07-27 12:26:26	COMPLETE	d 4	2	00:02:00:00	
Show 5 • entrie	s	-	prev 1	2 3 4	5 6	7	next →	

Selection Criteria Area

The right side of this page provides selection criteria you can use to limit what is displayed in the workload view.

You can choose to display:

- Specific jobs based on the job id or the user who submitted the job (submitter ID). Select the value from the Current Search drop-down, in the Narrow Search box, enter the specific information, and then click
- Jobs matching a specific status (state). Select the status from the Select Job State drop-down and then click **Filter**.
- Only job arrays or only regular jobs. The job arrays option is only applicable for arrays reported directly from Moab. Arrays reported using Torque will only display as a single (combined) job. Select the job type from the Select Job Type drop-down and then click **Filter**.
- Jobs within a given start date range or within a wallclock range. Selecting Start Date or Wall Clock will provide additional fields to specify the range. Specify the desired range and then click **Filter**.

You can utilize multiple selection criteria options; however, only the jobs that match all of the defined options will be shown in the workload view.

Click **Reset** at any time to remove all defined selection criteria options (restore the page defaults).

Workload View Details

The following information explains the layout and additional information available in the workload view.

- Display Refresh You can refresh the information displayed in the workload view (including specified search and filter criteria) to reflect the latest information about the jobs. At the top of the workload view, click
- Job Creation The CREATE JOB button at the top of the workload view lets you create a new job based on available application templates. See <u>Creating a Job on page 77</u> for detailed instructions.
- Columns The workload view displays the data in a column format. Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

The following table describes the different columns and their contents. You can hover the mouse over a column's contents to view additional information.

Column Heading	Description
Job ID	 Unique identifier given to a job by Moab (or the resource manager). In this column you can also: Use the <i>initial</i> icon to change the status of a non-completed job (as displayed in the Job Status column). See <u>Changing a Job's State</u>. Display additional information about a job. Click a job ID to open the Job Details page. See <u>Viewing Job Details on page 86</u>. See job array information. For a Moab job array, you will see the job array ID and then you can expand it to see the jobs within the job array. See <u>Job Arrays on page 74</u>. Job arrays sent through Torque will be treated as a single job.
Job Name	Name of the job provided by the user; also called the friendly name.
Submitter ID	Name of the user that submitted the job.
Start Date	Date and time when the job is scheduled to start or has started.
Submit Date	Date and time that the job was submitted.

Column Heading	Description
Queue Status	Current state of the job (for example, ELIGIBLE, COMPLETE, ACTIVE, IDLE).
Cores	Number of allocated cores.
Nodes	Number of allocated nodes. A zero indicates the job has not yet run or executed.
Wall Clock	Amount of time requested for the job. This represents the maximum amount of time the job is expected to run and is specified when the job is submitted. It does <i>not</i> represent the amount of time for which the job actually ran (if the job is in COMPLETED status). Wall clock time uses the following format: Days:Hours:Minutes:Seconds. For example, 01:02:03:04 means the owner of the job requested the job run for one day, two hours, three minutes, and four seconds. Jobs that exceed their wall clock limits are subject to the corrective action specified in the Moab WCVIOLATIONACTION parameter.

• **Page Controls** – Page controls are available at the bottom of the workload view to let you customize how many jobs appear per page. The page controls also include options for selecting which page to display.

Related Topics

- Creating a Job on page 77
- <u>1.1 Changing a Job's State</u>
- Viewing Job Details on page 86
- Job Arrays on page 74
- Job Details Page on page 60
- Chapter 3 Viewpoint Workload Overview on page 57

Job Details Page

The Job Details page shows additional information about a job and lets you make certain modifications to a given job. To access this page, from the Workload view, click on the Job ID link for the job.

This topic provides an example of the Job Details page and describes its overall layout, with a detailed description of the job status information at the top of the page.

In this topic:

- Page Example on page 61
- Page Actions and Navigation on page 62
- Job Actions and Basic Information on page 63
- Scheduler Analysis on page 64

See <u>Job Details–Functional Areas</u> and <u>Job Details–Additional Areas</u> for information about other areas of the Job Details page.

Page Example

The following image is an example of the Job Details page.

N/A Status: ACTIVE Job Status: RUNNING	Job Details Job Id : nativerm.2298 Submission Script: N/A Reservation Name: N/A Template: N/A		Return to earlier search Cancel
Credentials User cdiggory Group Class batch3 Quality	nobody Account hufflepuff of Service medium *	CPU Statistics	1220 1200 1210 La Ulanet CPUs
Time Frame Start Time Duration 2016-07-21 12-46:15 00:09:33:2	Completion Time	A. 2	ctual Duration
Data Management Execution Path Output Path Error Path	/home/cdiggory/ None	Other Information Partition Access Li Start Cou	ist nativerm nt 1
Resource Requirement Summar	Ŷ		
Total Cores Requested	8	Total Nodes Requested	8
Total Memory Requested	N/A	Allocated Node List	rode-022 node-020 rode-019 rode-012 rode-011
Total Disk	N/A	Allocated Node Count	5
Features	N/A	Allocated Partition	nativerm
readies		Operating System	N/A
		Architecture	N/A
		Total Generic Resources	N/A
Requirement Details			
			Go Back

Page Actions and Navigation

These buttons let you perform actions on this page:

- **Go Back** Returns to the Workload page; if you have authorization to make changes, this will discard any unsaved changes.
- Done Submits any job changes to Moab Workload Manager and returns to the Workload page.

• **Apply** – Submits any job changes to Moab Workload Manager and stays on the Job Details page.

At the right of the page there are two floating buttons that can be pressed to navigate to the top and the bottom of the page.

Click _____ to navigate to the top of the page.

Click 🔄 to navigate to the bottom of the page.

The information contained in, and the actions you can perform using, the Job Details page will vary based on the job's status, the user's role permissions and/or the fields available from the application template.

Job Actions and Basic Information

At the top of the Job Details page you will find basic information and actions pertaining to the job.

The following image is an example of the Job Actions and Basic Information area.



Job Actions

At the upper right of the page, you may find several links and buttons to perform actions. You will only see links and buttons for actions that you are authorized to perform. These are separate from the page-related actions identified later in this topic.

- The "Return to earlier search" link takes you to the Workload page with the search and filter criteria you specified.
- The "Cancel" button appears for a running or idle job, and lets you cancel the job.
- The "Hold" button appears for an active job, and lets you place the job in idle status.
- The "Release" button appears for a job for which a hold has been applied, and lets you release the hold on the job and allow it to continue running.

• The "More Information" button appears for blocked jobs and, based on the user's permissions, lets you view the Schedule Analysis window. See <u>Scheduler Analysis on page 64</u>.

Job Basic Information

At the upper left and right of the page, you will find several fields displaying basic information.

- Job Id ID given to the job by Moab or the resource manager.
- **Submission Script** Name of the script used to generate the job. For jobs sent directly from Moab or the resource manager, this will be "N/A".
- **Reservation Name** Name of the reservation, if applicable, associated with the job.
- **Template** Name of the application template used to create the job information. For jobs sent directly from Moab or the resource manager, this will be "N/A".

Scheduler Analysis

The Scheduler Analysis requires the "Job Details - Scheduling Analysis" permission. See <u>Role Permissions on page 14</u> for more information about the available permissions you can set.

When Scheduler Analysis is enabled, the "More Information" button appears under the Status information when the job is blocked. Click this button to view the Schedule Analysis pop-up window.

This window provides information useful in debugging why Moab is not running the job.

The following image is an example of the Scheduler Analysis window.

Showing 0 to 0 of 0 entrie	s Search:	
Block Reason	Message	- 0
	No block reasons found	
❤ Warning Messages	i	
Showing 1 to 1 of 1 entrie	s Search:	
Message		
job violates constraints fo	r partition torque (partition torque not in job partition mask)	
♥Node Analysis		
	Search	
Showing 1 to 10 of 50 ent	ries Search:	
Showing 1 to 10 of 50 ent Node Name	ries Search: Message	¢
Showing 1 to 10 of 50 ent Node Name	node-001 available: 1 tasks supported	¢
Showing 1 to 10 of 50 ent Node Name node-001 node-002	Message node-001 available: 1 tasks supported node-002 rejected: State (Busy)	¢
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003	Message node-001 available: 1 tasks supported node-002 rejected: State (Busy) node-003 available: 2 tasks supported	¢
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003 node-004	Message node-001 available: 1 tasks supported node-002 rejected: State (Busy) node-003 available: 2 tasks supported node-004 rejected: State (Busy)	\$
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003 node-004 node-005	Message Inode-001 available: 1 tasks supported Inode-002 rejected: State (Busy) Inode-003 available: 2 tasks supported Inode-004 rejected: State (Busy) Inode-005 rejected: State (Busy)	\$
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003 node-004 node-005 node-006	Message Inode-001 available: 1 tasks supported Inode-002 rejected: State (Busy) Inode-003 available: 2 tasks supported Inode-004 rejected: State (Busy) Inode-005 rejected: State (Busy) Inode-006 rejected: State (Busy)	\$
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003 node-004 node-005 node-006 node-007	Message Search: Message node-001 available: 1 tasks supported node-002 rejected: State (Busy) node-003 available: 2 tasks supported node-004 rejected: State (Busy) node-005 rejected: State (Busy) node-005 rejected: State (Busy) node-005 rejected: State (Busy) node-006 rejected: State (Busy) node-006 rejected: State (Busy)	\$
Showing 1 to 10 of 50 ent Node Name node-001 node-002 node-003 node-004 node-005 node-005 node-007 node-008	Message Search: Message node-001 available: 1 tasks supported node-002 rejected: State (Busy) node-003 available: 2 tasks supported node-004 rejected: State (Busy) node-005 rejected: State (Busy) node-005 rejected: State (Busy) node-006 rejected: State (Busy) node-006 rejected: State (Busy) node-006 rejected: State (Busy) node-007 available: 2 tasks supported node-006 rejected: State (Busy)	¢
Node Name Ande Name node-001 node-002 node-003 node-003 node-004 node-005 node-005 node-006 node-007 node-008 node-009 Node-009	Message Inode-001 available: 1 tasks supported Inode-002 rejected: State (Busy) Inode-003 available: 2 tasks supported Inode-004 rejected: State (Busy) Inode-005 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-007 available: 2 tasks supported Inode-009 rejected: State (Busy)	¢
Node Name Image: Additional system node-001 node-002 node-003 node-003 node-004 node-005 node-005 node-006 node-007 node-008 node-009 node-010	Message Inode-001 available: 1 tasks supported Inode-002 rejected: State (Busy) Inode-003 available: 2 tasks supported Inode-004 rejected: State (Busy) Inode-005 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-006 rejected: State (Busy) Inode-007 available: 2 tasks supported Inode-008 rejected: State (Busy) Inode-009 rejected: State (Busy) Inode-009 rejected: State (Busy) Inode-009 rejected: State (Busy)	¢
Node Name Image: Node Name node-001 node-002 node-002 node-003 node-004 node-005 node-005 node-006 node-007 node-008 node-009 node-010 Show_10_*_entries entries	Message Search: Message node-001 available: 1 tasks supported node-002 rejected: State (Busy) node-002 rejected: State (Busy) node-003 available: 2 tasks supported node-003 node-004 rejected: State (Busy) node-003 node-005 rejected: State (Busy) node-003 node-006 rejected: State (Busy) node-003 node-007 available: 2 tasks supported node-003 node-008 rejected: State (Busy) node-003 node-009 rejected: State (Busy) node-003 node-010 rejected: State (Busy) node-003 node-010 rejected: State (Busy) node-003 node-010 rejected: State (Busy) node-010 node-010 rejected: S	¢ Next

Related Topics

- 1.1 Workload Page
- Viewing Job Details on page 86
- Job Details-Functional Areas on page 66
- Job Details-Additional Areas on page 73
- Chapter 3 Viewpoint Workload Overview on page 57

Job Details–Functional Areas

The Job Details page shows additional information about a job and lets you make certain modifications to a given job. To access this page, from the Workload view, click on the Job ID link for the job.

This topic describes functional areas, including field descriptions, available on the Job Details page. To expand and display a functional area, click > to the left of the title of the desired area.

The information contained in, and the actions you can perform using, the Job Details page will vary based on the job's status, the user's role permissions and/or the fields available from the application template.

In this topic:

- Priority on page 66
- Job Messages on page 68
- <u>Credentials and CPU Statistics on page 68</u>
- Time Frame on page 69
- Data Management and Other Information on page 70
- Resource Requirement Summary on page 71
- <u>Requirement Details on page 72</u>

Priority

The Priority area requires the "Job Details - Priority Analysis" permission. See <u>Role Permissions on page 14</u> for more information about the available permissions you can set.

The Priority area lists the priority factors applied to the job for scheduling purposes. Expand the area to view the prioritization factors.
Expand the Priority area to view the additional information. Click c to refresh the priority information.

~		Prio	ori	ity																																							С
		o <mark>b P</mark> i																						Sta		iority									Jot		rt Co						
						0						•					(C					^						27											0			
Cre	den	ntial			Res	ouro	e						Tar	get	Ser	vice						Att	ribut	e			Fair	shar	e										Usa	ge			
account	sob	user		group	node	procequivalent	procecond	dews	memory	disk	proc	walltime	queuetime	xfactor	startcount	policyviolation	userprior	queuetime	deadline	bypass	xfactor	gres	attribute	jobname	state	jobid	psperuser	account	guser	sob	jobsperuser	gaccount	ggroup	user	jobsrunningperuser	group	procsperuser	userwcacc	executiontime	consumed	percentconsumed	remaining	= PRIORITY
		1							0					D				26						0								0)							(D		
0	1	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27

The following image is an example of the Priority area.

The Priority area is organized as follows:

The top area shows the cumulative value for these prioritization areas:

- **User Job Priority** User defined priority factors. See Job Priority Factors in the *Moab Workload Manager Reference Guide* for more information on the available factors.
 - This feature requires the User Priority field to be enabled in the application template and the Moab ENABLENEGJOBPRIORITY server parameter must be set to "TRUE". See <u>Advanced Settings on page</u> <u>106</u> for more information on the User Priority field.
- **System Priority** Factors that are used to override Moab Workload Manager's start priority to allow jobs to start sooner than they would ordinarily. See mjobctl in the *Moab Workload Manager Reference Guide* for more information on the available factors.
- Start Priority Moab's defined start priority.
- Job Start Count Number of times Moab has requeued the job after a job failure or preemption.

The second area provides details about how Moab calculated the start priority. The different start priority groups are listed and are also broken down into each factor within the group. The cumulative weight for the group and the how that breaks down into the different factors are provided.

Job Messages

The Job Message area lists any messages reported by Moab. These are the same messages you can view in Moab using checkjob -v -v.

Expand the Job Messages area to view the reported messages, if any. Click

to refresh the job message information.

The following image is an example of the Job Messages area.

✤ Job Messages						C
Issued on	Job Message					¢
2016-07-27 13:10:11	hold(s) 'User' set by user root					
Show 10 • entries		-	prev	1	next	→

Credentials and CPU Statistics

The following image is an example of the Credentials and CPU Statistics areas.

Credentials		CPU Statistics
User Imalfoy	Group nobody Account slytherin	<u>17.00</u>
Class batch4	Quality of Service Iow *	12.76 8.50 4.25 0.0 0.0 1.25 0.0 0.0 1.25 0.0 1.25 0.0 1.25 0.0 1.25 0.0 1.25 0.0 1.25 0.0 1.25 0.0 1.25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
		Dedicated CPUs Utilized CPUs

Credentials Area

The Credentials area displays information about the user who created/submitted the job.

The following table describes the fields in the Credentials area.

Field	Description
User	The user that submitted a job.
Group	Displays the group credential, which represents an aggregation of users. User-to-group mappings are often specified by the operating system or resource manager and typically map to a user's UNIX group ID. However, user-to-group mappings may also be provided by a security and identity management service, or you can specify such directly within Moab.

Field	Description
Account	Displays the account credential. This credential is generally associated with a group of users along the lines of a particular project for accounting and billing purposes.
Class	Displays the job class. The concept of the class credential is derived from the resource manager class or queue object. Classes differ from other credentials in that they more directly impact job attributes. In standard HPC usage, a user submits a job to a class and this class imposes a number of factors on the job. The attributes of a class may be specified within the resource manager or directly within Moab.
Quality of Ser- vice	Quality of service status applied to the job (for example, low, medium, or high).

CPU Statistics Area

The CPU Statics area contains a graph depicting the CPU statistics of the job. Click it open a pop-window to specify the range and refresh intervals for the displayed statistics. You can also manually update the display.

Time Frame

The Time Frame area provides information on the job's start and completion times as well as duration information.

The following image is an example of the Time Frame area.

Time Frame							
Start Time		Completion Time	Actual Duration				
2015-10-17 13:00:16	00:22:13:20	None	00:02:46:20				

The following table describes the fields in the Time Frame area.

Field	Description
Start Time	The date and time that the job started.
Duration	The amount of time requested for the job in seconds. This represents the maximum amount of time the job is expected to run and is specified when the job is submitted. This does not represent the amount of time the job actually ran if the job is completed. Jobs that exceed their wallclock limits are subject to the corrective action specified in the Moab WCVIOLATIONACTION parameter.

Field	Description
Completion Time	The date and time that the job completed; "None" if the job is running or idle.
Actual Dur- ation	The amount of time the job has been running (or ran if the job is completed).

Data Management and Other Information

The following image is an example of the Data Management and Other Information areas.

Data Management		Other Information	
Execution Path	/home/cchang	Partition Access List	None
Output Path	None	Start Count	1
Error Path	None		

Data Management Area

The Data Management area displays the file paths defined for the job. Click to open the File Manager page to change folder paths.

The following table describes the fields in the Data Management area.

Field	Description
Execution Path	Directory path where the job was executed. This is typically the user's home directory.
Output Path	Directory path where the standard output file is stored. This is typically the user's home directory.
Error Path	Directory path where the error file is stored. This is typically the user's home directory.

Other Information Area

The Other Information area displays additional Moab-related information job. The following table describes the fields in the Other Information area.

Field	Description
Partition Access List	List of available partitions on which the job can run.
Start Count	Number of times Moab requeued the job after a job failure or preemption.

Resource Requirement Summary

The Resource Requirement Summary area provides information on the resources requested/required for the job.

The following image is an example of the Resource Requirement Summary area.

Resource Requirement Summar	У		
Total Cores Requested	4	Total Nodes Requested	2
Total Memory Requested	N/A	Allocated Node List	node-019 node-018
Total Swap Requested	N/A	Allocated Node Count	2
Total Disk	N/A	Allocated Partition	nativerm
Features	N/A	Operating System	N/A
		Architecture	N/A
		Total Generic Resources	N/A

The following table describes the fields in the Resource Requirement Summary area.

Field	Description
Total Cores Requested	Maximum dedicated processors allocated for the node.
Total Memory Requested	Maximum memory made available for the job.
Total Swap Requested	Amount of swap memory made available for the job.
Total Disk	Amount of disk space available for the job.
Features	Maximum number of supported node features.

Chapter 3 Viewpoint Workload Overview

Field	Description
Total Nodes Requested	Number nodes requested at job submission.
Allocated Node List	List of nodes allocated for the job. The job coordinator node is displayed with a dark blue back- ground. Job worker nodes are displayed on a light blue background.
Allocated Node Count	Number of nodes actually allocated for the job.
Allocated Par- tition	Partition allocated for the job.
Operating Sys- tem	Operating system on which the node can run.
Architecture	Node's processor architecture.
Total Generic Resources	Number of generic resources available.

Requirement Details

The Requirement Details area provides task-specific details about the job.

ask 1		
Processors	2	Generic Resources N/A
Memory	N/A	
Swap	N/A	
Disk	N/A	
Features:	N/A	

If the job has more than one task definition, this area will list each task separately. In addition, if generic resources were defined, the generic resources field will contain a table listing the name of the resource and its used count.

Related Topics

- <u>1.1 Workload Page</u>
- Viewing Job Details on page 86

- Job Details Page on page 60
- Job Details-Additional Areas on page 73
- <u>Chapter 3 Viewpoint Workload Overview on page 57</u>

Job Details–Additional Areas

The Job Details page shows additional information about a job and lets you make certain modifications to a given job. To access this page, from the Workload view, click on the Job ID link for the job.

This topic describes functional areas on the Job Details page that apply only to certain types of jobs.

In this topic:

- Nitro Details on page 73
- Job Array on page 74

Nitro Details

The Nitro Details area is only available if you have integrated with Nitro and enabled Nitro Web Services.

The Nitro Details area lists information pertaining to Nitro jobs.

The following image is an example of the Nitro Details area.

ob Dela						Return to ear	lier search	Cancel
Job Id : Moab.15 (Nitro_job) Status: ACT					TIVE			
ubmission Scr	ipt: N/A						Job Status: R	JNNING
eservation Na	me: N/A							
emplate: Nitro	o Application (v.1 C	URRENT)						
Job Mess	ages							
 Nitro Stat 	tistics							\$
	Progress							
		30%						
	State Running			Task File /	home/hgranger/nitro	-medium.task		•
Coordin	ator Host <u>toi-901</u>			Task Log /	home/hgranger/nitro,	/Moab.15/nitro_Moab.1	5.tasklog.txt	
				Job Log /	home/hgranger/nitro/	/Moab.15/nitro_Moab.1	5.joblog.txt	•
Tasks				Worker Sum	imary		, ,	
Pending	In Progress	Completed	Tasks / Sec	Workers	Task Threads	Avg Asgmt Duration	Avg Task Durati	on
1,250	500	62,750 -	575.69	N/A	2	0.823	0.002	
			Total: 208,5	500				

Job Array

The Job Array area is present when the job is the parent job in a job array.

The Job Array area lists the child jobs within the job array. You can click on any of the child jobs to view job details for that child job.

The following image is an example of the Job Array area.

Job Array			-						
ubjobs			All Subjobs 5	Idle 0 Run	nning 4	Blocked 0	Hold 0	Removed 1	Completed
Moab.10[0] Moab.10[1]		Moab.10[2] Moab.10[3]		Mo	oab.10[4]			
(incubito[1]		1100010[0]							
	\leftarrow « 1 » \rightarrow								

You can click on **All Subjobs**, **Idle**, **Running**, **Blocked**, **Hold**, **Removed**, and **Completed** to view only jobs in each category.

See <u>Job Arrays on page 74</u> for more information about job arrays.

Related Topics

- 1.1 Workload Page
- Viewing Job Details on page 86
- Job Details Page on page 60
- Job Details-Functional Areas on page 66
- Chapter 3 Viewpoint Workload Overview on page 57

Job Arrays

Viewpoint supports Moab job arrays and displays information on the child jobs and the parent job in the job array.

Job arrays sent from Torque are treated as a single job (parent job).

This topic provides information specific to Moab job arrays in Viewpoint.

In this topic:

- Viewing Job Arrays on page 75
- Viewing Job Array Details on page 75
- Creating Job Arrays on page 76

Viewing Job Arrays

Job array information is viewable from the Workload page. However, with the job array, instead of the Job ID, the job array ID is listed in the Job ID column and the information in the rest of the columns is the parent job information.

Expand the job ID to see a listing of the child jobs in the job array.

The following image shows an example of the expanded job array.

Job ID	Job Name	Submitter ID	<u>Start Date</u>	Submit Date	Job Status	<u>Cores</u>	<u>Nodes</u>	Wall Clock
✓ Moab.10	MyOtherArray	hgranger	None	2015-09-21 23:18:11	IDLE	1	0	99:23:59:59
Job Array			All Subjobs 5	Idle 0 Running 4	Blocked 0 Hol	ld 0 <u>Remo</u>	oved 1	Completed 0
<u>Moab.10[0]</u>		Moal	b.10[2]		Moab.10[4]			
<u>Moab.10[1]</u>		Moal	b.10[3]					
	<u>*</u>	<u>1</u> ≥ →						

Viewing Job Array Details

Job detail information for a parent or child job in the job array is viewable using the Job Details page.

- For the parent job, select the job array ID in the Job ID column.
- For a child job, select the link for the child job from the expanded job array.

Once you have selected the job, the Job Details page displays. This page is similar to the Job Details page for non-job arrays, with these differences:

- Parent job:
 - The Job Array area is present. Expand this area to view the child jobs for this job array.

✤ Job Array		
Subjobs		All Subjobs 5 Idle 0 Running 4 Blocked 0 Hold 0 Removed 1 Complete
Moab.10[0] Moab.10[1]	Moab.10[2] Moab.10[3]	Moab.10[4]
← « 1	» →	

• You can make changes to, hold, or cancel the parent job.

If you cancel a parent job, all child jobs will be canceled. However, if you hold the parent job, all the child jobs continue as normal.

- Child job:
 - The parent job ID is listed under the Job Id field. Click the parent job ID to return to the parent job.
 - The Job Array area is not present, as this is a child job.
 - You can make changes to, hold, or cancel the child job.

Creating Job Arrays

Viewpoint also lets you create job arrays.

The user must have the Create Job permission applied. The user must also have access to an application template that has the "Job Arrays" label enabled and visible and/or editable and which includes a script with the "Moab Array Env Variables". See <u>Role Permissions on page 14</u> and <u>Application Template Details on page 97</u>.

You use the Create Job page to also create a job array; however you must choose an application template that enables creation of a job array.

When the Create Job page displays, you will see the job array-specification fields in the Basic Job Settings area. For example:



The "From" number is the first number you want appended to the job for the child job. The "To" number is the maximum number of child job. For example, if you specified the range as From 0 To 3. The job array will have four child jobs: jobID[0], jobID[1], jobID[2], and jobID[3].

Related Topics

- 1.1 Workload Page
- <u>Chapter 3 Viewpoint Workload Overview on page 57</u>

Managing the Workload

Viewpoint lets you manage the state of non-completed jobs directly from the Workload view. For example, if a job is idle, you can place it on hold or cancel it.

Do the following:

- 1. If you have not already done so, display the Workload view. (Click **WORKLOAD** in the menu bar; depending on your user credentials you may also access the Workload view from the Home page.)
- 2. In the workload view, hover your mouse over the Job ID for a noncompleted job and click the second click.

Depending on the current state of the job, the available options to change the job state appear. For example, if the job state is IDLE, the Hold and Cancel options are displayed.

3. Select the new state for the job.

Once the state change as been passed to Moab, a message appears indicating it has been changed and the new state appears in Queue Status column.

Related Topics

- Workload Page on page 57
- <u>Chapter 3 Viewpoint Workload Overview on page 57</u>

Creating a Job

Viewpoint lets you create a job directly from the Workload page.

You must have been granted the "Create Job Page" Viewpoint permission to create a job.

Do the following:

- 1. If you have not already done so, access the Workload page. (Click **WORKLOAD** in the menu bar.)
- 2. Click Create Job.

The Select Application Template pop-up window appears, showing a list of templates you can use to create a job.

Select Application Tem	plate		
Type	•	Filter All	* Q
P Docker Application	🞦 Free Form		✓ Nitro Application
2016/8/19 moab-admin	2016/8/19 moab-admin		2016/8/19 moab-admin
▶ Remote Viz Applicat			
2016/8/19 moab-admin			
Show 10 T			← « 1 » →
			Close

You can toggle between a grid view and list view by clicking and

respectively.

- 3. If desired, filter the application template results. For example,
 - Use the Type drop-down to limit by application template type.
 - Use the Filter drop-down to limit by its association to you:
 - **Shared With Me** Created by another but shared with you (based on template permissions)
 - **Owned by Me** Created by you
 - All All templates shared with you or created by you

You can use the Type and Filter drop-downs in combination to further limit application template results (for example, to search for HPC Application templates you created).

Alternatively, you can click **Q** to open a search box (replaces the filter box) that lets you enter the name of the application template you want to use.

Again, you can use the **Type** drop-down to further limit the application template results.

4. Click the application template you wish to use to create the job.

The Create Job page appears with the fields from the selected application template.

5. Enter the necessary information for the new job, such as the job name and submission script.

At the right of the page there are two floating buttons that can be pressed to navigate to the top and the bottom of the page.



 $c \left(\begin{array}{c} \end{array} \right)$ to navigate to the top of the page.

Click 🔄 to navigate to the bottom of the page.

6. Click **Create** to submit the information and create the job; otherwise, click **Cancel** to return to the Workload view.

Related Topics

- 1.1 Workload Page
- Chapter 3 Viewpoint Workload Overview on page 57

Creating or Editing a Job Submission Script

You may need to edit a job submission script when creating a job. If you have the Templates Page Viewpoint permission, you can also create a default job submission script associated with a job template. See <u>Job Submission Script on</u> page 111 for more information.

Do the following:

1. If you have not already done so, click **Customize Script** on the Create Job page. The Script Builder appears.

#!/bin/bash	Variables
<pre># the NITRO_LONG_TASK_FILE variable defines the path to the user's task file export NITRO_LONG_TASK_FILE="%TASKFILE%"</pre>	Viewpoint Inputs
# uncomment the following line to point Nitro to your network server	
#export adaptiveco_LICENSE=5053@rim-server.yourdomain.com # make the NITROJOBID match the MOAB JOBID	ARCHITECTURE
export NITROJOBID=\$MOAB_JOBID	DESTINATIONOUFUE
export NITRO_COORD_OPTIONS="run-local-worker" exec /opt/nitro/scripts/torque/launch nitro.sh	DURATION
	ELIGIBLEDATE
	EMAILOPTIONS
	ENDINDEX
	ERRORPATH
	EXECUTIONDIRECTORY
	FEATURESEXCLUDED
	FEATURESREQUESTED
	FEATURETAGS
	GENERICRESOURCES
	HOLD
	JOIN
	MAILLIST
	MEMORYPERNODE
	MOABENVIRONMENTVARIABLES
	MOABTEMPLATE
	KIAKAT

2. Enter the script in the pane on the left side of the Script Builder. To assist you in building your script, there is a list of variables on the right side of the Script builder that you can drag and drop into your script. Hover the mouse over the variable to view its description. When used in the script, the variables shown in the right pane are highlighted and the number of times the variable is used in this script is displayed.

Variables		
Variables NUMOFCORES OPERATINGSYSTEM OUTPUTPATH QOS SHELL	^	
STARTINDEX		
USERPRIORITY Custom Inputs		
TASKFILE Moab Env Variables MOAB_ACCOUNT MOAB_BATCH MOAB_CLASS MOAB_DEPEND MOAB_CROUP	1	
MOAB_GROOP	1	
MOAB_JOBNAME MOAB_MACHINE MOAB_NODECOUNT MOAB_NODELIST	•	

Another method for adding variables to a script is to type Ctrl+Space when editing a script in the left pane. You can select the variables directly in this list instead of having to drag them from the right pane.



In addition to Viewpoint input variables, the list may include Custom Inputs, which are defined in the Custom Settings section of the job template, and Moab environment variables. See <u>Script Variables on page 82</u> for more information about script variables.

You can also import a script from a file by clicking **Import** and selecting the file containing the script.

3. When you are done editing your script, click **Done Editing** to save.

If you want to export a script for use in other jobs or job templates, click **Export** and enter a file name for the script file.

Script Variables

The Script Builder provides a number of script variables that you can insert into your script. During script execution, Viewpoint replaces the variable with its current value. General patterns Viewpoint follows when replacing variables with current values is shown in the table below.

Text in Script Editor	Current Value of Variable	Text After Replacement
%VAR%	1	1
text%VAR%text	1	text1text

Text in Script Editor	Current Value of Variable	Text After Replacement
\%VAR%	1	\%VAR%
\\%VAR%	1	\1
%INVALID%	(Undefined variable)	%INVALID%
\%INVALID%	(Undefined variable)	%INVALID%
%VAR%VAR%	1	1VAR%
%VAR%%VAR%	1	11
%DURATION%	5 (Value set in one of the job template's widgets, such as the Time Management Duration widget)	5
%PATH%	/home/hpotter (Value of a path variable)	/home/hpotter
%DATE%	2017-03-15 11:00 UTC (Value of a date variable)	2017-03-15 11:00 UTC
%BOOL%	true (Value of a boolean variable)	true

Script variables in the Script Builder are categorized as Viewpoint Inputs, Moab Environment Variables, and Custom Inputs. **Viewpoint Inputs** are variables associated with the job.

Variable	Description
ACCOUNT	Account associated with the job.
ARCHITECTURE	Defines the system architecture required by the job. Example: x86_64.
DESTINATIONQUEUE	The destination queue or class of the job.
DURATION	The expected amount of time the job is expected to run.
ELIGIBLEDATE	The time at which the job is eligible for execution.

Chapter 3 Viewpoint Workload Overview

Variable	Description
EMAILOPTIONS	A comma-delimited list of requested email options, expressed as key/value pairs. Example: "START:TRUE,COMPLETION:FALSE,FAILURE:FALSE"
ENDINDEX	The end index of the job array.
ERRORPATH	The path to be used for the job's standard error stream.
EXECUTIONDIRECTORY	The job's execution directory.
FEATURESEXCLUDED	A comma-delimited list of feature tags representing features that cannot be present on the hardware on which the job will run. For example, "fea-ture1,feature2,feature3".
FEATURESREQUESTED	A comma-delimited list of feature tags representing features that must be present on the hardware on which the job will run. For example, "fea-ture1,feature2,feature3".
GENERICRESOURCES	A comma-delimited list of additional job attributes, expressed as key/value pairs. Example: "ANSYS:3,MATLAB:4"
HOLD	Specifies that a user hold will be placed on the job when submitted.
JOIN	Specifies whether to merge the standard output and standard error streams.
MAILLIST	A comma- and quote-delimited list of email addresses to be notified in the event of job or system failures or under other general conditions. Overrides the EMAILADDRESS specified on the USERCFG [credential]. Example: "luis@adaptivecomputing.com","sergeig@dsr-company.com".
MEMORYAMOUNT	Defines the resources that are required by the job and establishes a limit to the amount of resource that can be consumed.
MOABENVIRONMENTVARIABLES	Specifies whether to push Moab environment variables to the job.
MOABTEMPLATE	Specifies a MOAB job template to be used for the job.
NAME	Specifies a name for the job (must be alphanumeric).

Chapter 3 Viewpoint Workload Overview

Variable	Description
NODEACCESSPOLICY	Specifies whether other tasks may execute on the job's compute node. See 1.1 Node Access Policies for more more information.
NODEALLOCATIONPOLICY	Specifies the criteria for determining whether a node is busy. See 1.1 Node Availability Policies for more information.
NODESREQUESTED	Specifies the exact set, superset, or subset of nodes on which the job must run.
NODESREQUESTEDPOLICY	Indicates an exact set, superset, or subset of nodes on which the job must run. Only relevant if NODESREQUESTED is provided.
NUMOFCORES	If "Total Amount of Cores" is selected and total cores = 4, the value of the variable is "4". If "Nodes with Core Count" is selected, total nodes =2, and cores per node = 4, the value of the variable is "2:4".
OPERATINGSYSTEM	Specifies the job's required operating system.
OUTPUTPATH	Specifies the path to be used for the job's standard output stream.
QOS	Specifies the desired QoS for the job.
SHELL	The shell to execute the job script. Example: /bin/bash.
STARTINDEX	The start index of the job array.
USERPRIORITY	Specifies the priority at which the job is to run.

Moab Environment Variables are variable whose values Viewpoint uses when submitting a job to Moab.

Variable	Description
MOAB_ACCOUNT	Account name.
MOAB_BATCH	Set if a batch job (non-interactive).
MOAB_CLASS	Class name.
MOAB_DEPEND	Job dependency string.

Variable	Description
MOAB_GROUP	Group name.
MOAB_JOBID	Job ID.
MOAB_JOBNAME	Job name.
MOAB_MACHINE	Name of the machine (i.e. destination resource manager) on which the job is to run.
MOAB_NODECOUNT	Number of nodes allocated to the job.
MOAB_NODELIST	Comma-delimited list of nodes on which the job is to run.
MOAB_PARTITION	Partition name in which the job is to run.
MOAB_PROCCOUNT	Number of processors allocated to the job.
MOAB_QOS	QoS name.
MOAB_SUBMITDIR	Directory from which the job is submitted.
MOAB_TASKMAP	Node list with tasks allocated to each node listed. <nodename>.<tasklist></tasklist></nodename>
MOAB_USER	User name.

Custom Inputs are variables defined in the Custom Settings section of a job template. If you are creating a job template, Custom Inputs are variables you have defined. If you are creating a job, Custom Inputs are the variables defined by the designer of your selected job template. For example, the Nitro Application job template has a *TASKFILE* Custom Input variable that contains the name of the task file associated with the job.

Related Topics

- Creating a Job on page 77
- <u>Application Template Details on page 97</u>

Viewing Job Details

Viewpoint lets you view the job details for any job within your workload. This functionality uses both the Workload page and the Job Details page.

The detailed information available for a job will vary. See <u>Job Details Page</u> on page 60 for more information.

View Job Details

Do the following:

- 1. If you have not already done so, access the Workload page. (Click **Workload** from the menu.)
- 2. Enter the search and/or filter criteria as needed to limit the jobs displayed. See 1.1.2 Search and/or Filter Areas for more information.
- 3. Click on the Job ID of the job for which you want to view details. The Job Details page displays and shows information about that job. For the Job Details page you can view and/or edit job information. See <u>Job Details Page</u> on page 60 for more information.

Related Topics

- 1.1 Workload Page
- Job Details Page on page 60
- Application Template Details on page 97

Chapter 4 Application Templates

Application templates are used to predefine the job requirements available to users when creating jobs. Specifically:

- The Application Templates page (default) lists the application templates available to you when creating a job. Depending on how the application template was setup, you can also make small changes to the application template at job submission.
- If your credentials include the Templates Admin permission you can view and edit every application template in your Viewpoint configuration. You can also create and import application templates using this page.

Viewpoint is delivered with several application templates that you can customize for your environment or to use as a guide for creating your own application templates. See <u>Provided Application Templates on page 119</u> for more information.

The admin user (for example, "moab-admin") can perform application template functions programmatically in Viewpoint; instead of using the Application Templates page in the portal. See <u>Application Template API</u> on page 157.

In this chapter:

- <u>Application Templates Page on page 89</u>
- <u>Create Application Template Page on page 93</u>
- Edit Application Template Page on page 95
- Application Template Details on page 97
- <u>Creating an Application Template on page 114</u>
- Editing an Application Template on page 115
- Importing an Application Template on page 117
- Managing Application Template History on page 118
- Provided Application Templates on page 119
- Application Template API on page 157

Application Templates Page

The Application Templates page lets you manage application templates for your Viewpoint configuration.

To access this page, click **TEMPLATES** from the menu.

This topic provides an example of the Application Templates page and describes its layout and available information.

In this topic:

- Page Example on page 90
- Page Details on page 90
- Additional Functions on page 92

Page Example

The following image is an example of the Application Templates page.

Application Te	emplate	S		Template Type	All		•	Filte	rs		
Name	≜ <u>Ver.</u> ♦	<u>Owner</u>	Permissions	\$ <u>P</u>	ublished 🔶	<u>Used</u>	Changed		- Name -		
C Docker Application	v.1	moab- admin	Users: ALL Groups: ALL Accounts: ALL		*	0	2016-07-20		- Owner	-	
🎦 Free Form	v.1	moab- admin	Users: ALL Groups: ALL Accounts: ALL		*	0	2016-07-20		- Publis	ned -	Ŧ
 Nitro Application 	v.1	moab- admin	Users: ALL Groups: ALL Accounts: ALL		*	0	2016-07-20		Date Crea	ted	
Remote Viz Application	v.1	moab-	Users: ALL Groups: ALL		1	0	2016-07-20	Perr	missions		
		admin	Accounts: ALL			_			- User -		
Show 10 • e	ntries			-	prev	1 ne	ext →		- Group -	<u>e scone scone scone</u>	
				EATE APPLICATIO	N TEMPLA	ATE 2			- Account	-	
										RESET	FILTER

Page Details

This section describes the functional areas of the Application Templates page. In this section:

- New Application Template Creation on page 90
- Filters on page 91
- Application Templates List on page 91

New Application Template Creation

Viewpoint lets you create a new application template or import an existing application template you can use when creating jobs. To enable this functionality, two buttons are available towards the bottom of this page.

• **CREATE APPLICATION TEMPLATE** – Opens up a blank application template. See <u>Creating an Application Template on page 114</u>.

• **IMPORT** – Opens up a pop-window that lets you import an existing application template. See <u>Importing an Application Template on page 117</u>.

Filters

Filters let you specify what is displayed in the list of application templates on the main pane.

To use a filter, click the check box next to the filter to activate it, enter in the information, and then click **Filter**. You can click **Reset** at any time to restore the page default view.

The following table describes the different filters.

Filter	Description
Name	Name used to identify the application template.
Owner	The owner of the application template.
Published	Whether you want to display applications templates that are published <i>or</i> unpublished.
Date Created	Date range during which the application template was created. When this filter is selected, addi- tional fields appear letting you specify the date range.
User	Name of the user or users given permission to use this application template.
Group	User group given permission to use this application template.
Account	Account given permission to use this application template.

Application Templates List

The main pane of the Application Templates page lists the application templates and their corresponding information in a column format.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

Page controls are available at the bottom of the application templates list to let you customize how many application templates appear at a time in the list. These controls also include options for moving between pages of listed application templates.

The following table describes the different columns and their contents.

Chapter 4 Application Templates

Column Heading	Description
Name	Name used to identify the application template. Click on the application template's name to open the application template and view additional information about the application template.
Version	The current version of the template.
Owner	Name of the individual who created the application template.
Permissions	User, Group, and Account permissions granted for this application template.
Published	Indicates whether the application template is published.
Used	Number of times the application template has been used (the number of jobs submitted using this application template).
Changed	Date on which the application template was last changed.

Additional Functions

The Templates page also includes a pop-up menu with shortcuts to perform additional application template-related functions. To access the shortcuts, hover the mouse near the application template name to display \equiv , and then click this icon to display the pop-up menu.

Application Templa	ites		Template	Type Al	I		-
Name <u>\</u>	<u>/er. 0</u>	wner [;]	Permissions	Published 🔶	Used	<u>Changed</u>	¢
Docker Application	Create Job Modify	əb-admin	Users: ALL Groups: ALL Accounts: ALL	~	0	2017-03-14	
Free Form	Unpublish Export Copy	əb-admin	Users: ALL Groups: ALL Accounts: ALL	*	2	2017-03-14	
Job Array Template	Delete	anger	Users: ALL Groups: ALL Accounts: ALL	*	1	2017-03-15	
Nitro Application	<i>.</i> 1 m	oab-admin	Users: ALL Groups: ALL Accounts: ALL	*	0	2017-03-14	
Remote Viz Application	/.1 m	oab-admin	Users: ALL Groups: ALL Accounts: ALL	*	0	2017-03-14	
Show 10 • entries				-	prev 1	next \rightarrow	

From this pop-up menu, you can:

- Create a job using the template (if you have the necessary permissions).
- Open the Edit Application Template page to modify the application template.
- Toggle this application template between published and unpublished status.
- Export this application template.
- Copy this application template.
- Delete this application template.

If you delete one of the templates provided with Viewpoint, you can restore the template on the Application Template Configuration page. See <u>Application Templates Configuration Page on page 35</u>.

Related Topics

- <u>Creating an Application Template on page 114</u>
- Importing an Application Template on page 117
- Editing an Application Template on page 115
- Managing Application Template History on page 118
- Application Template Details on page 97
- Chapter 4 Application Templates on page 89

Create Application Template Page

The Create Application Template Page lets you create application templates that users may use when creating jobs.

To access this page, click **TEMPLATE** from the menu to access the Application Templates page, and then click **CREATE APPLICATION TEMPLATE**.

This topic identifies how the Create Application Template page is organized and the fields and functions available when creating an application template.

Page Example

The following image is an example of the Create Application Template page.

Create Application Template	
Untitled Application Template	
Template Type HPC Application Version Description	
Application Description	Visible
BISIZ Styles → Format →]= := := := := 99 ∞ ∞ m ≡ Ω ⊑	

The Create Application Template page is divided into several sections:

- General Information Contains the application template name, template type, and version description.
- Permissions Defines who is allowed to use the application template.
- Application Description Contains a formatted text description of the application template that you can use to provide detailed instructions on how to use the application template.
- Basic Settings Contains basic fields for defining Moab-related settings for jobs created with the application template.
- Advanced Settings Contains additional fields for defining Moab-related settings for jobs created with the application template.
- Node Policies Settings Contains fields for defining node policies for jobs created with the application template.
- Custom Settings Contains fields for defining custom parameters for jobs created with the application template.

All sections except General Information and Permissions have editable name fields that make it possible for you to rename the section for the template you are creating. See <u>Application Template Details on page 97</u> for detailed information about each of these sections.

Page Actions and Navigation

These buttons let you perform actions on this page:

- **EXPORT TEMPLATE** Export the current template for use.
- **SAVE TEMPLATE** Save any changes made to the current template.
- **SAVE AND CLOSE** Save any changes made to the current template and return to the Template Page.

At the right of the page there are two floating buttons that can be pressed to navigate to the top and the bottom of the page.

Click _____ to navigate to the top of the page.

Click 🔄 to navigate to the bottom of the page.

Related Topics

- <u>Creating an Application Template on page 114</u>
- Application Template Details on page 97
- Application Templates Page on page 89
- Chapter 4 Application Templates on page 89

Edit Application Template Page

The Edit Application Template page lets you edit existing application templates that users can use when creating jobs.

To access this page, click **TEMPLATES** in the menu bar to access the Application Templates page, then click the name of an existing application template from the list of application templates.

This topic identifies how the Edit Application Template page is organized and the fields and functions available when editing an application template.

Page Example

The following image is an example of the Edit Application Template page.

Edit Application Template			
Template Type Job Array	Version Description	Job Array, new submission script	HISTORY
♥ Application Description			 Visible
B I S I _x Styles Normal • Job Array Application Ter Fill in the inputs and press the "Create" button to subm	말 := (네트 네트 ୨୨ 📾 nplate nit your job.		
body p			4

The Edit Application Template page is divided into several sections:

- General Information Contains the application template name, template type, and version description.
- Permissions Defines who is allowed to use the application template.
- Application Description Contains a formatted text description of the application template that you can use to provide detailed instructions on how to use the application template.
- Basic Settings Contains basic fields for defining Moab-related settings for jobs created with the application template.
- Advanced Settings Contains additional fields for defining Moab-related settings for jobs created with the application template.
- Node Policies Settings Contains fields for defining node policies for jobs created with the application template.
- Custom Settings Contains fields for defining custom parameters for jobs created with the application template.

All sections except General Information and Permissions have editable name fields that make it possible for you to rename the section for the template you are editing. See <u>Application Template Details on page 97</u> for detailed information about each of these sections.

Page Actions and Navigation

These buttons let you perform actions on this page:

- **EXPORT TEMPLATE** Export the current template for use.
- **SAVE TEMPLATE** Save any changes made to the current template.
- **SAVE AND CLOSE** Save any changes made to the current template and return to the Template Page.

At the right of the page there are two floating buttons that can be pressed to navigate to the top and the bottom of the page.

Click 📄 to navigate to the top of the page.

Click 🔄 to navigate to the bottom of the page.

Related Topics

- Editing an Application Template on page 115
- <u>Application Template Details on page 97</u>
- Application Templates Page on page 89
- Chapter 4 Application Templates on page 89

Application Template Details

This topic identifies how the application template information is organized and the fields and functions available when creating or editing an application template.

See <u>Create Application Template Page on page 93</u> for more information about creating application templates.

See <u>Edit Application Template Page on page 95</u> for more information about editing application templates.

In this topic:

- <u>Application Template Name on page 98</u> Identifies the name for the application template.
- <u>Application Template Type on page 98</u> Identifies the type for the application template.
- <u>Available Fields on page 98</u> Provides information on the available fields and how the fields are organized.

- <u>Field Information and Actions on page 109</u> Provides a general explanation of the field functions; including how to show or hide fields.
- <u>Application Template Permissions on page 110</u> Provides information on how to restrict the users who have access to this application template.
- <u>Published/Unpublished Application Template on page 111</u> Provides information regarding the difference between published and unpublished application templates.
- Job Submission Script on page 111 Explains how to access and use the Script Builder window to manage the job submission script for the application template.
- <u>Application Template History on page 113</u> Identifies the version for the application template. Provides information on saving a template as a new view version, viewing a template's history, and reverting to previous template versions.

Application Template Name

The name of the application template appears towards the top of this page. Using the example in this topic, the application template title is "Untitled Application Template". The application template name is displayed in the application template list shown in the Application Templates page.

To edit the template name, click on the name label and enter the desired name.

Application Template Type

Directly under the application template name, you can specify the application template type. To choose, select one of the options from the drop-down menu. The available application template types are:

- HPC Application
- Job Array
- Remote Visualization
- Nitro Application

When editing an existing application template, you can modify the application template to create job arrays by changing the application template type to Job Array.

Available Fields

The available fields used for creating/editing application templates are grouped into five areas. Specifically:

- Application Description on page 99
- Basic Settings on page 99
- Advanced Settings on page 106
- Node Policy Settings on page 108
- Custom Settings on page 108

Expand an area to view its fields. This section provides information on these different areas and their associated fields. See <u>Field Information and Actions</u> on page 109 for information on using the fields.

Application Description

This area lets you provide a description for your application template. Use this area to tell users any necessary information to use or access this application template. This field provides multiple options for styling and formatting, among other ways to make your description more detailed.

The following image shows the Application Description area.



Basic Settings

This area, as well as the Advanced Settings area, contains Moab-specific input for the job. If the template will be used for creating job arrays, the Basic Settings area also specifies starting and ending job indexes.

This area breaks the basic setting information into functional groups. The information will also be grouped similarly on the Job Details page.

The following images are examples of the functional groups.

 Basic Job – contains settings for basic information like the name assigned to jobs created with this template and the submission script used to

Label	Name
Variable Name	NAME
Default Value	
🕑 Enabled 🕑 Visil	ble 🕑 Editable
Labal	Submission Script
Laber	
Variable Name	SCRIPT

submit jobs. See <u>Job Submission Script on page 111</u> for more information about creating a job submission script.

If the Template Type for the application template is set to **Job Array**, the Basic Settings area also contains settings for job indexes.

Label	Job Arrays
Min Variable Name	STARTINDEX
Min Default Value	0
Max Variable Name	ENDINDEX
Max Default Value	1
🗌 Visible 🔲 Edit	able

•	Time Management –	contains delay	start and job	duration settings.
---	-------------------	----------------	---------------	--------------------

Label	Duration
/ariable Name	DURATION
Default Value	0
🕑 Enabled 🕑	Visible 🗹 Editable
Enabled Label	Visible 🕑 Editable Delay Start By
✓ Enabled ✓ Label /ariable Name	Visible Editable Delay Start By ELIGIBLEDATE

• Credentials – settings for specifying job ownership, resource usage, policy enforcement, etc. See 1.1 Credential Overview for more information.
Label	Account	Label	Quality of Service
Variable Name	ACCOUNT	Variable Name	QOS
🕑 Enabled 🕑 Vis	ible	🕑 Enabled 🕑 Visi	ble
Label	Queue / Class		
Variable Name			

• Resources – contains architecture, memory, and core settings.

					,			
Label	mbei	r of Cores			Label	Total M	emory (GB)	
Variable Name N	моі	CORES			Variable Name	MEMORYAMOUNT		
Total Amount of Co	es	VisibleEditabl	e		Total N	/ emory	✓ Visit	ole able
Total Co	es	1	۵	*	Defau	lt Value	0.50	٥
Nodes With Core Co	nt	✔ Visible✔ Editabl	e		Memory p	er Core	✓ Visit	ole able
Total No	es	1	۵	•	Defau	lt Value	0.50	\$
Cores Per No	de	1	۵	•	Enabled			
Malleable Core Co	nt	VisibleEditabl	e		Label	Archite	cture	
Minimum Co	es	1	٥	~	Variable Name	ARCHI	TECTURE	
Maximum Co	es	2	¢	^	Default Value			

Use the up and down arrows to increment or decrement the resource values. Click the settings icon 🔬 to set minimum, maximum, and step values to be used when incrementing and decrementing the resource setting.

Total M	emory	🕑 Visit	ole	N	lin	0.25
		🗌 Edit	able	N	lax	65535
Default	t Value	0.50	٥	s	tep	0.25
Memory pe	er Core	Visit	ole able			APPLY
			ubre	L		
Default	t Value	0.50	\$	~		

• Data Management – settings for job execution directory, output, and error reporting. Check the Use execution path box to use the execution path for the output path or error path.

Label	Execution Path	
Variable Name	EXECUTIONDIRECTORY	
🕑 Enabled 🕑 Visible		
Label	Output Path	
Variable Name	OUTPUTPATH	
🖉 Enabled 🕑 Visible 🖉 Use	execution path	
Label	Error Path	
Variable Name	ERRORPATH	

Advanced Settings

This area contains advanced inputs that can be requested to Moab for the job such as whether to include Moab environment variables at job submission time. You can also define job environment variables that can be used when creating submission scripts.

The following image is an example of the Advanced Settings area.

Advanced Settir	125					
	hel Merre	Streams		1.	bel	Mosh Environment Variables
	and there	- Streams				
Variable Na	me JOIN			Variable Na	me	MOABENVIRONMENTVARIAB
Default Va	lue No		•	Default Va	lue	Yes
Enabled	Visible 🗎 E	ditable		🗷 Enabled 🗎	Visi	ble 🔍 Editable
La	bel Hold J	ab		L	bel	Email Options
Variable Na	Variable Name HOLD			Variable Na	me	EMAILOPTIONS
Default Va	lue No		•	Enabled	Visi	ble
Enabled	Visible 🔍 E	ditable		L	bel	Email Notification List
La	bel Script	Shell		Variable Na	me	MAILLIST
Variable Na	Variable Name SHELL			🔍 Enabled 🔍 Visible		ble
Default Va	lue			Label	Us	er Priority
Enabled	Visible 🔍 E	ditable	1		_	
			;	Variable Name	US	ERPRIORITY
Label	Generic Res	sources		Default Value	0	0
/ariable Name	GENERICR	ESOURCES		🛛 Enabled 🔍 Visible 🔍 Editable		ble 🔍 Editable
Default Value	Name	Count T	ype	Label	Re	quested Features
1	No requ	ired generic resou	irces		_	
				Variable Name	FE	ATURESREQUESTED
Enabled	Visible 🔍 E	ditable		Default Value	No	ne
Label	Job Env Var	iables		Enabled	Visi	ble 🔍 Editable
Default Value	Key	Value		Label	Ex	cluded Features
	No envi	ronment variable	sset	Variable Name	FE	ATURESEXCLUDED
1			1	Default Value	Cur	rrent feature
Enabled	Visible 🗉 🖡	ditable			-	
Enabled	Visible 🔍 E	diable		Enabled	Visi	ble 🔍 Editable
Enabled La	Visible U E	ditable ting System		Enabled	Visi	ble 🕕 Editable
Enabled La	Visible D E bel Opera me OPER	ditable ting System ATINGSYSTEM		Enabled La	Visil	ble 🔍 Editable Moab Job Template
Enabled La La Variable Na Default Va	Visible E bel Opera me OPER	ditable ting System ATINGSYSTEM	······	Enabled La La Variable Na	Visil bel me	Moab Job Template MOABTEMPLATE
Enabled La Variable Na Default Va	Visible DE bel Opera me OPER lue	ditable ting System ATINGSYSTEM ditable		Enabled La Variable Na Default Va	Visil bel me lue	ble Editable Moab Job Template MOABTEMPLATE None

When enabled, the User Priority field requires the Moab ENABLENEGJOBPRIORITY server parameter set to "TRUE". This Moab parameter should have been set when Viewpoint was installed. See Moab Parameters in the *Moab Workload Manager Reference Guide* for more information on this parameter.

Node Policy Settings

This area contains policies that can be requested to Moab for the job such as whether to include Moab environment variables at job submission time.

The following image is an example of the Node Policies Settings area.

	-			
La	bel Node	Requested Policy	Label	Node Access Policy
Variable Na	me NODESREQUESTEDPOLICY		Variable Name	NODEACCESSPOLICY
Default Value Exact Set		Default Value	Shared •	
Enabled	Visible 🗌 I	Editable	🗌 Enabled 🗌 Visil	ole 🔲 Editable
Label	Nodes Requested List		Label	Node Allocation Policy
/ariable Name	NODESREQUESTED		Variable Name	NODEALLOCATIONPOLICY
Default Value			Default Value	First Available
	_			

Custom Settings

This area lets you add any custom settings to a template. You can add new custom settings widgets by clicking Left, Fill, or Right to specify whether the widget is to appear in the left column, right column, or fill both columns.

◆ Custom S	Settings			
	+ Left	+ Center	+ Right	

When you add a custom setting, you can then specify the control that will be displayed to set the custom setting's value, a label to be displayed on the control, a variable name, and default value for the variable. Depending on the type of control you select, other settings may be required.

Туре	Text Box
Label	
Variable Name	
Default Value	
🕑 Visible 🕑 I	Editable 🕑 Required

Field Information and Actions

This section describes the different information and actions available for the fields in the Basic Settings, Advanced Settings, and Custom Settings areas of the application template.

- **Label** User-friendly name shown for the field on the Create/Edit Job page. This is typically similar to the variable name.
- Variable Name Actual name of the variable widget that will contain the user's input. For Basic and Advanced Settings areas, this is the Moab variable for that field and cannot be changed. For the Custom Settings area, this variable can be any name that does not conflict with a Moab input variable. See <u>Job Submission Script on page 111</u> for a list of Moab variable widgets.
- Default Value Lets you specify a default value that will be used when creating/editing a job. Depending on the type of variable for this field, this can be a selection list, a drop-down to select a date/time, or a space to write in the value. If it is a date/time or write-in value, leave this empty if you do not want to assign a default value to the widget's variable and input fields.
- Enabled, Visible, Editable check boxes These three check boxes control if and how fields are used in the application template.
 - Enabled When checked, this field is activated; meaning that this information is reported. At this time only two fields (Job Arrays and User Priority) require activation. If Job Arrays is enabled, then only job arrays can be created using this application template. If User

Priority is enabled, users are able to make changes to the user priority information for the job (this option requires additional configuration, see <u>Advanced Settings on page 106</u>).

- Visible When checked, this field will be displayed on the Create/Edit Job page. This check box requires the Enabled check box, if present, to be checked.
- **Editable** When checked, users can provide information for this field when creating/editing a job. This check box requires the Visible check box to be checked.

Application Template Permissions

In addition to being able to restrict which fields the user may see or edit, you can also restrict who has access to the application template itself. This is done using the Permissions area at the top right of the page.

	The following	image is ar	n example of the	e Permissions area.
--	---------------	-------------	------------------	---------------------

Permissions
Users
×ALL
Groups
×ALL
Accounts
None

Using this area you can restrict access by:

- Users. In the Users field, type the IDs of the users. Viewpoint will check if the users you added are valid; that is, has a valid operating system account. If the user is valid, the user name turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Group associations. In the Groups field, type the IDs of the groups. Viewpoint will check if the groups you added are valid; that is, has a valid operating system account. If the group is valid, the group ID turns green; otherwise it turns red. Use "ALL" to remove restrictions.

• Account associations. In the Accounts field, select from the available accounts listed in the drop-down. Leave blank to remove restrictions.

Published/Unpublished Application Template

Viewpoint also lets you configure whether this application template is available (published) for use.

When an application template is marked "Unpublished" only the creator of the application template or template admins can view/edit the application template; regardless of the Permissions settings. In addition, the application template does not appear in the application templates list when a user creates a job.

On the Create/Application Template page, under the "Permissions" area, select the appropriate radio button for the publish status.

You can also change the publish status directly from the drop-down menu in the Application Templates page. See <u>Additional Functions on page 92</u>.

Job Submission Script

Viewpoint provides a Submission Script widget on the Application Template Details page (in the Basic Job Settings area). This widget provides a Script Builder window where you can create/edit, upload, or export the script information.

In order for users to submit jobs using the application template, the application template must have a defined job submission script. As with any field in the application template, you can choose whether to make the script visible and editable by the user when creating a job.

Click **Customize Script** (located in the Default Value area in the Submission Script field) to access the Script Builder window.

The following image is an example of the Script Builder window.

#!/bin/bash	Variables		
# the NITRO_LONG_TASK_FILE variable defines the path to the user's task file export NITRO_LONG_TASK_FILE="%TASKFILE%"	Viewpoint Inputs		
# uncomment the following line to point Nitro to your network server	ACCOUNT		
<pre>#export adaptiveco_ficense=sesserim-server.yourdomain.com # make the NITROJOBID match the MOAB_JOBID</pre>	ARCHITECTURE		
export NITROJOBID=\$MOAB_JOBID	DESTINATIONOUEUE		
export NITRO_COORD_OPTIONS="run-local-worker" exec /opt/nitro/scripts/torque/launch_nitro.sh	DURATION		
	ELIGIBLEDATE		
	EMAILOPTIONS		
	ENDINDEX		
	ERRORPATH		
	EXECUTIONDIRECTORY		
	FEATURESEXCLUDED		
	FEATURESREQUESTED		
	FEATURETAGS		
	GENERICRESOURCES		
	HOLD		
	JOIN		
	MAILLIST		
	MEMORYPERNODE		
	MOABENVIRONMENTVARIABLES		
	MOABTEMPLATE		

Using this window you can:

- Create/edit a script.
 - 1. Add/edit the lines for the script in the left pane.
 - You can drag and drop the available variables from the right pane into the left pane. Hover the mouse over the variable to view its description. The right pane includes variables defined in the Advanced Settings area. When used in the script, the variables shown in the right pane are highlighted and the number of times the variable is used in this script is displayed.
 - From inside the left pane, click Ctrl+Space to access to a list of variables. You can select the variables directly in this list instead of having to drag them from the right pane.
 - 2. Click **DONE EDITING** to save the script and close the window.
- Import an existing script. You can import a script from your local computer or from your RFS.
- Export the script. Exporting a script lets you export a copy of your script to your RFS. Then you can import the script for application templates to use.

See <u>Creating or Editing a Job Submission Script on page 79</u> for more information about creating and editing job submission scripts.

Application Template History

Viewpoint creates a new version of the application template every time you edit an application template. The Template History Manager window displays a history of the versions and lets you manage the versions. Once an application template has been edited and saved, the next time you go to edit the template, a **History** button is provided. Click this button to view the Template History Manager window.

The following image is an example of the Template History Manager window.

Template History I	Manager							×
Name	♦ <u>Version</u>	Changed By	. <u>■ Date</u>	\$	Description	\$	<u>Operation</u>	ons
Docker Application	v. 5 (CURRENT)	hgranger	2016-03-02 15:	52:35	another version		×	٩
Docker Application	v. 4	hgranger	2016-03-02 15:	52:27	v.4		* ×	٩
Docker Application	v. 3	hgranger	2016-03-02 15:	52:10	Docker Application Template		* ×	٩
Docker Application	v. 2	hgranger	2016-03-02 15:	37:51	Default Docker Application Template		* ×	٩
Docker Application	v. 1	moab-admin	2016-02-18 18:	56:07	Default Docker Application Template		* ×	٩
Show 10 T	entries]	← prev 1	next	→
							С	lose

The Template History Manager window displays a list of the different versions for the application template in a column format and provides operations for managing the versions of an application template. The following table describes the different columns and their contents.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

Column Heading	Description
Name	Name used to identify the application template.
Version	The version number for the version of the application template.
Changed By	Name of the user who last edited the application template.
Description	A description of the application template version.

Column Heading	Description
Operations	 Icons representing operations that can be performed on the application template version. Alternative - Makes this version of the application template the current version. Deletes this version of the application template. O - Exports this version of the application template.

Related Topics

- <u>Create Application Template Page on page 93</u>
- Edit Application Template Page on page 95
- Managing Application Template History on page 118
- Application Templates Page on page 89
- Chapter 4 Application Templates on page 89

Creating an Application Template

Viewpoint lets you create application templates to define settings associated with jobs that will be created using the template.

Create an Application Template

Do the following:

- 1. If you have not already done so, access the Application Templates page. (Click **TEMPLATES** in the menu bar.)
- 2. Click **CREATE APPLICATION TEMPLATE** to create a new application template.

The Create Application Template page displays with the application template fields.

- 3. Click the default template name, "Untitled Application Template", enter a new template name and click **Save**. See <u>Application Template Name on page 98</u> for more information.
- 4. Select a template type from the **Template Type** drop-down menu. See <u>Application Template Type on page 98</u> for more information.
- 5. Enter a version description in the **Version Description** field. See <u>Application Template History on page 113</u> for more information.

- 6. In the **Permissions** section, do *one* of the following:
 - If you want to let others to use the template, add the users, groups, or accounts who can use the template and click the **Published** radio button.
 - If you do not want others to use the template, click the **Unpublished** radio button.

See Application Template Permissions on page 110 for more information.

- 7. Enter a description of template in the Application Description section. See <u>Application Description on page 99</u> for more information.
- 8. Use the fields in the Basic Settings section to define the Moab-related settings for jobs created with your application template. See <u>Basic Settings</u> on page 99 for more information.
- 9. Use the fields in the Advanced Settings section to define additional settings for jobs created with your application template. See <u>Advanced Settings on page 106</u> for more information.
- 10. Use the fields in the Node Policy Settings section to define node policy settings for jobs created with your application temperate. See <u>Node Policy</u> <u>Settings on page 108</u> for more information.
- 11. Use the controls in the Custom Settings section to define custom parameters for jobs created with your application template. See <u>Custom Settings on</u> <u>page 108</u> for more information.
- 12. Do one of the following:
 - Click SAVE TEMPLATE to save the application template and stay on this page.
 - Click SAVE AND CLOSE to save the application template and close this page.

Related Topics

- Application Template Details on page 97
- Create Application Template Page on page 93
- Application Templates Page on page 89
- Chapter 4 Application Templates on page 89

Editing an Application Template

Viewpoint lets you edit an existing application template to change settings associated with jobs that will be created using the template.

Edit an Application Template

Do the following:

- 1. If you have not already done so, access the Application Templates page. (Click **TEMPLATES** in the menu bar.)
- 2. Do one of the following:
 - If you want to edit the current version of an application template, click on the name of the application template you want to edit in the list of existing application templates to edit the application template.

If you are not editing the latest version of the template, the Edit Application Template page displays a warning and gives you options to restore the version you are editing, edit the latest version, or return to the version history.

• If you want to edit a previous version of an application template, use the Template History Manager. See <u>Application Template History on page</u> <u>113</u> for more information.

The Edit Application Template page displays with the application template fields.

- 3. Click the default template name, "Untitled Application Template", enter a new template name and click **Save**. See <u>Application Template Name on page 98</u> for more information.
- 4. Select a template type from the **Template Type** drop-down menu. See <u>Application Template Type on page 98</u> for more information.
- 5. Enter a version description in the **Version Description** field. See _ Application Template History on page 113 for more information.
- 6. In the **Permissions** section, do one of the following:
 - If you want to let others to use the template, add the users, groups, or accounts who can use the template and click the **Published** radio button.
 - If you do not want others to use the template, click the **Unpublished** radio button.

See <u>Application Template Permissions on page 110</u> for more information.

- 7. Enter a description of template in the Application Description section. See <u>Application Description on page 99</u> for more information.
- 8. Use the fields in the Basic Settings section to define the Moab-related settings for jobs created with your application template. See <u>Basic Settings</u> on page 99 for more information.
- 9. Use the fields in the Advanced Settings section to define additional settings for jobs created with your application template. See <u>Advanced Settings on page 106</u> for more information.

- 10. Use the fields in the Node Policy Settings section to define node policy settings for jobs created with your application templage. See <u>Node Policy</u> <u>Settings on page 108</u> for more information.
- 11. Use the controls in the Custom Settings section to define custom parameters for jobs created with your application template. See <u>Custom Settings on</u> page 108 for more information.
- 12. Do one of the following:
 - Click SAVE TEMPLATE to save the application template and stay on this page.
 - Click SAVE AND CLOSE to save the application template and close this page.

Related Topics

- Application Template Details on page 97
- Edit Application Template Page on page 95
- <u>Application Templates Page on page 89</u>
- Chapter 4 Application Templates on page 89

Importing an Application Template

Viewpoint lets you import an existing application template to use when creating jobs. You can import a single application template or multiple application templates at the same time.

Do the following:

- 1. If you have not already done so, access the Application Templates page. (Click **TEMPLATES** in the menu bar.)
- 2. Click IMPORT.

The Import Template pop-up window appears.

Import Template	×
BROWSE	
	Close IMPORT

- 3. Click **BROWSE** and navigate to where the application template file is saved. You can select multiple application template files by pressing *shift* and then clicking on each file.
- 4. Once you have chosen which files to include, click **Open**.
- 5. When the application template appears in the Import Template window, click **IMPORT**. The application template appears in the application template list and can be edited as needed.

Related Topics

- Editing an Application Template on page 115
- Application Templates Page on page 89
- Chapter 4 Application Templates on page 89

Managing Application Template History

Viewpoint creates a new version of an application template every time you open and save an application template from the Edit Application Template page.

Manage the History for the Application Template

Do the following:

- 1. If you have not already done so, access the Application Templates page (click **Template** from the menu).
- 2. From the list of templates, select the application template for which you would like to manage the application template version.

The Edit Application page displays.

3. Click **History**.

The Template History Version page appears.

- 4. In the row containing the version number you want to manage, do the following, as needed:
 - Click the description of an application template version to change its description.
 - Click to make this version of the application template to be the current version.
 - Click 💓 to delete this version of the application template.
 - Click 💿 to export this version of the application template.

Related Topics

- Application Template History on page 113
- Application Templates Page on page 89
- <u>Chapter 4 Application Templates on page 89</u>

Provided Application Templates

Viewpoint comes configured with several application templates that you can customize for your environment. The available templates are:

- Free Form Basic application template for creating jobs and job arrays.
- Docker Application Application template that can be used to create HPC jobs for a Docker container running an image of your choice.
- Nitro Application Template for specifying setting and the task file to create Nitro jobs.
- Remote Viz Application Template for creating remote visualization and workload management sessions.

If you delete one of the provided templates, you can redeploy it from the Application Templates Configuration page. See <u>Application Templates</u> <u>Configuration Page on page 35</u>.

In this section:

- Free Form Application Template on page 120
- Docker Application Template on page 129
- Nitro Application Template on page 138
- <u>Remote Viz Application Template on page 147</u>

- Application Templates Configuration Page on page 35
- Chapter 4 Application Templates on page 89

Free Form Application Template

The Free Form Application Template is a basic application template for creating HPC jobs and job arrays

Available Fields

The available fields used for creating/editing the Free Form application template are grouped into five areas. Specifically:

- Application Description on page 120
- Basic Settings on page 121
- Advanced Settings on page 126
- Node Policy Settings on page 128
- <u>Custom Settings on page 128</u>

Expand an area to view its fields. This section provides information on these different areas and their associated fields. See <u>Field Information and Actions</u> on page 109 for information on using the fields.

Application Description

This area lets you provide a description for your application template. Use this area to tell users any necessary information to use or access this template. This field provides multiple options for styling and formatting, among other ways to make your description more detailed.

The following image shows the Application Description area.

Application Description	✓ Visible
B $I \rightarrow I_x$ Styles - Format - $I = I + I + I$ (B $I = \Omega$ (D)	
Welcome to our Free Form Application Template! Fill in the inputs and press the "Create" button to submit your job!	
Enjoy!	

Basic Settings

This area, as well as the Advanced Settings area, contains Moab-specific input for the job. This area breaks the basic setting information into functional groups. The following images are examples of the functional groups.

 Basic Job Settings – contains settings for basic information like the name assigned to jobs created with this template and the submission script used to submit jobs.

Basic Job Settings	
Label	Name
Variable Name	NAME
Default Value	
🕑 Enabled 🕑 Visib	ole 🗹 Editable
Label	Submission Script
Variable Name	SCRIPT
Default Value	Customize Script
🗌 Visible 🔲 Edital	ble

If the Template Type for the application template is set to **Job Array**, the Basic Job Settings area also contains settings for job indexes.

Label	Job Arrays	
Min Variable Name	STARTINDEX	
Min Default Value	0	^
Max Variable Name	ENDINDEX	
Max Default Value	1	^
🗌 Visible 🔲 Edit	able	

• Time Management – contains delay start and job duration settings.

Label	Duration
/ariable Name	DURATION
Default Value	C
🕑 Enabled 🕑	Visible 🕑 Editable
Enabled Label	Visible 🕑 Editable Delay Start By
✓ Enabled ✓ Label Variable Name	Visible 🗹 Editable Delay Start By ELIGIBLEDATE

• Credentials – settings for specifying job ownership, resource usage, policy enforcement, etc. See 1.1 Credential Overview for more information.

Label	Account	Label	Quality of Service
Variable Name	ACCOUNT	Variable Name	QOS
🕑 Enabled 🕑 Vis	ible	🕑 Enabled 🕑 Visi	ble
Label	Queue / Class		
Variable Name			

• Resources – contains architecture, memory, and core settings.

				3			
Label Number	r of Cores			Label	Total M	emory (GB)	
Variable Name NUMO	FCORES		Variable Name	MEMORYAMOUNT			
Total Amount of Cores	✓ Visible) a		Total N	/ emory	✓ Visit	ble
Total Cores	e Editab	¢	^	Defau	lt Value	0.50	able 🌣
Nodes With Core Count	 ✔ Visible ✔ Editable 1 ★ 		Memory per Core		🕑 Visit	ble	
Total Nodes			^	Default Value		0.50 Contraction C	
Cores Per Node	1	٥	* *				
Malleable Core Count	 Visible Editab 	e le		Label	Archite	cture	
Minimum Cores	1 ¢		*	Variable Name	ARCHITECTURE		
Maximum Cores	2	¢	<u>^</u>	Default Value			

 Data Management – settings for job execution directory, output, and error reporting.

Label	Execution Path	
Variable Name	EXECUTIONDIRECTORY	
Enabled Visible		
Label	Output Path	
Variable Name	OUTPUTPATH	
🕑 Enabled 🕑 Visible 🕑 Use	execution path	
Label	Error Path	
Variable Name	ERRORPATH	

Advanced Settings

This area contains advanced inputs to Moab that can be requested for the job, such as whether to include Moab environment variables at job submission time.

The following image is an example of the Advanced Settings area.

	125					
	hal Maria	Deserve				Mark Francisco and Maintein
Li	Del Merge	: streams		Li	Del	Moab Environment Variables
Variable Na	me JOIN			Variable Na	me	MOABENVIRONMENTVARIAB
Default Va	lue No			Default Va	lue	Yes •
Enabled	Visible 🔍 E	ditable			Visil	ble 🔍 Editable
La	bel Hold J	lob		La	bel	Email Options
Variable Name HOLD			Variable Na	me	EMAILOPTIONS	
Default Va	lue No		•	Enabled	Visil	ble
D Carbled	Maible	-fachie				
D Enabled	VISIDIE	dicable		La	bel	Email Notification List
La	bel Script	Shell		Variable Na	me	MAILLIST
Variable Na	me SHELL			Enabled	Visit	ble
Default Va	lue					
			1	Label	Us	er Priority
Enabled	Visible 🔍 E	ditable	1	Variable Name		
			,	Variable Mattic	0.0	ENTRIORITI
Label	Generic Re	sources		Default Value	0	÷
Variable Name	GENERICR	ESOURCES		Enabled	Visil	ble 🔍 Editable
Default Value	Manag	Course 1				
	Name	Counc	type	Label	Re	quested Features
			urces			
<u> </u>	No requ	ired generic reso		Variable Name	L PE	ATURESREQUESTED
Enabled	Visible D E	ired generic reso ditable		Default Value	Nor	ATURESREQUESTED
Enabled •	Visible 🔍 E	ared generic reso		Default Value	Nor	ATURESREQUESTED
Enabled Label	Visible D E	inted generic reso iditable fiables		Default Value	Visil	ATURESREQUESTED
Enabled Label	Visible E E	iditable riables Value		Variable Name Default Value Enabled Label	Visil Ex	ATURESREQUESTED ne ble Editable cluded Features
Enabled Label	Visible E E Job Env Var Key No envi	iditable iditable Value ionment variable	isset	Variable Name Default Value Enabled Label Variable Name	Visil Ex	ATURESREQUESTED IE Editable cluded Features ATURESEXCLUDED
Enabled	No requi	iditable iditable value ironment variable	sset	Variable Name Default Value Enabled Label Variable Name Default Value	Visil Ex FE	ATURESREQUESTED INE Editable Cluded Features ATURESEXCLUDED rent feature
Enabled Label	No requi	iditable iables Value ironment variable	s set	Variable Name Default Value Enabled Label Variable Name Default Value Enabled	Visil Ex FE	ATURESREQUESTED Pe Editable Cluded Features ATURESEXCLUDED rent feature Leature
Enabled Label Default Value	Visible E E Job Env Var Key No envi Visible E E bel Opera	inted generic reso iditable value ironment variable iditable iting System	s set	Variable Name Default Value Enabled Label Variable Name Default Value Enabled	Visit Ex Cur Visit	ATURESREQUESTED IE Editable Cluded Features ATURESEXCLUDED rent feature Sle Editable
Enabled Cabel Label Default Value Enabled Label	No requi	iditable value ionment variable iditable iditable	es set	Variable Name Default Value Label Variable Name Default Value Enabled Label Label	Visil Ex FE Cur Visil	ATURESREQUESTED Pe Editable Cluded Features ATURESEXCLUDED rent feature Editable Moab Job Template
Enabled Cabel Label Default Value Enabled La La Variable Na Default Va	No requi	ined generic reso iditable Value ironment variable iditable iditable ATINGSYSTEM	sset	Variable Name Default Value Label Variable Name Default Value Label Label Variable Name Label Variable Name Label	Visil Ex FE Cur Visil	ATURESREQUESTED IN IN IN IN IN IN IN IN IN I
Enabled Label Default Value Enabled Label Label Label Label La La La La La Label La Labela	Visible E Job Env Var Key No envi Visible E bel Opera me OPER lue	iditable iditable value iditable iditable iditable iditable iditable iditable iditable	es set	Variable Name Default Value Label Variable Name Default Value Enabled La Label Variable Name La	Visil Ex FE Cur Visil	ATURESREQUESTED IE Editable Cluded Features ATURESEXCLUDED rent feature De Editable Moab Job Template MOABTEMPLATE None

When enabled, the User Priority field requires the Moab ENABLENEGJOBPRIORITY server parameter set to "TRUE". This Moab parameter should have been set when Viewpoint was installed. See Moab Parameters in the *Moab Workload Manager Reference Guide* for more information on this parameter.

Node Policy Settings

This area specifies node request, access, and allocation policies for jobs created with this template.

The following image is an example of the Node Policies Settings area.

Node Policies Se	ttings		
La	bel Node Requested Policy	Label	Node Access Policy
Variable Name NODESREQUESTEDPOLICY		Variable Name	NODEACCESSPOLICY
Default Va	Lue Exact Set	Default Value	Shared
Enabled	Visible 🗌 Editable	📄 Enabled 📄 Visil	ble 🔲 Editable
Label	Nodes Requested List	Label	Node Allocation Policy
/ariable Name	NODESREQUESTED	Variable Name	NODEALLOCATIONPOLICY
Default Value		Default Value	First Available
Enabled	Visible Editable	🗌 Enabled 🗍 Visil	ble 🗍 Editable

Custom Settings

This area lets you add any custom settings to your template.

+ Left + Fil	II + Right	

Related Topics

- Editing an Application Template on page 115
- Application Template Details on page 97
- Provided Application Templates on page 119
- Chapter 4 Application Templates on page 89

Docker Application Template

The Docker Application template can be used to create HPC jobs for a Docker container running an operating system image that can be selected at job submission time.

Available Fields

The available fields used for creating/editing the Docker application template are grouped into five areas. Specifically:

- Application Description on page 129
- Basic Settings on page 130
- Advanced Settings on page 135
- Node Policy Settings on page 137
- Image Selection on page 137

Expand an area to view its fields. This section provides information on these different areas and their associated fields. See <u>Field Information and Actions</u> on page 109 for information on using the fields.

Application Description

This area lets you provide a description for your application template. Use this area to tell users any necessary information to use or access this template. This field provides multiple options for styling and formatting, among other ways to make your description more detailed.

The following image shows the Application Description area.



Basic Settings

This area, as well as the Advanced Settings area, contains Moab-specific input for the job. This area breaks the basic setting information into functional groups. The following images are examples of the functional groups.

Basic Job Settings
 – contains settings for basic information like the name
 assigned to jobs created with this template and the submission script used
 to submit jobs.

Basic Job Settings	
Label	Name
Variable Name	NAME
Default Value	Docker_job
🔲 Enabled 🔲 Visit	ole 🔲 Editable
Label	Submission Script
Variable Name	SCRIPT
Default Value	Customize Script

If the Template Type for the application template is set to **Job Array**, the Basic Job Settings area also contains settings for job indexes.

Label	Job Arrays		
Min Variable Name	STARTINDEX		
Min Default Value	0	* *	
Max Variable Name	ENDINDEX		
Max Default Value	1	~	

• Time Management – contains delay start and job duration settings.

ïme Managemer	ıt	
Label	Duration	
Variable Name	DURATION	
Default Value		©
Enabled	Visible 🗌 Editable	
Label	Delay Start By	
Variable Name	ELIGIBLEDATE	
Default Value		©

• Credentials – settings for specifying job ownership, resource usage, policy enforcement, etc. See 1.1 Credential Overview for more information.

		·····	
Label	Account	Label	Quality of Service
Variable Name	ACCOUNT	Variable Name	QOS
🗌 Enabled 🔲 Vis	ible	🗌 Enabled 🗌 Vis	ible
Label	Queue / Class		
Variable Name	DESTINATIONOUEUE		

• Resources – contains architecture, memory, and core settings.

ources							
Label	Number	r of Cores		Label	Total M	emory (GB)	
Variable Name	NUMO	FCORES		Variable Name	MEMO	RYAMOUNT	
Total Amount o	of Cores	VisibleEditab	e Jle	Total N	Memory	VisibleEditabl	e
Tot	al Cores	1	* *	Defau	lt Value	0.50	
Nodes With Cor	e Count	✓ Visible✓ Editab	e ole	Memory p	er Core	VisibleEditabl	e
Tota	I Nodes	1	`	Defau	lt Value	0.50	
Cores P	er Node	1	* *	Enabled			
Malleable Cor	e Count	VisibleEditab	e ole	Label	Archite	cture	
Minimu	m Cores	1	~	Variable Name	ARCHIT	TECTURE	
Maximu	m Cores	2	~	Default Value			•
🖉 Eashlad				🗌 Enabled 🗌 Visi	ible 🔲 Eo	ditable	

• Data Management – settings for job execution directory, output, and error reporting.

Label	Execution Path	
Vesiable News		
Variable Name	EXECUTIONDIRECTORY	
Enabled Visible		
Labal	Output Bath	
Laber	Output Path	
Variable Name	OUTPUTPATH	
🗹 Enabled 🗹 Visible 🗹 Use	execution path	
Label	Error Path	
Mariahia Nama	CODODDATU	

Advanced Settings

This area contains advanced inputs to Moab that can be requested for the job, such as whether to include Moab environment variables at job submission time.

The following image is an example of the Advanced Settings area.

Advanced Settin	p:					
			3 (**********			
Lal	Merge Streams		La	bel	Moab Environment V	ariables
Variable Na	me JOIN		Variable Na	me (MOABENVIRONME	NTVARIAB
Default Val	ue Yes		Default Va	lue	Yes	
				10.21	0.000	
Enabled	Visible Editable		Enabled	VISIDI	e 🤍 Editable	
ادا	Hold Job		La La	bel (Email Options	
Variable Nar	me HOLD		Variable Na	me	EMAILOPTIONS	
Default Val	ue No		Enabled	Visibl	e	
Enabled	Visible 🔍 Editable		La	bel	Email Notification Lis	t
Lai	bel Script Shell		Variable Na	me (MAILLIST	
Variable Nar	me SHELL		Enabled	Visibl	e	
Default Val	ue		Label	Use	r Priority	
Enabled	Visible 🔍 Editable		Mariable Marra	1150	PROJODITY	
			• • • • • • • • • • • • • • • • • • •	038	APRICALL P	
Label	Generic Resources		Default Value	0		
ariable Name	GENERICRESOURCES		🛛 Enabled 🔍	Visibl	e 🗉 Editable	
Default Value	Name Count	Туре				
1	No required reperio	Carol Incar	Label	Req	uested Features	
	No regarea generio	resources	Variable Name	FEA	TURESREQUESTED	
Enabled	Visible 🔍 Editable		Default Value	None		
Label	Job Environment Varial	bles	Enabled	Visibl	e 🔍 Editable	
Default Value	Key Value	:	Label	Excl	uded Features	
1	No environment va	riables set	Variable Name	FEA	TURESEXCLUDED	
			Defention	N		
Enabled	Visible 🔍 Editable		Lerault value	Lague		
			Enabled	Visibl	e 🔍 Editable	
Lal	Operating System					
Variable Nar	me OPERATINGSYST	ΈM	La	bel	Default Moab Templa	te
Default Val	lue		Variable Na	me	MOABTEMPLATE	
Enabled	Visible Editable		Default Va	lue	None	

When enabled, the User Priority field requires the Moab ENABLENEGJOBPRIORITY server parameter set to "TRUE". This Moab parameter should have been set when Viewpoint was installed. See Moab Parameters in the *Moab Workload Manager Reference Guide* for more information on this parameter.

Node Policy Settings

This area specifies node request, access, and allocation policies for jobs created with this template.

The following image is an example of the Node Policies Settings area.

Node Policies Se	etting	5		
La	bel	Node Requested Policy	 Label	Node Access Policy
Variable Na	me	NODESREQUESTEDPOLICY	Variable Name	NODEACCESSPOLICY
Default Va	lue	Exact Set 🔹	Default Value	Shared •
🗌 Enabled 🗌	Visit	ole 📄 Editable	🗌 Enabled 🗌 Visil	ble 🔲 Editable
Label	No	des Requested List	Label	Node Allocation Policy
Variable Name	NC	DESREQUESTED	Variable Name	NODEALLOCATIONPOLICY
Default Value	Nor	ie	Default Value	First Available
Enabled	Visit	ole 🔲 Editable	🗌 Enabled 🗌 Visil	ble 🗍 Editable

Image Selection

This area lets you specify operating system images in which to run Docker jobs created with this template. You can also add any custom settings to the template in this area.

	Туре	List	•
	Label Docker Image		
Variable	Name	IMAGENAME	
1	Label		Value
L	Ubuntu 1	4 🗸	ubuntu
(CentOS 5	;	centos:5
(CentOS 6	5	centos:6

Related Topics

- Editing an Application Template on page 115
- Application Template Details on page 97
- Provided Application Templates on page 119
- <u>Chapter 4 Application Templates on page 89</u>

Nitro Application Template

The Nitro Application Template lets you specifying settings and the task file for creating Nitro jobs.

Available Fields

The available fields used for creating/editing the Nitro application template are grouped into five areas. Specifically:

- Application Description on page 139
- Basic Settings on page 139
- Advanced Settings on page 144
- Node Policy Settings on page 146
- Nitro Inputs on page 146

Expand an area to view its fields. This section provides information on these different areas and their associated fields. See <u>Field Information and Actions</u> on page 109 for information on using the fields.

Application Description

This area lets you provide a description for your application template. Use this area to tell users any necessary information to use or access this template. This field provides multiple options for styling and formatting, among other ways to make your description more detailed.

The following image shows the Application Description area.



Basic Settings

This area, as well as the Advanced Settings area, contains Moab-specific input for the job. This area breaks the basic setting information into functional groups. The following images are examples of the functional groups.

 Basic Job – contains settings for basic information like the name assigned to jobs created with this template and the submission script used to submit jobs.

Basic Job Settings	
Label	Name
Variable Name	NAME
Default Value	Nitro_job
🕑 Enabled 🕑 Visit	ole 🗹 Editable
Label	Submission Script
Variable Name	SCRIPT
Default Value	Customize Script
🕑 Visible 🕑 Edital	ble

If the Template Type for the application template is set to **Job Array**, the Basic Job Settings area also contains settings for job indexes.

Label	Job Arrays
Min Variable Name	STARTINDEX
Min Default Value	0
Max Variable Name	ENDINDEX
Max Default Value	1
🗌 Visible 🔲 Edit	able

• Time Management – contains delay start and job duration settings.

Label	Duration
/ariable Name	DURATION
Default Value	©
Enabled	Visible 🔲 Editable
Enabled	Visible Editable Delay Start By
Enabled Label	Visible Editable Delay Start By ELIGIBLEDATE

• Credentials – settings for specifying job ownership, resource usage, policy enforcement, etc. See 1.1 Credential Overview for more information.

Label	Account	Label	Quality of Service	
Variable Name	ACCOUNT	Variable Name	QOS	
🗌 Enabled 🔲 Visi	ible	🗌 Enabled 🔲 Vis	ible	
Label	Queue / Class			
Variable Name	DESTINATIONQUEUE			
	ible			

• Resources – contains architecture, memory, and core settings.

				,				
Label	Number	r of Cores		Label	Total M	emory	(GB)	
Variable Name	NUMO	FCORES		Variable Name	MEMORYAMOUNT			
Total Amount o	of Cores	VisibleEditable		Total N	Memory		Visible Editable	
Tot	al Cores	1	* *	Defau	lt Value	1.00		
Nodes With Cor	e Count	VisibleEditable		Memory p	er Core		Visible Editable	
Tota	l Nodes	1	•	Defau	lt Value	1.00		
Cores P	er Node	8	•	Enabled				
Malleable Cor	e Count	VisibleEditable		Label	Archite	cture		
Minimu	m Cores	1	* *	Variable Name	ARCHIT	FECTU	RE	
Maximu	m Cores	2	^	Default Value				
				Enabled Vid	iblo 🔲 Er	litable		

• Data Management – settings for job execution directory, output, and error reporting.

Label	Execution Path	
Variable Name	EXECUTIONDIRECTORY	
Enabled Visible		
Label	Output Path	
Variable Name	OUTPUTPATH	
	execution path	
Label	Error Path	
Variable Name		

Advanced Settings

This area contains advanced inputs to Moab that can be requested for the job, such as whether to include Moab environment variables at job submission time.

The following image is an example of the Advanced Settings area.

Advanced Setting	5					
Labe	el Merge Streams		La	bel N	Ioab Environment V	ariables
Variable Nam			Mariable No.			
variable Nam	e 3014		Variable Na	me	ICADERVINO RIPER	TYANAD
Default Valu	e Yes	•	Default Va	lue 🗋	/es	
Enabled I \	/isible 🔍 Editable			Visible	Editable	
Labe	doL bloH		La	bel E	mail Options	
Variable Nam	e HOLD		Variable Na	me E	MAILOPTIONS	
Default Valu	e No		Enabled	Visible		
D Cooking D 1	Seible D Defectue					
W Enabled W V			La	bel E	mail Notification List	t
Labe	el Script Shell		Variable Na	me N	AILLIST	
Variable Nam	SHELL		Enabled	Visible		
Default Valu	e		Label	User P	riority	
Enabled E 1	fisible 🔍 Editable					
			Variable Name	USERP	RIORITY	
Label	Generic Resources		Default Value	0		0
Anishia Nama						
anable realife	GENERICKESOOKCES		U Enabled U	Visible	Editable	
Default Value	Name Count	Туре	Ishal	Denue	stad Easturian	
1	No required generic re	sources	Laber	Reque	sted reatores	
			Variable Name	FEATU	IRESREQUESTED	
■ Enabled ■ \	/isible 🔍 Editable		Default Value	None		
Label	Job Environment Variable	s	Enabled	Visible	Editable	
Default Value	Value Value			Deelud	ad Fasterer	
	Ney Value		Label	ENCIUD	eu reatures	
	No environment varia	Diesset	Variable Name	FEATU	IRESEXCLUDED	
D Fashind IT A	Colds ID Extends		Default Value	None		
U Enabled U V	ISIDIE I Editable					
1.1	d Onerstine Easter		Enabled	Visible	Editable	
Labe	a Operating System					
Variable Nam	e OPERATINGSYSTEM	Ν	La	bel D	efault Moab Templa	te
Default Valu	e		Variable Na	me N	OABTEMPLATE	
			Default Va	lue 💌	nitro	×
Enabled II N	/isible Editable					

When enabled, the User Priority field requires the Moab ENABLENEGJOBPRIORITY server parameter set to "TRUE". This Moab parameter should have been set when Viewpoint was installed. See Moab Parameters in the *Moab Workload Manager Reference Guide* for more information on this parameter.

Node Policy Settings

This area specifies node request, access, and allocation policies for jobs created with this template.

The following image is an example of the Node Policies Settings area.

Node Policies Se	etting	s				
La	bel	Node Requested Policy		Label	Node Access Policy	
Variable Na	ime	NODESREQUESTEDPOLICY		Variable Name	NODEACCESSPOLICY	
Default Va	lue	Exact Set	•	Default Value	Single Job	•
Enabled	Visil	ole 🔲 Editable		🕑 Enabled 🗌 Visit	ble 🗌 Editable	
Label	No	des Requested List		Label	Node Allocation Policy	
Variable Name	NC	DDESREQUESTED		Variable Name	NODEALLOCATIONPOLICY	
Default Value	Nor	ie		Default Value	First Available	•
🗌 Enabled 🗌	Visit	ole 📃 Editable		🗌 Enabled 🗌 Visit	ole 🔲 Editable	

Nitro Inputs

This area lets you specify the task file to be used when creating Nitro jobs. You can also add any custom settings to your template.

Nitro Inputs			
Туре	File Upload		•
Label	Task File		
Variable Name	TASKFILE		
Required			Delete
🕂 Left		∔ Fill	+ Right

Related Topics

- Editing an Application Template on page 115
- Application Template Details on page 97
- <u>Provided Application Templates on page 119</u>
- <u>Chapter 4 Application Templates on page 89</u>

Remote Viz Application Template

The Remote Viz Application template lets you specify settings for remote visualization and workload management sessions.

Available Fields

The available fields used for creating/editing the Remote Viz application template are grouped into five areas. Specifically:

- <u>Application Description on page 148</u>
- Basic Settings on page 148
- Advanced Settings on page 154
- Node Policy Settings on page 156
- User Inputs on page 156

Expand an area to view its fields. This section provides information on these different areas and their associated fields. See <u>Field Information and Actions</u> on page 109 for information on using the fields.

Application Description

This area lets you provide a description for your application template. Use this area to tell users any necessary information to use or access this template. This field provides multiple options for styling and formatting, among other ways to make your description more detailed.

The following image shows the Application Description area.

~	Application Description	 Visible
	$\mathbf{B} \mathbf{I} \mathbf{S} \mathbf{I}_{\mathbf{x}} \mathbf{Styles} \mathbf{v} \mathbf{Format} \mathbf{v} \mathbf{I} \equiv \mathbf{I} \equiv \mathbf{I} \equiv \mathbf{I} \equiv \mathbf{I} = \mathbf{I}$	
	Welcome to our Remote Viz Application! Select the application you would like to launch and hit the submit button! Have fun! :o)	

Basic Settings

This area, as well as the Advanced Settings area, contains Moab-specific input for the job. This area breaks the basic setting information into functional groups. The following images are examples of the functional groups.

 Basic Job Settings – contains settings for basic information like the name assigned to jobs created with this template and the submission script used to submit jobs.

Basic Job Settings	
Label	Name
Variable Name	NAME
Default Value	Remote_viz_job
🕑 Enabled 🔲 Visit	ole 🔲 Editable
Label	Submission Script
Variable Name	SCRIPT
Default Value	Customize Script
🗌 Visible 📄 Edital	ble

If the Template Type for the application template is set to **Job Array**, the Basic Job Settings area also contains settings for job indexes.

Label	Job Arrays]
Min Variable Name	STARTINDEX	
Min Default Value	0	* *
Max Variable Name	ENDINDEX	
Max Default Value	1	* *

• Time Management – contains delay start and job duration settings.

Label	Duration	
/ariable Name	DURATION	
Default Value		©
Enabled	Visible 🗌 Editable	
Label	Delay Start By	
ariable Name	ELIGIBLEDATE	
F (1.1/1		•

• Credentials – settings for specifying job ownership, resource usage, policy enforcement, etc. See 1.1 Credential Overview for more information.

Label	Account	Label	Quality of Service
Variable Name	ACCOUNT	Variable Name	QOS
Enabled Vis	ible	🗌 Enabled 🔲 Vis	ible
Label	Queue / Class		
Variable Name	DESTINATIONOUEUE		

• Resources – contains architecture, memory, and core settings.

			,				
Label Numbe	r of Cores		Label	Total M	Vemory (GB)		
Variable Name NUMO	FCORES		Variable Name MEMORYAMOUNT				
Total Amount of Cores	VisibleEditable		Total I	Memory	VisibleEditable	•	
Total Cores	1	~	Default Value		0.50	-	
Nodes With Core Count	VisibleEditable		Memory p	oer Core	VisibleEditable	•	
Total Nodes	1	~	Defau	lt Value	0.50	-	
Cores Per Node	1	•	Enabled				
Malleable Core Count	VisibleEditable		Label	Archite	cture		
Minimum Cores	1	* *	Variable Name	ARCHIT	ITECTURE		
Maximum Cores	2	^ ~	Default Value				

 Data Management – settings for job execution directory, output, and error reporting.

Label	Execution Path	
Variable Name	EXECUTIONDIRECTORY	
Enabled Visible		
Label	Output Path	
Variable Name	OUTPUTPATH	
🖉 Enabled 🔲 Visible 🖉 Use	execution path	
Label	Error Path	
Variable Name	ERRORPATH	

Advanced Settings

This area contains advanced inputs to Moab that can be requested for the job, such as whether to include Moab environment variables at job submission time.

The following image is an example of the Advanced Settings area.

La	bel	Merge Streams			La	bel	Moab Environment Variables		
Variable Na	me	JOIN			Variable Na	me	MOABENVIRONMENTVARIAB		
Default Va	alue	Yes		•	Default Va	lue	Yes *		
Enabled	Visib	e 🔍 Editable				Visi	ble 🔍 Editable		
Ŀ	abel	Hold Job			La	bel	Email Options		
Variable Na	me	HOLD			Variable Na	me	EMAILOPTIONS		
Default Value No •				•	🔍 Enabled 🔍	Visit	ble		
🛛 Enabled 🔍 Visible 🔍 Editable					La	bel	Email Notification List		
L	Label Script Shell				Variable Na	Variable Name MAILLIST			
Variable Name SHELL				🔍 Enabled 🔍	Visil	ble			
Default Va	lue								
					Label	Us	er Priority		
Enabled	Visib	sle 🔍 Editable			Variable Name	US	ERPRIORITY		
Label	Ge	neric Resources			Default Value	0	\$		
ariable Name	65	GENERICRESOURCES							
	GE	NERICRESOURCE	5		Enabled	Visil	ble 🔍 Editable		
	GE	NERICRESOURCE	5		Enabled	Visil	ble 🔍 Editable		
Default Value	Nan	ne ne	Count	Type	Enabled	Visil	ole 💷 Editable quested Features		
Default Value	Nan	NERICRESOURCE	Count	Type Per Job	Enabled Label Variable Name	Visil Re FE	ole Editable guested Features ATURESREQUESTED		
Default Value	Nan	nericresource	Count	Type Per Job	Enabled Label Variable Name Default Value	Visil Re FE	ole Ditable quested Features ATURESREQUESTED		
Default Value	Nan rem Visib	NERICRESOURCE ne note_visualization ole	Count 1	Type Per Job	Enabled Label Variable Name Default Value	Visil Re FE	ole Editable quested Features ATURESREQUESTED		
Default Value	Visib	NERICRESOURCE me note_visualization ole II Editable	Count 1	Type Per Job	Enabled Label Label Variable Name Default Value Enabled	Visil Re FE Nor Visil	ole Ditable quested Features ATURESREQUESTED re ble Ditable		
Default Value	Visib Job	ne ne note_visualization ole U Editable o Env Variables	Count	Type Per Job	Enabled Label Variable Name Default Value Enabled Label	Visil Re FE Visil	ole Delitable quested Features ATURESREQUESTED ne ble Delitable cluded Features		
Enabled Label	Visib Job Key	NERICRESOURCE me hote_visualization ble Editable b Env Variables v Vali	Count 1	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name	Visit Re FE Visit	ole Editable quested Features ATURESREQUESTED re ble Editable cluded Features ATURESEXCLUDED		
Enabled Cabel	Nan rem Visib	NERICRESOURCE me hote_visualization ble DEditable b Env Variables v Val No environment v	Count 1 ue variables s	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value	Visil Re FE Nor Ex	ele Editable quested Features ATURESREQUESTED te Editable cluded Features ATURESEXCLUDED te		
Enabled Default Value	Visib Visib	NERICRESOURCE me hote_visualization ble Editable conv Variables v Vali No environment v ble Editable	Count 1	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value	Visil Re FE Visil Ex FE	ole Delitable quested Features ATURESREQUESTED re Del Delitable cluded Features ATURESEXCLUDED re		
Default Value	Visib	NERICRESOURCE me hote_visualization ble Editable b Env Variables v Vali No environment v ble Editable	Count 1 ue variables s	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value Enabled Enabled	Visil Re FE Nor Visil	ole Delitable quested Features ATURESREQUESTED re De Delitable cluded Features ATURESEXCLUDED re De Delitable Editable		
Default Value Enabled Label Default Value Enabled Label Label Label Label Label Label Label Label Label Label L	Visib Visib	NERICRESOURCE me note_visualization ole Editable b Env Variables v Val No environment v ole Editable Operating Syste	Count 1 ue variables s	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value Enabled	Visil Re FE Nor Visil Nor Visil	ble Editable quested Features ATURESREQUESTED te Editable cluded Features ATURESEXCLUDED te Editable Default Mask Exception		
Default Value Enabled Enabled Enabled Label Default Value Label Label Label Label Label Label Label La	Visib Job Visib	NERICRESOURCE me oute_visualization ole Editable o Env Variables v Val No environment v ole Editable Operating Syste OPERATINGSY:	Count 1 ue variables s m	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value Enabled Label Label	Visil Re FE Nor Visil FE Nor Visil	ble Default Moab Template		
Default Value Enabled Label Default Value Enabled Label Label Default Value La Variable Na Default Value	Visib Visib Visib	NERICRESOURCE me bote_visualization ble Editable b Env Variables v Val No environment v ble Editable Operating Syste OPERATINGSYS	Count 1 ue cariables s m STEM	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value Enabled La Label Label Label La	Visil Re FE Nor Visil Ex Nor Visil	ble Default Moab Template Default Moab Template		
Default Value Enabled Enabled Enabled Label Label Label Label Label Label Label Default Value La Label Lab	Visib Job Visib	NERICRESOURCE me oute_visualization ole Editable o Env Variables v Val No environment v ole Editable Operating Syste OPERATINGSY3	Count 1 ue variables s m STEM	Type Per Job	Enabled Label Variable Name Default Value Enabled Label Variable Name Default Value Enabled La La Variable Na	Visil Re FE Nor Visil Ex Visil Visil Mor	ble Editable quested Features ATURESREQUESTED Te ble Editable cluded Features ATURESEXCLUDED Te ble Editable Default Moab Template MOABTEMPLATE (xremote_visualization) x		

When enabled, the User Priority field requires the Moab ENABLENEGJOBPRIORITY server parameter set to "TRUE". This Moab parameter should have been set when Viewpoint was installed. See Moab Parameters in the *Moab Workload Manager Reference Guide* for more information on this parameter.

Node Policy Settings

This area specifies node request, access, and allocation policies for jobs created with this template.

The following image is an example of the Node Policies Settings area.

Node Policies Se	etting	5				
La	bel	Nodes Requested Policy		Label	Node Access Policy	
Variable Name NODESREQUESTEDPOLICY				Variable Name	NODEACCESSPOLICY	
Default Value Exact Set		T	Default Value	Shared	•	
Enabled	Visit	ole 🔲 Editable		🗌 Enabled 🔲 Visil	ble 🔲 Editable	
Label	No	des Requested List		Label	Node Allocation Policy	
Variable Name	NC	DESREQUESTED		Variable Name	NODEALLOCATIONPOLICY	
Default Value	Nor	le		Default Value	First Available	•
🗌 Enabled 🔲	Visit	ole 🗌 Editable		🗌 Enabled 🗌 Visil	ble 🔲 Editable	

User Inputs

This area lets you specify graphical commands to run inside your remote visualization session. You can also add any custom settings to the template in this area.

Ту	/pe	List	•	Тур	e	List		•	
La	bel	Application		Labe	el C	Geometry			
ariable Na	me	COMMAND		Variable Name			GEOMETRY		
/	Lab	el	Value		Label		Value	Value	
	Gno	ome Desktop 🛛 🗸	gnome-session		800x6	00	800x600		
	Fire	fox Browser	firefox		1024x	768	✓ 1024x768		
	Gra	phical Terminal	xterm -ls		1280x	720	1280x720	1280x720	
					1440x	900	1440x900		
🖉 Visible		Editable 🕑 Require	ed 🛍 Delete		1920x	1080	1920x1080	0	

Related Topics

- Editing an Application Template on page 115
- Application Template Details on page 97
- Provided Application Templates on page 119
- <u>Chapter 4 Application Templates on page 89</u>

Application Template API

Application Template API lets the admin user (for example, "moab-admin") perform application template functions programmatically in Viewpoint instead of using the Application Templates page in the portal.

This section provides information and example of the supported methods and how to authenticate against the Viewpoint application template API.

In this section:

- Authenticate Against the Viewpoint Template API on page 158
- Supported Methods on page 159
- Create Template on page 161
- Delete Template on page 189
- Delete Template History on page 189
- Get All Templates on page 190
- Get Single Template on page 206
- Modify Template on page 214
- Modify Template History on page 224

Related Topics

• Chapter 4 Application Templates on page 89

Authenticate Against the Viewpoint Template API

The Viewpoint Template API requires users to authenticate to it using cookies.

This topic provides an example on how to authenticate using cURL to get a valid cookie that can be used to validate your access.

Do the following:

1. Create the following script:

```
#!/bin/bash
REQUEST METHOD=$1
REQUEST URL=$2
LOGIN URL=http://localhost:8080/login/
YOUR USER='moab-admin'
YOUR PASS='changeme!'
COOKIES=cookies.txt
CURL BIN="curl -s -c $COOKIES -b $COOKIES -e $LOGIN_URL" echo "Django Auth: get csrftoken ..."
$CURL BIN $LOGIN URL > /dev/null
DJANGO TOKEN="csrfmiddlewaretoken=$(grep cid $COOKIES | sed 's/^.*cid\s*//')"
echo "DJANGO TOKEN is $DJANGO_TOKEN"
echo "Performing login..."
$CURL BIN \
   -d "$DJANGO TOKEN&uName=$YOUR USER&pwd=$YOUR PASS" \
   -X POST $LOGIN URL
echo "Request: $REQUEST_METHOD $REQUEST_URL"
$CURL BIN \
    -d "$DJANGO_TOKEN&..." \
-X $REQUEST_METHOD \
    -H "Accept: Application/json" \
   $REQUEST_URL \
| python -m json.tool
rm $COOKIES
```

2. Consume the API by running this script:

./iris-curl.sh GET "http://localhost:8080/api/templates/"

Related Topics

- Application Template API on page 157
- <u>Chapter 4 Application Templates on page 89</u>

Supported Methods

The table that follows shows the supported methods for the Viewpoint application template API. Detailed information about each method is provided later in this section.

Resource	GET	PUT	POST	DELETE	РАТСН
/api/templates/	Get All Templates		Create Template		

Resource	GET	PUT	POST	DELETE	РАТСН
/api/templates/ <id>/</id>	Get Single Template	Modify Template Beginning with version 9.0.1, this method creates a new application template version every time you modify and save changes to an application template. The previous version is saved in the template history.		Delete Template	Modify Tem- plate Attrib- ute "published"
/api/templates/ <history_ pk>/history/</history_ 	Get Tem- plate His- tory		Create Template (creates a new applic- ation tem- plate and assigns it as the cur- rent ver- sion)		
/api/templates/ <history_ pk>/history/<version>/</version></history_ 	Get Single Template History	Revert Template (creates a copy of the application template for the specified his- tory version and assigns it as the cur- rent version)		Delete Template History	Update Template Version Description

Related Topics

- Application Template API on page 157
- Authenticate Against the Viewpoint Template API on page 158

- Create Template on page 161
- Delete Template on page 189
- Delete Template History on page 189
- Get All Templates on page 190
- Get Single Template on page 206
- Modify Template on page 214
- Modify Template History on page 224
- <u>Chapter 4 Application Templates on page 89</u>

Create Template

In this topic:

- URL on page 161
- Example on page 161
 - Request Body on page 162
 - Response on page 176

URL

(-	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_
	P	\cap	gr	г	1	' a	m	÷	1	+ 4	⊃r	nr	51	а	+		S	/
	-		. 0	-	/	2	P	-	/	0	-1	·'Ŀ	-	. u	C	~	,	
<u> </u>	_		_	_	_	_		_	_	_		_	_	_	_	_	_	

Example

POS	r /api/templates/

Chapter 4 Application Templates

Request Body

Request Body

```
{
  "name": "New Template",
"version_description": "",
  "type": "regular",
  "description": {
    "text": "",
    "visible": false
  },
  "published": true,
  "widgets": [
    {
      "default_value": "",
"label": "Name",
       "variable name": "NAME",
       "visible": true,
       "editable": true,
       "properties": [
         {
           "name": "id",
"value": "name"
         },
         {
           "name": "enable",
           "value": "true"
         }
       ],
       "tooltip": "Allows you to specify a more friendly name (note: name must be
alphanumeric)"
    },
     {
      "default_value": 0,
"label": "Duration",
       "variable name": "DURATION",
      "visible": true,
       "editable": true,
       "properties": [
         {
           "name": "id",
           "value": "duration"
         },
         {
           "name": "enable",
           "value": "true"
         }
       ],
       "tooltip": "The amount of time the job is expected to run for"
    },
     {
       "default_value": "",
"label": "Job Arrays",
       "variable name": "arrays",
       "visible": false,
       "editable": false,
       "properties": [
         {
           "name": "id",
           "value": "arrays"
         },
         {
```

```
"name": "enable",
      "value": "false"
    },
    {
      "name": "start-value",
      "value": "0"
    },
    {
      "name": "end-value",
      "value": "1"
    },
    {
      "name": "start-variable",
      "value": "STARTINDEX"
    },
    {
      "name": "end-variable",
      "value": "ENDINDEX"
   }
  ]
},
{
 "default_value": 0,
"label": "Delay Start By",
  "variable_name": "ELIGIBLEDATE",
  "visible": false,
"editable": false,
  "properties": [
   {
      "name": "id",
      "value": "eligibledate"
   },
    {
      "name": "enable",
      "value": "false"
   }
  ],
  "tooltip": "Declares the time after which the job is eligible for execution"
},
{
  "default value": "0",
  "label": "User Priority",
 "variable name": "USERPRIORITY",
  "visible": false,
  "editable": false,
  "properties": [
    {
      "name": "id",
      "value": "priority"
   },
    {
      "name": "enable",
      "value": "false"
   }
 ],
  "tooltip": "Defines the priority of the job"
},
{
 "default_value": "",
"label": "Submission Script",
```

```
"variable name": "SCRIPT",
  "visible": true,
  "editable": true,
  "properties": [
     {
       "name": "id",
"value": "script"
     }
  ]
},
{
  "default_value": "",
"label": "Account",
  "variable name": "ACCOUNT",
  "visible": false,
  "editable": true,
  "properties": [
     {
       "name": "id",
"value": "account"
     },
     {
       "name": "enable",
       "value": "false"
    }
  ],
   "tooltip": "Defines the account associated with the job"
},
{
  "default_value": "",
"label": "Queue / Class",
  "variable name": "DESTINATIONQUEUE",
  "visible": false,
"editable": true,
  "properties": [
     {
       "name": "id",
       "value": "destinationQueue"
     },
     {
       "name": "enable",
"value": "false"
    }
  ],
  "tooltip": "Defines the destination queue / class of the job"
},
{
  "default_value": "",
  "label": "Quality of Service",
"variable_name": "QOS",
  "visible": false,
  "editable": true,
   "properties": [
     {
       "name": "id",
       "value": "gos"
     },
     {
      "name": "enable",
"value": "false"
```

```
}
 ],
  "tooltip": "Defines the desired QoS for the job"
},
{
 "default_value": "",
"label": "Number of Cores",
"variable_name": "NUMOFCORES",
  "visible": true,
  "editable": true,
  "properties": [
    {
      "name": "id",
      "value": "cpupernode"
    },
    {
      "name": "totalamount",
      "value": true
    },
    {
      "name": "nodeswithcount",
"value": true
    },
    {
      "name": "malleablecorecount",
      "value": true
    },
    {
      "name": "totalamount editable",
      "value": true
    },
    {
      "name": "nodeswithcount_editable",
"value": true
    },
    {
      "name": "malleablecorecount editable",
      "value": true
    },
    {
      "name": "totalamount visible default",
      "value": true
    },
    {
      "name": "nodeswithcount_visible_default",
      "value": false
    },
    {
      "name": "malleablecorecount visible default",
      "value": false
    },
    {
      "name": "totalcores default",
      "value": "1"
    },
    {
      "name": "totalnodes default",
      "value": "1"
    },
    {
```

```
"name": "corespernode_default",
"value": "1"
         },
         {
            "name": "minimumcores_default",
"value": "1"
         },
         {
            "name": "maximumcores_default",
            "value": "2"
         },
         {
            "name": "enable",
"value": "true"
         }
       ],
       "tooltip": "Defines the resources that are required by the job and
establishes a limit to the amount of resource that can be consumed"
    },
     {
       "default_value": "",
       "label": "Memory (GB)",
"variable name": "MEMORYAMOUNT",
       "visible": true,
       "editable": true,
       "properties": [
         {
            "name": "id",
            "value": "memorypernode"
         },
         {
            "name": "totalmemory",
            "value": true
         },
         {
            "name": "memorypercore",
            "value": true
         },
         {
            "name": "totalmemory_visible_default",
"value": false
         },
         {
            "name": "memorypercore_visible_default",
            "value": true
         },
         {
            "name": "totalmemory_default",
"value": "0.50"
         },
         {
            "name": "memorypercore_default",
"value": "0.50"
         },
         {
            "name": "totalmemory editable",
            "value": true
         },
         {
            "name": "memorypercore_editable",
```

```
"value": true
         },
         {
           "name": "enable",
           "value": "true"
        }
      1,
       "tooltip": "Defines the resources that are required by the job and
establishes a limit to the amount of resource that can be consumed"
    },
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      "editable": true,
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establishes a limit to the amount of resource that can be consumed"
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      "variable name": "EXECUTIONDIRECTORY",
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      "editable": true,
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           "name": "id",
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           "value": "false"
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      ],
      "tooltip": "Your job's execution directory"
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"editable": true,
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           "name": "id",
           "value": "errorpath"
         },
         {
           "name": "useExecutionPath",
```

```
"value": false
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         {
           "name": "enable",
           "value": "false"
         }
       1,
       "tooltip": "Defines the path to be used for the standard error stream of the
job"
    },
     {
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       "editable": true,
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           "value": "outputpath"
         },
         {
           "name": "useExecutionPath",
           "value": false
         },
         {
           "name": "enable",
"value": "false"
         }
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       "tooltip": "Defines the path to be used for the standard output stream of the
job"
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       "variable_name": "JOIN",
       "visible": false,
       "editable": false,
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           "name": "id",
           "value": "join"
         },
         {
           "name": "enable",
"value": "false"
         }
       ],
       "tooltip": "Merge stderr and stdout streams?"
     },
     {
       "default_value": "false",
"label": "Hold Job",
       "variable name": "HOLD",
       "visible": false,
       "editable": false,
       "properties": [
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           "name": "id",
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```
"value": "hold"
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          "name": "enable",
          "value": "false"
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      "tooltip": "Specifies that a user hold be applied to the job at submission
time"
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      "default_value": "",
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      "editable": false,
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           "name": "id",
           "value": "shell"
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        }
      1,
      "tooltip": "Declares the shell that interprets the job script, e.g.
/bin/bash"
    },
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      "label": "Moab Environment Variables",
      "variable name": "MOABENVIRONMENTVARIABLES",
      "visible": false,
      "editable": false,
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           "name": "id",
           "value": "moabenvironmentvariables"
        },
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          "name": "enable",
          "value": "true"
        }
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      "tooltip": "Push Moab environment variables to job?"
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      "default_value": "",
"label": "Email Notification List",
      "variable_name": "MAILLIST",
      "visible": false,
"editable": false,
      "properties": [
        {
          "name": "id",
          "value": "maillist"
        },
         {
           "name": "enable",
```

```
"value": "false"
         }
       ],
       "tooltip": "Specifies the list of users to whom mail is sent by the execution
server. Overrides the EMAILADDRESS specified on the USERCFG [credential]"
    },
     {
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       "editable": false,
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           "value": "emailoptions"
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           "name": "enable",
"value": "false"
         }
       ],
       "tooltip": "A list of requested email options"
    },
     {
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       "visible": false,
       "editable": false,
       "properties": [
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           "name": "id",
"value": "genericresources"
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           "name": "enable",
           "value": "false"
         }
       ],
       "tooltip": "Allows for specification of additional job attributes"
    },
     {
      "default_value": "",
"label": "Job Env Variables",
"variable_name": "Job Environment Variables",
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       "editable": false,
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           "value": "jobEnvVariables"
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           "name": "enable",
           "value": "false"
         }
      ]
    },
     {
```

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  "visible": false,
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  "properties": [
    {
      "name": "id",
      "value": "moabtemplates"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ],
  "tooltip": "Defines set of MOAB job templates"
},
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 "default_value": "SHARED",
"label": "Node Access Policy",
  "variable name": "NODEACCESSPOLICY",
  "visible": false,
  "editable": false,
  "properties": [
    {
      "name": "id",
      "value": "node-access-policy"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
  "default_value": "FIRSTAVAILABLE",
  "label": "Node Allocation Policy",
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  "visible": false,
"editable": false,
  "properties": [
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      "value": "node-allocation-policy"
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      "value": "false"
    }
  ]
},
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 "default_value": "EXACTSET",
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  "variable name": "NODESREQUESTEDPOLICY",
  "visible": false,
  "editable": false,
  "properties": [
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      "name": "id",
```

```
"value": "nodes-requested-policy"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
 "default_value": "",
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  "variable_name": "OPERATINGSYSTEM",
  "visible": false,
"editable": false,
  "properties": [
    {
      "name": "id",
      "value": "operatingSystem"
    },
    {
      "name": "enable",
"value": "false"
    }
  ]
},
{
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"label": "Requested Features",
  "variable name": "FEATURESREQUESTED",
  "visible": false,
  "editable": false,
  "properties": [
    {
      "name": "id",
      "value": "features-requested"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ],
  "tooltip": "Contains a list of features that are required for the job to run"
},
{
  "default_value": "",
"label": "Excluded Features",
  "variable_name": "FEATURESEXCLUDED",
  "visible": false,
  "editable": false,
  "properties": [
    {
      "name": "id",
       "value": "features-excluded"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ],
  "tooltip": "Contains a list of features that can not be present on hardware
```

```
the job needs to run"
    },
    {
      "default_value": "",
"label": "Nodes Requested List",
       "variable name": "NODESREQUESTED",
       "visible": false,
"editable": false,
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           "value": "nodes-requested"
         },
         {
           "name": "enable",
"value": "false"
         }
      ]
    }
  ],
  "sections": [
    {
      "name": "defaults",
       "value": "Basic Job Settings"
    },
    {
      "name": "timeManagement",
"value": "Time Management"
    },
    {
       "name": "credentials",
       "value": "Credentials"
    },
    {
      "name": "resources",
"value": "Resources"
    },
    {
       "name": "dataManagement",
       "value": "Data Management"
    },
    {
      "name": "custom",
       "value": "Custom Settings"
    },
    {
       "name": "basic",
       "value": "Basic Settings"
    },
    {
       "name": "advanced",
       "value": "Advanced Settings"
    },
    {
      "name": "description",
       "value": "Application Description"
    }
  ],
  "permissions": [
     {
```
```
"name": "ALL",
"type": "user"
},
{
    "name": "ALL",
    "type": "group"
    },
    {
    "name": "ALL",
    "type": "account"
    }
]
}
```

Chapter 4 Application Templates

```
{
  "url": "http://10.2.184.87:8081/api/templates/7/",
  "history url": null,
  "changed by": "moab-admin",
  "current": true,
"date": "2016-09-13T07:42:36.204904Z",
  "id": 7,
  "name": "New Template",
  "type": "regular",
  "description": {
    "text": "",
    "visible": false
  },
  "owner": "moab-admin",
  "permissions": [
    {
      "name": "ALL",
"type": "account"
    },
    {
      "name": "ALL",
      "type": "group"
    },
    {
      "name": "ALL",
      "type": "user"
    }
  ],
  "published": true,
  "sections": [
    {
      "name": "defaults",
      "value": "Basic Job Settings"
    },
    {
      "name": "timeManagement",
      "value": "Time Management"
    },
    {
      "name": "credentials",
      "value": "Credentials"
    },
    {
      "name": "resources",
"value": "Resources"
    },
    {
      "name": "dataManagement",
      "value": "Data Management"
    },
    {
      "name": "custom",
"value": "Custom Settings"
    },
    {
      "name": "basic",
      "value": "Basic Settings"
    },
    {
```

```
"name": "advanced",
"value": "Advanced Settings"
  },
  {
    "name": "description",
    "value": "Application Description"
 }
],
"use": 0,
"widgets": [
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    "editable": true,
    "label": "Name",
    "variable name": "NAME",
    "visible": true,
    "properties": [
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        "name": "id",
"value": "name"
      },
      {
        "name": "enable",
        "value": "true"
      }
    ]
  },
  {
    "default value": "0",
    "editable": true,
    "label": "Duration",
    "variable name": "DURATION",
    "visible": true,
    "properties": [
      {
        "name": "id",
        "value": "duration"
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      {
        "name": "enable",
        "value": "true"
      }
    ]
  },
  {
    "default value": "",
    "editable": false,
    "label": "Job Arrays",
    "variable name": "arrays",
    "visible": false,
    "properties": [
      {
        "name": "id",
        "value": "arrays"
      },
      {
        "name": "enable",
        "value": "false"
      },
      {
```

```
"name": "start-value",
"value": "0"
    },
    {
       "name": "end-value",
"value": "1"
    },
    {
       "name": "start-variable",
       "value": "STARTINDEX"
    },
    {
       "name": "end-variable",
       "value": "ENDINDEX"
    }
  ]
},
{
  "default_value": "0",
  "editable": false,
"label": "Delay Start By",
  "variable name": "ELIGIBLEDATE",
  "visible": false,
  "properties": [
    {
       "name": "id",
       "value": "eligibledate"
    },
    {
       "name": "enable",
       "value": "false"
    }
  ]
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  "editable": false,
  "label": "User Priority",
  "variable_name": "USERPRIORITY",
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    {
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       "value": "priority"
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    {
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"value": "false"
    }
  ]
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  "editable": true,
  "label": "Submission Script",
  "variable name": "SCRIPT",
  "visible": true,
  "properties": [
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```

```
"value": "script"
    }
  ]
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  "editable": true,
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  "variable_name": "ACCOUNT",
  "visible": false,
  "properties": [
    {
      "name": "id",
       "value": "account"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
  "default value": "",
  "editable": true,
  "label": "Queue / Class",
"variable_name": "DESTINATIONQUEUE",
"visible": false,
  "properties": [
    {
      "name": "id",
      "value": "destinationQueue"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
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  "editable": true,
  "label": "Quality of Service",
  "variable name": "QOS",
  "visible": false,
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      "name": "id",
      "value": "qos"
    },
    {
      "name": "enable",
       "value": "false"
    }
  ]
},
{
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  "editable": true,
  "label": "Number of Cores",
"variable_name": "NUMOFCORES",
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```
"visible": true,
"properties": [
  {
    "name": "id",
     "value": "cpupernode"
  },
  {
    "name": "totalamount",
"value": "True"
  },
  {
    "name": "nodeswithcount",
     "value": "True"
  },
  {
    "name": "malleablecorecount",
    "value": "True"
  },
  {
    "name": "totalamount_editable",
"value": "True"
  },
  {
    "name": "nodeswithcount_editable",
     "value": "True"
  },
  {
    "name": "malleablecorecount_editable",
"value": "True"
  },
  {
    "name": "totalamount_visible_default",
"value": "True"
  },
  {
    "name": "nodeswithcount visible default",
     "value": "False"
  },
  {
    "name": "malleablecorecount_visible_default",
"value": "False"
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    "name": "totalcores_default",
"value": "1"
  },
  {
    "name": "totalnodes_default",
"value": "1"
  },
  {
    "name": "corespernode_default",
"value": "1"
  },
  {
    "name": "minimumcores_default",
"value": "1"
  },
  {
     "name": "maximumcores_default",
```

```
"value": "2"
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    {
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       "value": "true"
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  "editable": true,
  "label": "Memory (GB)",
"variable_name": "MEMORYAMOUNT",
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       "name": "id",
       "value": "memorypernode"
    },
    {
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"value": "True"
    },
    {
       "name": "memorypercore",
       "value": "True"
     },
     {
       "name": "totalmemory_visible_default",
       "value": "False"
    },
     {
      "name": "memorypercore_visible_default",
"value": "True"
    },
     {
       "name": "totalmemory_default",
       "value": "0.50"
    },
    {
       "name": "memorypercore_default",
"value": "0.50"
    },
     {
       "name": "totalmemory_editable",
"value": "True"
    },
     {
       "name": "memorypercore_editable",
       "value": "True"
    },
    {
       "name": "enable",
       "value": "true"
    }
  ]
},
{
  "default_value": "linux",
  "editable": true,
```

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  "visible": true,
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       "value": "true"
    }
  ]
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    },
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"value": "false"
    }
  ]
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    {
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"value": "false"
    }
  ]
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```

```
"name": "id",
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      "value": "False"
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    {
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     "value": "false"
    }
  ]
},
{
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  "editable": false,
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  "visible": false,
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      "value": "join"
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      "value": "false"
   }
  ]
},
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  "visible": false,
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      "value": "hold"
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    {
      "name": "enable",
      "value": "false"
   }
  ]
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  "variable_name": "SHELL",
"visible": false,
  "properties": [
    {
      "name": "id",
      "value": "shell"
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    {
      "name": "enable",
```

```
"value": "false"
    }
  ]
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  "editable": false,
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  "visible": false,
  "properties": [
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      "name": "id",
      "value": "moabenvironmentvariables"
    },
    {
      "name": "enable",
      "value": "true"
    }
  ]
},
{
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  "editable": false,
  "label": "Email Notification List",
  "variable_name": "MAILLIST",
"visible": false,
  "properties": [
    {
      "name": "id",
      "value": "maillist"
    },
    {
      "name": "enable",
"value": "false"
    }
  ]
},
{
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  "editable": false,
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"value": "emailoptions"
    },
    {
      "name": "enable",
      "value": "false"
  ]
},
{
  "default_value": "",
  "editable": false,
  "label": "Generic Resources",
  "variable name": "GENERICRESOURCES",
```

```
"visible": false,
  "properties": [
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      "name": "id",
      "value": "genericresources"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
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  "editable": false,
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  "variable name": "Job Environment Variables",
  "visible": false,
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      "name": "id",
      "value": "jobEnvVariables"
    },
    {
      "name": "enable",
      "value": "false"
  ]
},
{
  "default_value": "",
  "editable": false,
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  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "moabtemplates"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
  "default_value": "SHARED",
  "editable": false,
  "label": "Node Access Policy",
  "variable_name": "NODEACCESSPOLICY",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "node-access-policy"
    },
    {
      "name": "enable",
"value": "false"
```

```
}
  ]
},
{
  "default_value": "FIRSTAVAILABLE",
  "editable": false,
  "label": "Node Allocation Policy",
  "variable name": "NODEALLOCATIONPOLICY",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "node-allocation-policy"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
  "default value": "EXACTSET",
  "editable": false,
  "label": "Node Requested Policy",
  "variable_name": "NODESREQUESTEDPOLICY",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "nodes-requested-policy"
    },
    {
      "name": "enable",
"value": "false"
    }
  ]
},
{
  "default_value": "",
  "editable": false,
  "label": "Operating System",
  "variable name": "OPERATINGSYSTEM",
  "visible": false,
  "properties": [
    {
      "name": "id",
"value": "operatingSystem"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
  "default value": "",
  "editable": false,
  "label": "Requested Features",
  "variable name": "FEATURESREQUESTED",
  "visible": false,
```

```
"properties": [
        {
          "name": "id",
          "value": "features-requested"
        },
        {
          "name": "enable",
          "value": "false"
        }
      ]
    },
    {
      "default value": "",
      "editable": false,
      "label": "Excluded Features",
      "variable name": "FEATURESEXCLUDED",
      "visible": false,
      "properties": [
        {
          "name": "id",
          "value": "features-excluded"
        },
        {
          "name": "enable",
          "value": "false"
        }
      ]
    },
    {
      "default value": "",
      "editable": false,
      "label": "Nodes Requested List",
      "variable_name": "NODESREQUESTED",
      "visible": false,
"properties": [
        {
          "name": "id",
          "value": "nodes-requested"
        },
        {
          "name": "enable",
          "value": "false"
        }
      ]
    }
  ],
  "version_description": "",
  "version": 1
}
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- <u>Chapter 4 Application Templates on page 89</u>

Delete Template

This topic provides information on how to delete an application template; including all of its template history (api/templates/<id>). See <u>Delete Template</u> <u>History on page 189</u> for information on how to delete the selected history for an application template (api/templates/<history_pk>/history/<version>).

In this topic:

- URL on page 189
- Parameters on page 189
- Example on page 189

URL

```
DELETE /api/templates/<id>/
```

Parameters

Parameter	Required	Туре	Description	Example
id	Yes	Integer	ID of the application template.	1

Example

```
DELETE /api/templates/2/
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Delete Template History

This topic provides information on how to delete the selected history for an application template (api/templates/<history_pk>/history/<version>). See <u>Delete Template on page 189</u> for information on how to delete an application template; including all of its template history (api/templates/<id>

In this topic:

- URL on page 190
- Parameters on page 190

• Example on page 190

URL

```
DELETE /api/templates/<history pk>/history/<version>/
```

Parameters

Parameter	Required	Туре	Description	Example
history_pk	Yes	String	History ID of the application template	b00ce08c-01ed-4a9d-a916- f587b9f1af44
version	Yes	Integer	Version of the application tem- plate	2

Example

```
_____
DELETE /api/templates/b00ce08c-01ed-4a9d-a916-f587b9f1af44/history/2/
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Get All Templates

In this topic:

- URL on page 190
- Parameters on page 191
 - Page Control on page 191
 - Filter on page 191
- Example on page 192
 - Response on page 193

URL

```
GET /api/templates/
```

Parameters

Page Control

Parameter	Required	Туре	Description	Example
page_size	No	Integer	Specifies count of application templates per page.	page_size=3
page	No	Integer	Specifies number of page.	page=2

Filter

Parameter	Required	Туре	Description	Example
name	No	String	Specifies name of application tem- plate for filtering	name=Free Form namecontains=foo nameicontains=foo name_startswith=foo
current	No	Boolean	Specifies whether only the current version for the application templates is included in the filtering	current=True
type	No	String	Specify the application template type to include in the filtering	type=array
owner	No	String	Specifies the owner's name for fil- tering	<pre>owner=moab-foo owner contains=moab owner icontains=foo owner startswith=foo owner_ne=foo</pre>
published	No	Boolean	Specifies the published status of the application template for filtering	published=True
permissions_ user_name_ in	No	List	Specifies the list of users that the application template should contain	permissionsuser namein=- =hpotter,hgranger

Parameter	Required	Туре	Description	Example
permissions_ group_name_ _in	No	List	Specifies the list of groups that the application template should contain	permissions_group_ _name_in=- =hpotter,hgranger
permissions_ account_ name_in	No	List	Specifies the list of accounts that the application template should contain	permissions accountname in=DEFAULT,QA
date_gte	No	Date	Specifies the date before which the application template was created	dategte=2015-09- 01
date_lte	No	Date	Specifies the date after which the application template was created	date1te=2015-09- 16

Example

,		k.
GEI	/api/templates/?page_size=1&published=True	
<u> </u>		/

Chapter 4 Application Templates

```
{
    "count": 1,
    "next": null,
    "previous": null,
    "results": [
        {
            "url": "http://localhost:8080/api/templates/5/",
            "history url": "http://localhost:8080/api/templates/b00ce08c-01ed-4a9d-
a916-f587b9f1af44/history/",
            "changed_by": "moab-admin",
            "current": true,
            "date": "2016-09-08T12:14:19.647410Z",
            "id": 5,
            "name": "Free Form",
            "type": "regular",
            "description": {
                "text": "<h1><strong>Welcome to our Free Form</strong> Application
Template!</h1>\n\nFill in the inputs and press the "Create" button to submit
your job!\n\n-- Enjoy!",
                "visible": true
            },
            "owner": "moab-admin",
            "permissions": [
                {
                    "name": "ALL",
                    "type": "account"
                },
                {
                    "name": "ALL",
                    "type": "group"
                },
                {
                    "name": "ALL",
                    "type": "user"
                }
            ],
            "published": true,
            "sections": [
                {
                    "name": "description",
                    "value": "Application Description"
                },
                {
                    "name": "advanced",
                    "value": "Advanced Settings"
                },
                {
                    "name": "basic",
                    "value": "Basic Settings"
                },
                {
                    "name": "custom",
                    "value": "Custom Settings"
                },
                {
                    "name": "dataManagement",
                    "value": "Data Management"
                },
                {
```

```
"name": "resources",
"value": "Resources"
     },
     {
          "name": "credentials",
"value": "Credentials"
     },
     {
          "name": "timeManagement",
          "value": "Time Management"
     },
     {
          "name": "defaults",
          "value": "Basic Job Settings"
     }
],
"use": 0,
"widgets": [
    {
          "default_value": "ggg",
"editable": true,
          "label": "Name",
          "variable name": "NAME",
          "visible": true,
          "properties": [
               {
                   "name": "id",
"value": "name"
               },
               {
                   "name": "enable",
"value": "true"
               }
          ]
     },
     {
          "default_value": "0",
          "editable": true,
          "label": "Duration",
          "variable_name": "DURATION",
"visible": true,
          "properties": [
               {
                    "name": "id",
                    "value": "duration"
               },
               {
                    "name": "enable",
                    "value": "true"
               }
          ]
     },
     {
          "default value": "",
          "editable": false,
          "label": "Job Arrays",
          "variable name": "arrays",
          "visible": false,
          "properties": [
               {
```

```
"name": "id",
              "value": "arrays"
         },
         {
              "name": "enable",
              "value": "false"
         },
         {
              "name": "start-value",
              "value": "0"
         },
         {
              "name": "end-value",
              "value": "1"
         },
         {
              "name": "start-variable",
              "value": "STARTINDEX"
         },
         {
              "name": "end-variable",
"value": "ENDINDEX"
         }
    ]
},
{
    "default value": "0",
    "editable": true,
    "label": "Delay Start By",
    "variable name": "ELIGIBLEDATE",
    "visible": true,
    "properties": [
         {
              "name": "id",
"value": "eligibledate"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
{
    "default_value": "0",
    "editable": false,
"label": "User Priority",
"variable_name": "USERPRIORITY",
    "visible": false,
    "properties": [
         {
              "name": "id",
              "value": "priority"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
{
```

```
"default value": "",
    "editable": true,
    "label": "Submission Script",
    "variable name": "SCRIPT",
    "visible": true,
    "properties": [
         {
              "name": "id",
             "value": "script"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Account",
    "variable_name": "ACCOUNT",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "account"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Queue / Class",
"variable_name": "DESTINATIONQUEUE",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "destinationQueue"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Quality of Service",
"variable_name": "QOS",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "gos"
         },
         {
             "name": "enable",
"value": "true"
```

```
}
    ]
},
{
     "default value": "",
    "editable": true,
"label": "Number of Cores",
"variable_name": "NUMOFCORES",
     "visible": true,
     "properties": [
          {
               "name": "id",
               "value": "cpupernode"
          },
          {
               "name": "totalamount",
               "value": "True"
          },
          {
               "name": "nodeswithcount",
"value": "True"
          },
          {
               "name": "malleablecorecount",
               "value": "False"
          },
          {
               "name": "totalamount_editable",
"value": "False"
          },
          {
               "name": "nodeswithcount_editable",
"value": "False"
          },
          {
               "name": "malleablecorecount editable",
               "value": "False"
          },
          {
               "name": "totalamount_visible_default",
"value": "True"
          },
          {
               "name": "nodeswithcount visible default",
               "value": "False"
          },
          {
               "name": "malleablecorecount_visible_default",
"value": "False"
          },
          {
               "name": "totalcores_default",
"value": "1"
          },
          {
               "name": "totalnodes_default",
               "value": "1"
          },
          {
               "name": "corespernode default",
```

```
"value": "1"
          },
          {
               "name": "minimumcores default",
               "value": "1"
          },
          {
               "name": "maximumcores_default",
"value": "2"
          },
          {
               "name": "enable",
               "value": "true"
          }
     ]
},
{
     "default_value": "",
     "editable": true,
"label": "Total Memory (GB)",
"variable_name": "MEMORYAMOUNT",
     "visible": true,
     "properties": [
          {
               "name": "id",
               "value": "memorypernode"
          },
          {
               "name": "totalmemory",
               "value": "True"
          },
          {
               "name": "memorypercore",
"value": "True"
          },
          {
               "name": "totalmemory visible default",
               "value": "True"
          },
          {
               "name": "memorypercore_visible_default",
"value": "True"
          },
          {
               "name": "totalmemory_default",
"value": "0.5"
          },
          {
               "name": "memorypercore_default",
               "value": "0.5"
          },
          {
               "name": "totalmemory_editable",
"value": "False"
          },
          {
               "name": "memorypercore editable",
               "value": "False"
          },
          {
```

```
"name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "linux",
    "editable": true,
    "label": "Architecture",
    "variable name": "ARCHITECTURE",
    "visible": true,
    "properties": [
         {
             "name": "id",
"value": "architecture"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Execution Path",
    "variable name": "EXECUTIONDIRECTORY",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "exedir"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Error Path",
    "variable name": "ERRORPATH",
    "visible": true,
    "properties": [
         {
             "name": "id",
              "value": "errorpath"
         },
         {
              "name": "useExecutionPath",
              "value": "True"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
```

```
{
    "default value": "",
    "editable": true,
    "label": "Output Path",
    "variable name": "OUTPUTPATH",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "outputpath"
         },
         {
             "name": "useExecutionPath",
             "value": "True"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default value": "false",
    "editable": true,
    "label": "Merge Streams",
    "variable_name": "JOIN",
"visible": true,
    "properties": [
         {
             "name": "id",
             "value": "join"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "false",
    "editable": true,
    "label": "Hold Job",
    "variable name": "HOLD",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "hold"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Script Shell",
"variable_name": "SHELL",
```

```
"visible": true,
    "properties": [
         {
              "name": "id",
              "value": "shell"
         },
         {
              "name": "enable",
"value": "true"
         }
    ]
},
{
    "default value": "true",
    "editable": true,
    "label": "Moab Environment Variables",
    "variable name": "MOABENVIRONMENTVARIABLES",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "moabenvironmentvariables"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
"label": "Email Notification List",
"variable_name": "MAILLIST",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "maillist"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Email Options",
    "variable_name": "EMAILOPTIONS",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "emailoptions"
         },
         {
              "name": "enable",
"value": "true"
```

```
}
    ]
},
{
    "default_value": "",
    "editable": true,
"label": "Generic Resources",
    "variable name": "GENERICRESOURCES",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "genericresources"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Job Environment Variables",
    "variable_name": "Job Environment Variables",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "jobEnvVariables"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": false,
    "label": "Default Moab Template",
    "variable name": "MOABTEMPLATE",
    "visible": false,
    "properties": [
         {
             "name": "id",
"value": "moabtemplates"
         },
         {
             "name": "enable",
             "value": "false"
         }
    ]
},
{
    "default value": "SHARED",
    "editable": false,
    "label": "Node Access Policy",
    "variable_name": "NODEACCESSPOLICY",
    "visible": false,
```

```
"properties": [
         {
             "name": "id",
             "value": "node-access-policy"
         },
         {
             "name": "enable",
"value": "false"
         }
    ]
},
{
    "default value": "FIRSTAVAILABLE",
    "editable": false,
    "label": "Node Allocation Policy",
    "variable name": "NODEALLOCATIONPOLICY",
    "visible": false,
    "properties": [
         {
             "name": "id",
             "value": "node-allocation-policy"
         },
         {
             "name": "enable",
             "value": "false"
         }
    ]
},
{
    "default value": "EXACTSET",
    "editable": false,
    "label": "Node Requested Policy",
    "variable name": "NODESREQUESTEDPOLICY",
    "visible": false,
"properties": [
         {
             "name": "id",
             "value": "nodes-requested-policy"
         },
         {
             "name": "enable",
"value": "false"
         }
    ]
},
{
    "default value": "",
    "editable": false,
    "label": "Operating System",
    "variable name": "OPERATINGSYSTEM",
    "visible": false,
    "properties": [
         {
             "name": "id",
             "value": "operatingSystem"
         },
         {
             "name": "enable",
"value": "false"
         }
```

```
]
                 },
                 {
                     "default value": "",
                     "editable": false,
                     "label": "Requested Features",
                     "variable_name": "FEATURESREQUESTED",
                     "visible": false,
                     "properties": [
                         {
                              "name": "id",
                              "value": "features-requested"
                         },
                          {
                              "name": "enable",
                              "value": "false"
                         }
                     ]
                 },
                 {
                     "default_value": "",
                     "editable": false,
                     "label": "Excluded Features",
                     "variable name": "FEATURESEXCLUDED",
                     "visible": false,
                     "properties": [
                         {
                              "name": "id",
                              "value": "features-excluded"
                         },
                          {
                              "name": "enable",
"value": "false"
                         }
                     ]
                 },
                 {
                     "default_value": "",
                     "editable": false,
                     "label": "Nodes Requested List",
                     "variable name": "NODESREQUESTED",
                     "visible": false,
                     "properties": [
                         {
                              "name": "id",
                              "value": "nodes-requested"
                          },
                         {
                              "name": "enable",
                              "value": "false"
                         }
                     ]
                 }
            ],
             "version_description": "Default Free Form Application Template",
             "version": 2
        }
   ]
}
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Get Single Template

In this topic:

- URL on page 206
- Parameters on page 206
- Example on page 206
 - Response on page 207

URL

```
GET /api/templates/<id>/
```

Parameters

Parameter	Required	Туре	Description	Example
id	Yes	Integer	ID of the application template.	1

Example

GET	/api/templates/1/
L .	

Chapter 4 Application Templates

```
{
     "permissions": [
           {
                 "name": "ALL",
"type": "account"
           },
            {
                 "name": "ALL",
"type": "group"
           },
            {
                 "name": "ALL",
"type": "user"
           }
     ],
"published": true,
     "sections": [
            {
                 "name": "defaults",
"value": "Basic Job Settings"
            },
            ł
                 "name": "timeManagement",
"value": "Time Management"
            },
            {
                 "name": "credentials",
"value": "Credentials"
           },
            {
                 "name": "resources",
"value": "Resources"
           },
            {
                 "name": "dataManagement",
"value": "Data Management"
           },
            {
                 "name": "custom",
"value": "Custom Settings"
           }
     ],
"use": 3,
     "widgets": [
            {
                 "default value": "",
                 "editable": true,
"label": "Name",
"variable_name": "NAME",
"visible": true,
                 "properties": [
                       {
                             "name": "id",
                             "value": "name"
                       }
                 ]
           },
            {
```

```
"default_value": "",
"editable": true,
      "label": "Duration",
      "variable name": "DURATION",
"visible": true,
      "properties": [
             {
                    "name": "id",
"value": "duration"
             }
      ]
},
{
      "default_value": "",
"editable": false,
"label": "Job Arrays",
      "variable name": "arrays",
"visible": false,
"properties": [
             {
                    "name": "id",
"value": "arrays"
             },
             {
                    "name": "enable",
"value": "false"
             },
             {
                   "name": "start-value",
"value": "0"
             },
             {
                    "name": "end-value",
                    "value": "1"
             },
              {
                    "name": "start-variable",
"value": "STARTINDEX"
             },
             {
                    "name": "end-variable",
"value": "ENDINDEX"
             }
      ]
},
{
      "default_value": "",
      "editable": true,
"label": "Delay Start By",
"variable_name": "ELIGIBLEDATE",
"visible": true,
      "properties": [
             {
                    "name": "id",
"value": "eligibledate"
             }
      ]
},
      "default value": "0",
      "editable": true,
"label": "User Priority",
      "variable_name": "PRIORITY",
"visible": true,
      "properties": [
```

```
{
                 "name": "id",
                 "value": "priority"
           },
           {
                 "name": "enable",
                 "value": "true"
           }
     ]
},
{
     "default_value": "",
     "editable": true,
     "label": "Submission Script",
     "variable name": "SCRIPT",
     "visible": true,
     "properties": [
           {
                 "name": "id",
                 "value": "script"
           }
     ]
},
{
     "default_value": "",
     "editable": true,
     "label": "Account",
     "variable name": "ACCOUNT",
"visible": true,
     "properties": [
           {
                "name": "id",
"value": "account"
           }
     ]
},
{
     "default_value": "",
"editable": true,
"label": "Queue / Class",
"variable_name": "DESTINATIONQUEUE",
"visible": true,
     "properties": [
           {
                "name": "id",
"value": "destinationQueue"
           }
     ]
},
{
     "default_value": "",
"editable": true,
"label": "Quality of Service",
"variable_name": "QOS",
     "visible": true,
     "properties": [
           {
                "name": "id",
"value": "qos"
           }
     ]
},
{
     "default_value": "",
     "editable": true,
```
```
"label": "Number of Cores"
     "variable_name": "NUMOFCORES",
"visible": true,
     "properties": [
           {
                "name": "id",
                "value": "cpupernode"
           }
     ]
},
{
     "default value": "0.5",
     "editable": true,
     "label": "Total Memory (GB)",
"variable_name": "MEMORYPERNODE",
     "visible": true,
     "properties": [
          {
                "name": "id",
                "value": "memorypernode"
           }
     ]
},
{
     "default value": "",
     "editable": true,
     "label": "Architecture",
"variable_name": "ARCHITECTURE",
"visible": true,
     "properties": [
          {
                "name": "id",
"value": "architecture"
           }
     ]
},
{
     "default value": "",
     "editable": true,
"label": "Execution Path",
     "variable_name": "EXECUTIONDIRECTORY",
"visible": true,
     "properties": [
          {
                "name": "id",
"value": "exedir"
           }
     ]
},
{
     "default_value": "",
     "editable": true,
"label": "Error Path",
"variable name": "ERRORPATH",
"visible": true,
     "properties": [
          {
                "name": "id",
                "value": "errorpath"
           }
     ]
},
{
     "default value": "",
     "editable": true,
```

```
"label": "Output Path",
"variable_name": "OUTPUTPATH",
"visible": true,
     "properties": [
           {
                "name": "id",
                "value": "outputpath"
           }
     ]
},
{
     "default value": "false",
     "editable": true,
     "label": "Merge Streams",
"variable_name": "JOIN",
     "visible": true,
     "properties": [
           {
                "name": "id",
                "value": "join"
           }
     ]
},
{
     "default_value": "false",
     "editable": true,
     "label": "Hold Job",
"variable_name": "HOLD",
"visible": true,
     "properties": [
           {
                "name": "id",
"value": "hold"
           }
     ]
},
{
     "default_value": "",
"editable": true,
"label": "Script Shell",
     "variable_name": "SHELL",
"visible": true,
     "properties": [
           {
                "name": "id",
"value": "shell"
           }
     ]
},
{
     "default_value": "true",
"editable": true,
     "label": "Moab Environment Variables",
     "variable_name": "MOABENVIRONMENTVARIABLES",
     "visible": true,
     "properties": [
           {
                "name": "id",
"value": "moabenvironmentvariables"
           }
     ]
},
{
     "default value": "",
     "editable": true,
```

```
"label": "Email Notification List",
                "variable_name": "MAILLIST",
                "visible": true,
                "properties": [
                     {
                          "name": "id",
                          "value": "maillist"
                     }
               ]
          },
          {
               "default value": "",
               "editable": true,
               "label": "Email Options",
"variable_name": "EMAILOPTIONS",
               "visible": true,
                "properties": [
                     {
                          "name": "id",
                          "value": "emailoptions"
                     }
               ]
          },
          {
                "default value": "",
               "editable": true,
               "label": "Generic Resources",
"variable_name": "GENERICRESOURCES",
"visible": true,
                "properties": [
                     {
                          "name": "id",
"value": "genericresources"
                     }
               ]
          },
          {
               "default value": "",
               "editable": true,
"label": "Feature Tags",
               "variable_name": "FEATURETAGS",
"visible": true,
                "properties": [
                     {
                          "name": "id",
"value": "featuretags"
                     }
               ]
          }
     ]
}
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Modify Template

This topic provides information on how to modify the application template itself (api/templates/<id>

 (api/templates/<id>). See Modify Template History on page 224 for information on how to modify the application template's history/version information (api/templates/<history_pk>/history/<version>).

These are the different methods that you can use to modify an application template:

- PUT Creates a new application template version and enables you to modify and save template attribute changes to that version. The previous version is saved in the application template's history.
- PATCH Lets you change whether the application template is published; all other template attributes, including the template version, remain unchanged.

In this topic:

- PUT Method on page 214
- PATCH Method on page 215

PUT Method

In this section:

- URL on page 214
- Parameters on page 214
- Example on page 214

URL

```
PUT /api/templates/<id>/
```

Parameters

Parameter	Required	Туре	Description	Example
id	Yes	Integer	ID of the application template	1

Example

See <u>Create Template on page 161</u> for additional parameters you can modify.

PATCH Method

You must the correct content type when using the PATCH API. If not specified, the API will consider the type as 'text/html' which might cause side effects in the request processing code.

In this section:

- URL on page 215
- Parameters on page 215
- JSON Structure on page 215
- Example on page 215
 - Request Body on page 216
 - Response on page 217

URL

```
PATCH /api/templates/<id>/
```

Parameters

Parameter	Required	Туре	Description	Example
id	Yes	Integer	ID of the application template	1

JSON Structure

The following table identifies the template attributes that can be changed via a PATCH call.

Name	Required	Туре	Description
published	No	Boolean	Application template's status: published or unpublished; if the applic- ation template is unpublished, then only owner can use it (not generally visible)

Example

This section provides an example of how to update application template 1 with the published tag unset.

PATCH /api/templates/1/

Request Body

·)
	1
"published": false	
\	;

Chapter 4 Application Templates

Response

Response

```
{
  "url": "http://localhost:8080/api/templates/1/",
  "assigned": "ALL",
  "date": "2015-09-01",
 "id": 1,
"name": "My New Name",
"owner": "hpotter",
  "permissions": [
    {
       "name": "ALL",
       "type": "account"
    },
    {
      "name": "ALL",
"type": "group"
    },
    {
      "name": "ALL",
"type": "user"
    }
  ],
  "published": false,
  "sections": [
    {
       "name": "defaults",
       "value": "Basic Job Settings"
    },
    {
      "name": "timeManagement",
       "value": "Time Management"
    },
    {
      "name": "credentials",
       "value": "Credentials"
    },
    {
       "name": "resources",
"value": "Resources"
    },
    {
      "name": "dataManagement",
       "value": "Data Management"
    },
    {
      "name": "custom",
"value": "Custom Settings"
    },
    {
       "name": "basic",
       "value": "Basic Settings"
    },
    {
       "name": "advanced",
       "value": "Advanced Settings"
    }
  ],
  "use": 0,
  "widgets": [
    {
```

```
"default value": "",
  "editable": true,
  "label": "Name",
  "variable name": "NAME",
  "visible": true,
  "properties": [
    {
       "name": "id",
"value": "name"
     }
  ]
},
{
  "default_value": "0",
  "editable": true,
  "label": "Duration",
  "variable name": "DURATION",
  "visible": true,
  "properties": [
    {
       "name": "id",
"value": "duration"
     }
  ]
},
{
  "default_value": "",
  "editable": true,
  "label": "Job Arrays",
  "variable_name": "arrays",
  "visible": true,
  "properties": [
    {
       "name": "id",
"value": "arrays"
     },
     {
       "name": "enable",
       "value": "true"
     },
     {
       "name": "start-value",
       "value": "0"
     },
     {
       "name": "end-value",
"value": "1"
     },
     {
       "name": "start-variable",
       "value": "STARTINDEX"
     },
     {
       "name": "end-variable",
"value": "ENDINDEX"
     }
  ]
},
{
  "default_value": "0",
```

```
"editable": false,
  "label": "Delay Start By",
  "variable name": "ELIGIBLEDATE",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "eligibledate"
    }
  ]
},
{
  "default value": "0",
  "editable": false,
  "label": "User Priority",
  "variable name": "USERPRIORITY",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "priority"
    },
    {
      "name": "enable",
      "value": "false"
    }
  ]
},
{
 "default_value": "",
 "editable": true,
  "label": "Submission Script",
  "variable name": "SCRIPT",
  "visible": true,
"properties": [
    {
      "name": "id",
      "value": "script"
    }
  ]
},
{
 "default_value": "",
 "editable": true,
  "label": "Account",
  "variable name": "ACCOUNT",
  "visible": false,
"properties": [
    {
      "name": "id",
      "value": "account"
    }
  ]
},
{
 "default value": "",
 "editable": true,
  "label": "Queue / Class",
"variable_name": "DESTINATIONQUEUE",
  "visible": false,
```

```
"properties": [
    {
      "name": "id",
      "value": "destinationQueue"
    }
  ]
},
{
  "default_value": "",
  "editable": true,
  "label": "Quality of Service",
"variable_name": "QOS",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "gos"
    }
  ]
},
{
  "default_value": "",
  "editable": true,
  "label": "Number of Cores",
  "variable_name": "NUMOFCORES",
  "visible": true,
  "properties": [
    {
      "name": "id",
      "value": "cpupernode"
    }
  ]
},
{
  "default_value": "0.5",
  "editable": true,
  "label": "Total Memory (GB)",
  "variable_name": "MEMORYPERNODE",
  "visible": true,
  "properties": [
    {
      "name": "id",
      "value": "memorypernode"
    }
  ]
},
{
  "default_value": "",
  "editable": true,
  "label": "Architecture",
  "variable_name": "ARCHITECTURE",
  "visible": true,
  "properties": [
    {
      "name": "id",
      "value": "architecture"
    }
  ]
},
{
```

```
"default_value": "",
  "editable": true,
 "label": "Execution Path",
 "variable name": "EXECUTIONDIRECTORY",
 "visible": false,
  "properties": [
   {
      "name": "id",
     "value": "exedir"
   }
 ]
},
{
 "default_value": "",
 "editable": true,
 "label": "Error Path",
 "variable name": "ERRORPATH",
 "visible": false,
  "properties": [
   {
      "name": "id",
     "value": "errorpath"
   }
 ]
},
{
 "default_value": "",
 "editable": true,
 "label": "Output Path",
 "variable name": "OUTPUTPATH",
 "visible": false,
  "properties": [
   {
      "name": "id",
     "value": "outputpath"
   }
 ]
},
{
 "default value": "false",
 "editable": false,
 "label": "Merge Streams",
 "variable_name": "JOIN",
 "visible": false,
  "properties": [
   {
      "name": "id",
     "value": "join"
   }
 ]
},
{
 "default_value": "false",
 "editable": false,
 "label": "Hold Job",
 "variable_name": "HOLD",
 "visible": false,
  "properties": [
    {
      "name": "id",
```

```
"value": "hold"
    }
  ]
},
{
  "default_value": "",
 "editable": false,
"label": "Script Shell",
  "variable name": "SHELL",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "shell"
    }
  ]
},
{
  "default_value": "true",
  "editable": false,
  "label": "Moab Environment Variables",
  "variable name": "MOABENVIRONMENTVARIABLES",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "moabenvironmentvariables"
    }
  ]
},
{
  "default_value": "",
  "editable": false,
  "label": "Email Notification List",
  "variable name": "MAILLIST",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "maillist"
    }
  ]
},
{
  "default_value": "",
  "editable": false,
  "label": "Email Options",
  "variable name": "EMAILOPTIONS",
  "visible": false,
  "properties": [
    {
      "name": "id",
      "value": "emailoptions"
    }
  ]
},
{
  "default_value": "",
  "editable": false,
"label": "Generic Resources",
```

```
"variable name": "GENERICRESOURCES",
      "visible": false,
      "properties": [
        {
          "name": "id",
          "value": "genericresources"
        }
      ]
    },
    ł
      "default value": "",
      "editable": false,
      "label": "Feature Tags",
      "variable_name": "FEATURETAGS",
      "visible": false,
      "properties": [
        {
          "name": "id",
          "value": "featuretags"
        }
      ]
    }
 ]
}
```

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Modify Template History

This topic provides information on how to modify the application template's history/version number (api/templates/<history_pk>/history/<version>). See <u>Modify Template on page 214</u> for information on how to modify the application template itself (api/templates/<id>

The are two different methods that you can use to modify an application template history/version number:

- PUT Creates a copy of the selected application template history version and applies it as the current version for the application template (reverts the application template to a previous version's information).
- PATCH Lets you modify the version description for the selected application template history version, all other attributes, including the template version, remain unchanged.

In this topic:

- PUT Method on page 225
- PATCH Method on page 239

PUT Method

In this section:

- URL on page 225
- Parameters on page 225
- Example on page 225
 - Response on page 226

URL

```
PUT /api/templates/<history_pk>/history/<version>/
```

Parameters

Parameter	Required	Туре	Description	Example
history_pk	Yes	String	History ID of the application template	b00ce08c-01ed-4a9d-a916- f587b9f1af44
version	Yes	Integer	Version of the application tem- plate	2

Example

This section provides an example of how to take an older application template's version and copy and save it as a new (current) version.

PUT /api/templates/b00ce08c-01ed-4a9d-a916-f587b9f1af44/history/1/

Chapter 4 Application Templates

Response

```
Response
```

```
{
             "url": "http://localhost:8080/api/templates/5/",
            "history url": "http://localhost:8080/api/templates/b00ce08c-01ed-4a9d-
a916-f587b9f1af44/history/",
            "changed by": "moab-admin",
            "current": true,
"date": "2016-09-08T12:14:19.647410Z",
            "id": 5,
            "name": "Free Form v.2",
            "type": "regular",
            "description": {
                "text": "<h1><strong>Welcome
to our Free Form</strong> Application
Template!</hl>\n\nFill in the inputs and press the
"Create" button to submit your
job!\n\n-- Enjoy!",
                "visible": true
            },
            "owner": "moab-admin",
            "permissions": [
                {
                     "name": "ALL",
                     "type": "account"
                 },
                 {
                     "name": "ALL",
                     "type": "group"
                },
                 {
                     "name": "ALL",
                     "type": "user"
                 }
            ],
            "published": true,
            "sections": [
                 {
                     "name": "description",
                     "value": "Application Description"
                 },
                 {
                     "name": "advanced",
                     "value": "Advanced Settings"
                 },
                 {
                     "name": "basic",
                     "value": "Basic Settings"
                 },
                 {
                     "name": "custom",
                     "value": "Custom Settings"
                },
                 {
                     "name": "dataManagement",
                     "value": "Data Management"
                },
                 {
                     "name": "resources",
                     "value": "Resources"
                 },
                 {
```

```
"name": "credentials",
         "value": "Credentials"
    },
    {
         "name": "timeManagement",
         "value": "Time Management"
    },
    {
         "name": "defaults",
         "value": "Basic Job Settings"
    }
],
"use": 0,
"widgets": [
    {
         "default value": "ggg",
         "editable": true,
         "label": "Name",
         "variable name": "NAME",
         "visible": true,
         "properties": [
             {
                  "name": "id",
                  "value": "name"
             },
             {
                  "name": "enable",
"value": "true"
             }
        ]
    },
    {
         "default_value": "0",
         "editable": true,
         "label": "Duration",
         "variable name": "DURATION",
         "visible": true,
         "properties": [
             {
                  "name": "id",
"value": "duration"
             },
             {
                 "name": "enable",
"value": "true"
             }
        ]
    },
    {
        "default value": "",
         "editable": false,
         "label": "Job Arrays",
         "variable name": "arrays",
         "visible": false,
         "properties": [
             {
                  "name": "id",
                  "value": "arrays"
             },
             {
```

```
"name": "enable",
             "value": "false"
         },
         {
             "name": "start-value",
"value": "0"
         },
         {
             "name": "end-value",
             "value": "1"
         },
         {
             "name": "start-variable",
             "value": "STARTINDEX"
         },
         {
             "name": "end-variable",
             "value": "ENDINDEX"
         }
    ]
},
{
    "default value": "0",
    "editable": true,
    "label": "Delay Start By",
    "variable_name": "ELIGIBLEDATE",
"visible": true,
    "properties": [
        {
             "name": "id",
             "value": "eligibledate"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "0",
    "editable": false,
    "label": "User Priority",
    "variable name": "USERPRIORITY",
    "visible": false,
    "properties": [
         {
             "name": "id",
             "value": "priority"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Submission Script",
    "variable_name": "SCRIPT",
```

```
"visible": true,
     "properties": [
         {
              "name": "id",
              "value": "script"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Account",
    "variable_name": "ACCOUNT",
"visible": true,
     "properties": [
         {
               "name": "id",
               "value": "account"
         },
          {
              "name": "enable",
"value": "true"
          }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Queue / Class",
"variable_name": "DESTINATIONQUEUE",
    "visible": true,
     "properties": [
         {
               "name": "id",
               "value": "destinationQueue"
         },
          {
               "name": "enable",
               "value": "true"
          }
    ]
},
{
    "default_value": "",
    "editable": true,
"label": "Quality of Service",
"variable_name": "QOS",
    "visible": true,
     "properties": [
          {
               "name": "id",
               "value": "qos"
         },
          {
              "name": "enable",
               "value": "true"
          }
    ]
},
{
```

```
"default value": "",
"editable": true,
"label": "Number of Cores",
"variable name": "NUMOFCORES",
"visible": true,
"properties": [
    {
         "name": "id",
         "value": "cpupernode"
    },
     {
         "name": "totalamount",
         "value": "True"
    },
         "name": "nodeswithcount",
         "value": "True"
    },
     {
         "name": "malleablecorecount",
"value": "False"
    },
     {
         "name": "totalamount editable",
         "value": "False"
    },
     {
         "name": "nodeswithcount_editable",
"value": "False"
    },
     {
         "name": "malleablecorecount_editable",
"value": "False"
    },
     {
         "name": "totalamount visible default",
         "value": "True"
    },
     {
         "name": "nodeswithcount_visible_default",
"value": "False"
    },
     {
         "name": "malleablecorecount visible default",
         "value": "False"
    },
     {
         "name": "totalcores_default",
         "value": "1"
    },
     {
         "name": "totalnodes default",
         "value": "1"
    },
     {
         "name": "corespernode_default",
"value": "1"
    },
     {
         "name": "minimumcores default",
```

```
"value": "1"
         },
         {
              "name": "maximumcores default",
              "value": "2"
         },
         {
              "name": "enable",
"value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Total Memory (GB)",
    "variable name": "MEMORYAMOUNT",
    "visible": true,
     "properties": [
         {
              "name": "id",
              "value": "memorypernode"
         },
         {
              "name": "totalmemory",
              "value": "True"
         },
          {
              "name": "memorypercore",
"value": "True"
         },
         {
              "name": "totalmemory_visible_default",
"value": "True"
         },
         {
              "name": "memorypercore_visible_default",
              "value": "True"
         },
         {
              "name": "totalmemory_default",
"value": "0.5"
         },
         {
              "name": "memorypercore_default",
"value": "0.5"
         },
         {
              "name": "totalmemory editable",
              "value": "False"
         },
         {
              "name": "memorypercore_editable",
"value": "False"
         },
         {
              "name": "enable",
              "value": "true"
         }
    ]
```

```
},
{
     "default value": "linux",
     "editable": true,
     "label": "Architecture",
     "variable name": "ARCHITECTURE",
     "visible": true,
     "properties": [
          {
               "name": "id",
               "value": "architecture"
          },
          {
               "name": "enable",
"value": "true"
          }
     ]
},
{
     "default_value": "",
     "editable": true,
     "label": "Execution Path",
     "variable name": "EXECUTIONDIRECTORY",
     "visible": true,
     "properties": [
          {
               "name": "id",
"value": "exedir"
          },
          {
               "name": "enable",
"value": "true"
          }
     ]
},
{
     "default_value": "",
     "editable": true,
     "label": "Error Path",
"variable_name": "ERRORPATH",
"visible": true,
     "properties": [
          {
               "name": "id",
               "value": "errorpath"
          },
          {
               "name": "useExecutionPath",
               "value": "True"
          },
          {
               "name": "enable",
"value": "true"
          }
     ]
},
{
     "default_value": "",
     "editable": true,
"label": "Output Path",
```

Chapter 4 Application Templates

```
"variable name": "OUTPUTPATH",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "outputpath"
         },
         {
             "name": "useExecutionPath",
              "value": "True"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "false",
    "editable": true,
"label": "Merge Streams",
    "variable_name": "JOIN",
    "visible": true,
    "properties": [
         {
              "name": "id",
              "value": "join"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default value": "false",
    "editable": true,
    "label": "Hold Job",
    "variable_name": "HOLD",
"visible": true,
    "properties": [
         {
              "name": "id",
              "value": "hold"
         },
         {
             "name": "enable",
"value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Script Shell",
    "variable_name": "SHELL",
    "visible": true,
    "properties": [
         {
              "name": "id",
```

```
"value": "shell"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default value": "true",
    "editable": true,
    "label": "Moab Environment Variables",
    "variable_name": "MOABENVIRONMENTVARIABLES",
"visible": true,
    "properties": [
         {
             "name": "id",
             "value": "moabenvironmentvariables"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": true,
    "label": "Email Notification List",
    "variable name": "MAILLIST",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "maillist"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
    "label": "Email Options",
"variable_name": "EMAILOPTIONS",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "emailoptions"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
```

```
"default value": "",
    "editable": true,
    "label": "Generic Resources",
    "variable name": "GENERICRESOURCES",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "genericresources"
        },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default_value": "",
    "editable": true,
"label": "Job Environment Variables",
    "variable name": "Job Environment Variables",
    "visible": true,
    "properties": [
         {
             "name": "id",
             "value": "jobEnvVariables"
         },
         {
             "name": "enable",
             "value": "true"
         }
    ]
},
{
    "default value": "",
    "editable": false,
    "label": "Default Moab Template",
    "variable_name": "MOABTEMPLATE",
    "visible": false,
    "properties": [
         {
             "name": "id",
             "value": "moabtemplates"
         },
         {
             "name": "enable",
"value": "false"
         }
    ]
},
{
    "default value": "SHARED",
    "editable": false,
    "label": "Node Access Policy",
    "variable name": "NODEACCESSPOLICY",
    "visible": false,
    "properties": [
        {
             "name": "id",
"value": "node-access-policy"
```

```
},
        {
             "name": "enable",
            "value": "false"
        }
    ]
},
{
    "default_value": "FIRSTAVAILABLE",
    "editable": false,
    "label": "Node Allocation Policy",
    "variable_name": "NODEALLOCATIONPOLICY",
    "visible": false,
    "properties": [
        {
             "name": "id",
             "value": "node-allocation-policy"
        },
        {
            "name": "enable",
"value": "false"
        }
    ]
},
{
    "default_value": "EXACTSET",
    "editable": false,
    "label": "Node Requested Policy",
    "variable name": "NODESREQUESTEDPOLICY",
    "visible": false,
    "properties": [
        {
             "name": "id",
             "value": "nodes-requested-policy"
        },
        {
             "name": "enable",
             "value": "false"
        }
    ]
},
{
    "default value": "",
    "editable": false,
    "label": "Operating System",
    "variable_name": "OPERATINGSYSTEM",
    "visible": false,
    "properties": [
        {
             "name": "id",
             "value": "operatingSystem"
        },
        {
             "name": "enable",
             "value": "false"
        }
    ]
},
{
    "default_value": "",
```

```
"editable": false,
                      "label": "Requested Features",
                      "variable name": "FEATURESREQUESTED",
                      "visible": false,
                      "properties": [
                           {
                                "name": "id",
"value": "features-requested"
                           },
                           {
                               "name": "enable",
                               "value": "false"
                           }
                      ]
                  },
                  {
                      "default value": "",
                      "editable": false,
                      "label": "Excluded Features",
                      "variable name": "FEATURESEXCLUDED",
                      "visible": false,
"properties": [
                           {
                                "name": "id",
                                "value": "features-excluded"
                           },
                           {
                               "name": "enable",
"value": "false"
                           }
                      ]
                  },
                  {
                      "default value": "",
                      "editable": false,
                      "label": "Nodes Requested List",
                      "variable name": "NODESREQUESTED",
                      "visible": false,
                      "properties": [
                           {
                                "name": "id",
                                "value": "nodes-requested"
                           },
                           {
                               "name": "enable",
"value": "false"
                           }
                      ]
                 }
             ],
             "version_description": "Default Free Form Application Template",
             "version": 2
         }
    ]
}
```

PATCH Method

You must the correct content type when using the PATCH API. If not specified, the API will consider the type as 'text/html' which might cause side effects in the request processing code.

In this section:

- URL on page 239
- Parameters on page 239
- JSON Structure on page 239

URL

PATCH /api/templates/<history_pk>/history/<version>/

Parameters

Parameter	Required	Туре	Description	Example
history_pk	Yes	String	History ID of the application template	b00ce08c-01ed-4a9d-a916- f587b9f1af44
version	Yes	Integer	Version of the application tem- plate	2

JSON Structure

The following table identifies the application template attributes that can be changed via PATCH call.

Name	Required	Туре	Description
version_description	No	String	Description of changes in this application template's version.

Related Topics

- Application Template API on page 157
- Supported Methods on page 159
- Chapter 4 Application Templates on page 89

Chapter 5 Nodes

Viewpoint lets you view all of the nodes reported to Moab by your resource manager. Specifically:

- the Nodes page (default) offers a place to determine the status of your compute nodes, how many jobs are running on each node, what features are on each node, and other information.
- the Node Details page provides additional details about a node.
- the Resource Job Timeline page is a sub-page of the Nodes page that displays information about the jobs and reservations that are running on a set of nodes.

In this chapter:

- Nodes Page on page 241
- Node Details Page on page 244
- <u>Resource Job Timeline Page on page 247</u>
- Threshold Settings on page 250

Nodes Page

The Nodes page offers a place to determine the status of your compute nodes, how many jobs are running on each node, what features are on each node, and other information.

To access this page, click **Nodes** in the menu bar.

This topic provides an example of the Nodes page and describes its layout and available information.

In this topic:

- Page Example on page 241
- Selection Criteria Area on page 242
- Nodelist View Details on page 243

Page Example

The following image is an example of the Nodes page.

Chapter 5 Nodes

HOME	WORKLOAD	D REPO	RTING	TEMPLATE	S	NODES	FILE MANAGER	SESSIONS	CONFIGUR	ATION
Nodes 🔊				Refresh Interva	I 15s		Current S	Search: 20 results ret	urned	
Node ID	<u>Status</u> 븆	<u>Cores Availabl</u> 🔷	<u>Jobs</u>	Utilization CPU/	<u>Time to Live</u>	Operational Tas	sk - Select	-	•	
node-001	IDLE	4/4	0	0/0	N/A	N/A	Narrow	Search	٩	
node-002	IDLE	4/4	0	0/0	N/A	N/A	Filters			
node-003	IDLE	4/4	0	0/0	N/A	N/A	Select S	itatus	T	
node-004	RUNNING	3/4	1	25/25	N/A	N/A	Select T	Type	• •	
node-005	RUNNING	3/4	1	25/25	N/A	N/A	CPU			
10000000000000000000000000000000000000	RUNNING	3/4	1	25/25	N/A	N/A	Memory		∞ ♦	
node-007	RUNNING	3/4	1	25/25	N/A	N/A	Othizad	RESET	FILTER	
node-008	IDLE	4/4	0	0/0	N/A	N/A				
node-009	IDLE	4/4	0	0/0	N/A	N/A				
node-010	IDLE	4/4	0	0/0	N/A	N/A				
Show 10	 entries 				← prev :	L 2 next →	•			

Selection Criteria Area

The right side of this page provides selection criteria you can use to limit what is displayed in the nodelist view.

You can choose to display:

- Specific nodes or groups of nodes based on the Node ID, Class, or Feature information. Select the value from the Current Search drop-down, in the Narrow Search box, enter the specific information, and then click **Q**.
- Only nodes matching a specific status (state). Select the status from the Select Status drop-down and then click **Filter**.
- Only nodes within a given processor, job, CPU utilization, and/or memory utilization range. Select the minimum and maximum values and then click **Filter**.

You can utilize multiple selection criteria options; however, only the nodes that match all of the defined options will be shown in the nodelist view.

Click **Reset** at any time to remove all defined selection criteria options (restore the page defaults).

Nodelist View Details

The following information explains the layout and additional information available in the nodelist view.

- Display Refresh You can refresh the information displayed in the nodelist view (including specified search and filter criteria) to reflect the latest information about the nodes. At the top of the nodelist view, click
- **Refresh Interval** You can set a time interval for automatic refresh of the nodelist view. Select a time interval from the drop-down list or select NONE to turn off automatic refresh.
- Resource Job Timeline You can switch from viewing the nodelist to the Resource Job Timeline by clicking at the top right corner of the

nodelist. (the icon is greyed out until it is selected). See <u>Resource Job</u> <u>Timeline Page on page 247</u> for more information.

• **Columns** – The nodelist view displays the data in a column format. Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

Column Heading	Description
Node ID	Unique identifier for the node. You can click a node ID in the column's contents to view additional information about that node. See <u>Node Details Page</u> .
Status	State of the node (for example, BUSY, IDLE, or DOWN).
Cores Available/Configured	Number of processors on this node displayed as available/configured; where configured is the number of processors being reported by the resource manager.
Jobs	Number of jobs running on this node.
Utilization CPU/Memory	Percentage of this node's CPU utilization; based on the node's operating system reported CPU load average/Percentage of this node's memory that is dedicated to currently running jobs.
Time to Live	Specifies the time that the node is supposed to be retired by Moab. Moab will not schedule any jobs on a node after its time to live has passed.
Operational Task	Indicates whether the node is provisioning or deprovisioning (or N/A for all other operations).

• **Page Controls** – Page controls are available at the bottom of the nodeslist view to let you customize how many nodes appear per page. The page controls also include options for selecting which page to display.

Related Topics

- Node Details Page on page 244
- Resource Job Timeline Page on page 247
- <u>Chapter 5 Nodes on page 241</u>

Node Details Page

The Node Details page shows additional information about a selected node.

To access this page, from the Nodes page, click on the Node ID link for the node.

If you defined selection criteria on the Nodes page, when you are done with the Nodes Details page, click the "Return to earlier search" link to preserve the criteria; otherwise, click Close to return to the default state of the Nodes page.

This topic provides an example of the Nodes Details page and describes its layout and available information.

In this topic:

- Page Example on page 244
- Page Details on page 245

Page Example

The following image is an example of the Node Details page.

HOME	wo	RKLOAD	REPORTING	TEMPLATES	NODES	FILE MANAGER	SESSIONS	CONFIGURATION
							Return	to earlier search
			Node Deta	ils 🛛		Resource	es	
			Power	None		Real Cores	4	
			Operating System	Rhel6		Available Cores	3	
			Resource Managers	nativerm		Real Memory (G	B) 2	
		num:	Jobs	1		Available Memo	ory (GB) 1.50	
	node-0	03	Reservations	None		CPU Utilization	27.5%	
St	ate:Rur	nning				Generic Resource	1	Count
						alpha		4
						bravo		4
						charlie		4
Feature1 f	es ^{ieature2} f obs (feature3					Refresh Interval	15s •
Job ID	\$ <u>Jot</u>	<u>b Name</u> 🗍	Submitter ID 🗍 🗍	a <u>rt Date</u> 🗍 🗍 🗍	i <u>it Date</u> 🔹	Queue Status 🗍 🗘 Cores	<u>Nodes</u> 🗍 🐺	/all Clock 🔶
> Moab.183	0 Tes	stArray2	hgranger N/	A 2017	-02-21 14:37:38	ACTIVE 1	0 00):00:10:00
Show	5 •	entries					← prev 1	next →
								Close

Page Details

This section describes the different functional areas, including field descriptions, available on the Node Details page.

In this section:

- Node Details
- <u>Resources</u>
- Features
- Node Jobs

Node Details

The Node Details area displays specific information about the node. The following table describes the fields in the Node Details area.

Field	Description
Name	The ID of the node.
State	The current state of the node or resource (such as BUSY, IDLE, DOWN).
Power	The power state of the node.
Operating System	The name of the operating system currently running on this node.
Resource Managers	List of resource managers that report the node.
Jobs	The number of jobs running on this node.
Reservations	List of reservations that include this node.

Resources

The Resources area displays information about the node's available and allocated resources. The following table describes the fields in the Resources area.

Field	Description
Real Cores	The number of processors on the node.
Available Cores	The number of processors that are not dedicated to currently running jobs.
Real memory (GB)	The amount of memory (in GB) on the node.
Available memory (GB)	The amount of memory (in GB) that is available on the node.
CPU utilization	The current CPU utilization of the node; based on the node's operating system reported cpu load average.
Generic Resource - Count	The generic resources required by the node or resource.
Features

The Features area lists the reported and the configurable features for this node.

- Reported features are the node features that were reported by the resource manager or configured in the Moab configuration file. You cannot remove these features in the Features area.
- Configurable features are the node features that were added using the Viewpoint portal (additional features available through MWS). You can add/remove these features in the Features area.

Node Jobs

The Node Jobs area lists the job information for this node. See 1.1 Workload Page for more information on the job fields.

Related Topics

- Nodes Page on page 241
- Chapter 5 Nodes on page 241
- Chapter 5 Nodes on page 241

Resource Job Timeline Page

The Resource Job Timeline page is a sub-page of the Nodes page that displays information about the jobs and reservations that are running on a set of nodes. You can also utilize selection criteria to narrow the results shown graphically in the timeline view.

To access this page, from the Nodes page, click



(the icon is greyed out

until it is selected).

The Resource Job Timeline View, by default, is set is to show the last 24 hours and the next 4 hours when you first visit the page. Depending on how many jobs run in your cluster per day, and how many nodes you are viewing, that time window might contain too many objects for the browser to display. You can change the default setting. See <u>Threshold Settings on page 250</u> more information.

This topic provides an example of the Resource Job Timeline page and describes its layout and available information.

In this topic:

- Page Example on page 248
- Selection Criteria Area on page 248
- Graphical Timeline View Details on page 249

Page Example

The following image is an example of the Resource Job Timeline page.

12-16-20	14 14:51:07 to 1						
		.2-17-2014 18:5	1:07	Narrow Sea	rch		Q
12/16 18 1	2/17 00 12/1	7 06 12/17	12	Start Date			
			Now				
na nativerm 181	nati nativerm 2	248		End Date			
na <u>nativerm.181</u>	nativerm.2	erm.281 268		Jobs	Re Re	eservation	15
<u>na</u> <u>nativerm.181</u> na <u>nativerm.20</u>	Z <u>nativerm.2</u>	268		Filters			
na	Z <u>nativerm.2</u>	<u>:68</u>		Select State	us		
na. <u>nati</u>	<u>iverm.224 na</u>	nativerm.303		Processors	0	To	
pativerm 141		pativerm 241		Jobs	0	▼ ¹⁰	×
		nativenit 241		Node	0	🕈 To	
	nativerm.189			Job			
	ativerm.133			Reset			Filter
	nativerm.262	nativerm.295					
	na_ nativerm.181 na_ nativerm.181 na_ nativerm.181 na_ nativerm.181 na_ nativerm.181 na_ nativerm.141	na_ nativerm.181 nati_ nativerm.2 na_ nativerm.181 nati_ nativerm.2 na_ nativerm.181 nati_ nativerm.2 na_ nativerm.181 nativerm.2 na_ nativerm.227 nativerm.2 na_ nativerm.224 na_ nativerm.2 nativerm.143 nativerm.143 nativerm.143 nativerm.143 nativerm.143 nativerm.143 nativerm.143 nativerm.189 nati	na nativerm 181 nativerm 263 na nativerm 181 nativerm 268 na nativerm 201 nativerm 268 na nativerm 202 nativerm 268 na nativerm 202 nativerm 268 na nativerm 101 nativerm 268 na nativerm 202 nativerm 268 na nativerm 102 nativerm 268 nativerm 143 nativerm 143 nativerm 133 nativerm 169	12.10.10 12.11.00 12.11.00 12.11.12 Now Inativerm 181 Inativerm 263 Inativerm 281 na nativerm 181 Inativerm 268 Inativerm 268 na nativerm 181 Inativerm 268 Inativerm 303 na Inativerm 224 Inativerm 269 nativerm 143 Inativerm 241 Inativerm 133 Inativerm 133	Now na. nativerm 181 nativerm 181 nativerm 181 nativerm 202 nativerm 263 nativerm 143 nativerm 143	12 10 10 12 11 00 12 11 10 Start Date na nativerm 181 nativerm 268 Image: Construction of the start o	12 10 10 12 11 00 12 11 00 12 11 12 Now na na nail n

Selection Criteria Area

The right side of this page provides selection criteria you can use to limit what is displayed in the graphical timeline view.

You can choose to display:

 Specific jobs and/or reservations based on node, job and/or reservation ID information. Select the value from the **Current Search** drop-down, in the **Narrow Search** box, enter the specific information, and then click

- Jobs and/or reservations within a given start and end date range. In the Start Date and End Date fields, select the desired dates, and then click Filter.
- Jobs, reservations, or both. Click the desired check boxes, and then click **Filter**.
 - The Jobs check box is selected by default. If you chose to narrow the search by reservation ID, the **Reservations** check box is automatically selected. When both the **Reservations** check box and the **Jobs** check box are selected, and jobs and reservations co-exist in the same time frame and on the same node, the Reservation block overlaps the Job block on the timeline.
- Only nodes matching a specific status (state). Select the status from the **Select Status** drop-down and then click **Filter**.
- Only regular nodes or only elastic nodes (if an Elastic Computing license is present). Select the node type from the **Select Type** drop-down and then click **Filter**.
- Only nodes within a given processor and/or node count. Select the minimum and maximum values and then click **Filter**.

You can utilize multiple selection criteria options; however, only the nodes that match all of the defined options will be shown in the nodelist view.

Click **Reset** at any time to remove all defined selection criteria options (restore the page defaults).

Graphical Timeline View Details

The following information explains the layout and additional information available in the graphical timeline view.

- **Refresh Interval** You can refresh the information displayed in the graphical timeline view to reflect the latest information about the jobs running on the nodes. The refresh options are at the top of the graphical time view.
 - The **Refresh Interval** field lets you select a time interval for which the graphical timeline view will automatically refresh.
 - You can also click at any time, to manually update the graphical timeline view.
- List of Nodes The list of nodes (by node ID) is displayed on the vertical axis on the left.

- Hover the mouse over the node ID to see the number of processors configured on the node.
- Click on the node ID to view additional information about that node. See <u>Node Details Page</u> for more information.
- **Time Span** The time span is displayed on the horizontal axis at the top. The vertical blue line with the "Now" label denotes the current time.
- Jobs Jobs are visible on the timeline only if the Jobs check box is selected. A job that is running on a particular node is displayed against the node on the timeline in the form of a blue block. The color shade of the job block indicates the number of processors used for the job. The darker shade indicates more processors and the lighter shade indicates fewer processors being used for the job (relative to your cluster's average job size). The vertical height of the block indicates the number of processors that the job is using on a particular node. For example, if a job is using 2 out of 4 processors on a particular node, then the job will take up 50 percent of the height of the Node ID row.
 - Hover the mouse over the job block to display additional information (such as the job's start and stop time, the number of processors that the job is occupying on the node, and the wallclock limit time).
 - Click on the job block to open the Job Details page to view additional information about that job on that node. See <u>Job Details Page</u> for more information.
- **Reservations** Reservations are visible on the timeline only if the **Reservations** check box is selected. A reservation that is running on a particular node is displayed against that node on the timeline in the form of a gray block. If a job and a reservation co-exist in the same time frame and for the same node, then the reservation block is displayed over the job block.
- **Page Controls** Page controls are available at the bottom of the graphical timeline view to let you customize how many nodes appear per page.

Related Topics

- Node Details Page on page 244
- Threshold Settings on page 250
- Chapter 5 Nodes on page 241

Threshold Settings

This topic contains instructions on how to configure Insight and Viewpoint settings to adjust the amount of data displayed by Viewpoint.

- The Resource Job Timeline View, by default, is set is to show the last 24 hours and the next 4 hours when you first visit the page. Depending on how many jobs run in your cluster per day, and how many nodes you are viewing, that time window might contain too many objects for the browser to display.
 - You can change the default time window by editing PAST_HOURS and FUTURE_HOURS in /opt/viewpoint/etc/viewpoint.cfg.
 - You can change the default limit on the number of objects to display by editing RJTV_THRESHOLD in /opt/viewpoint/lib/viewpoint/config/config.json.

- Resource Job Timeline Page on page 247
- Chapter 5 Nodes on page 241

Chapter 6 File Manager

Viewpoint lets you connect to a remote file system (RFS) to upload and download files directly from the portal. For example, you can upload or download job submission scripts, access standard output or error files, and upload input files for your job. Specifically:

 the File Manager page (default) lists all of the folders and files that you can access. Using this page you can upload files, create folders, and perform various file and folder maintenance options (such as download, compress or delete).

You can restrict system folder access using the Configuration page. To use the File Manager page, users must have an operating system account on the RFS and be assigned a role that has the "File Manager Page" Viewpoint Permission selected.

In this chapter:

- File Manager Page on page 253
- Uploading Files on page 256
- <u>Creating Folders on page 257</u>
- Maintaining Files and Folders on page 257

File Manager Page

The File Manager page lets users organize and manage files on the RFS. For example, you can upload a script or an application template, or you can save an output or error file.

To access this page, click **FILE MANAGER** from the menu.

This topic provides an example of the File Manager page and describes its layout and available information.

In this topic:

- Page Example on page 253
- Page Details on page 254
- Additional Functions on page 255

Page Example

The following image is an example of the File Manager page.

Remote File System / tmp			⑦ Upload ■ New Folder	III III ↑Name - Filter by Nam
/	hultdar/	har a faith to		har an
🛑 builder	builder/	nspertdata_in	nspertdata_ro	nspertdata_to
hsperfdata_insight	2016/07/20	2016/07/20	2016/07/20	2016/07/20
🚞 hsperfdata_root				
🚞 hsperfdata_tomcat	keyring-Kxs1	moab-hpc-sui	orbit-root/	pip-build-root/
🚞 keyring-Kxs1mh	2016/07/20	2014/07/20	2014/07/20	2014/07/20
🚞 moab-hpc-suite-latest	2016/07/20	2010/07/20	2010/07/20	2018/07/20
🚞 orbit-root	pulse-Ryh70I	ssh-NRPbB11	builder-add_key	configure_mon
🚞 pip-build-root			0 Bytes	0 Bytes
🚞 pulse-Ryh70ICivMAM	2016/07/20	2016/07/20	2016/07/20	2016/07/20
ssh-NRPbB11815	facty 13003	insight-dh-init	insight-init-co	insight-post-in
	1 89 KB	0 Bytes	0 Bytes	0 Bytes
	2016/07/20	2016/07/20	2016/07/20	2016/07/20
	Idap_applied.txt	mam-db-init-c	moab-hpc-suit	moab_db_impo
	0 Bytes	0 Bytes	369.81 MB	0 Bytes

Page Details

This section describes the functional areas of the File Manager page.

In this section:

- Directory Structure on page 254
- View Settings on page 254
- Folder/File Creation Buttons on page 255

Directory Structure

At the top of the File Manager page you will see the Home icon and the directory path box. Using the File Manager page example provided earlier, you will see Remote File System/home/hgranger in the directory box.

The File Manager page uses a left pane to list the folders available in the selected directory. The main pane lists the folders *and* any files in that directory.

If you select a folder in the left pane, the directory path changes and the left and main panes display the applicable folders/files. Click the Home icon at any time to go directly to your home directory.

View Settings

You can change whether the main pane shows the directory contents in grid or list view by clicking the appropriate icon at the top right of the page.

If you use the list view, the folders will have "/" at the end of their name and the files will have information in the Size column.

The following is an example of the directory list view.

Remote File System / tmp				⑦ Upload ■ New Folder ■ ▲ Name ▼ Filter by	Name
/	↑ Name	Туре	Size	Modified	
builder	builder/			2016/07/20	
hsperfdata_insight	hsperfdata_insight/			2016/07/20	
hsperfdata_root	hsperfdata_root/			2016/07/20	
hsperfdata_tomcat	hsperfdata_tomcat/			2016/07/20	
keyring-Kxs1mh	keyring-Kxs1mh/			2016/07/20	
moab-hpc-suite-latest	moab-hpc-suite-latest/			2016/07/20	
orbit-root	orbit-root/			2016/07/20	
pip-build-root	pip-build-root/			2016/07/20	
pulse-Ryh70ICivMAM	pulse-Ryh70ICivMAM/			2016/07/20	
ssh-NRPbB11815	ssh-NRPbB11815/			2016/07/20	
	builder-add_key		0 Bytes	2016/07/20	
	configure_mongo_users		0 Bytes	2016/07/20	
	fastx_13003		1.89 KB	2016/07/20	
	insight-db-init-completed.txt	txt	0 Bytes	2016/07/20	
	Show 64 • entries				

Controls are also provided to sort files by name, file type, date modified, or size, change the sort order, and filter files by name.

Folder/File Creation Buttons

Viewpoint lets you upload a file and/or create a new folder. To enable this functionality, two buttons are available towards the top of this page.

- **Upload** Opens up a pop-window that lets you upload an existing file from the RFS. See <u>Uploading Files on page 256</u>.
- **New Folder** Opens up a pop-window that lets you specify the name of the new folder. See <u>Creating Folders on page 257</u>.

The new folder/file is saved in the active directory (shown in the directory box).

Additional Functions

The File Manager page also includes a drop-down with shortcuts to perform additional folder-/file-related functions. See <u>Maintaining Files and Folders on page 257</u> for details.

Related Topics

- <u>Maintaining Files and Folders on page 257</u>
- <u>Chapter 6 File Manager on page 253</u>

Uploading Files

This topic provides information on how to upload files from the RFS.

Upload Files

Do the following:

- 1. If you have not already done so, access the File Manager page. (Click **File Manager** in the menu bar.)
- 2. Navigate to the directory in which you want the uploaded file to be contained.
- 3. At the top of the page, click **Upload**.

The Upload file pop-up window appears.



- 4. Click **BROWSE** and navigate to where the file is located on the RFS.
- 5. You can also select multiple files or folders using you operating systems respective functions used in selecting multiple files anywhere on the list. For example, control or shift clicking the files you wish to upload.
- 6. When the file content appears in the Upload file window, click **UPLOAD**.

- File Manager Page on page 253
- Chapter 6 File Manager on page 253

Creating Folders

This topic provides information on how to add new folders.

You can only create new folders in the directories to which you have been granted access.

Create Folders

Do the following:

- 1. If you have not already done so, access the File Manager page. (Click **File Manager** in the menu bar.)
- 2. Navigate to the directory in which you want the new folder to be contained.
- 3. Click New Folder.

The Create new folder pop-window appears.

Create n	ew folder	×
Name:		
	Close	E

4. Enter the name for this folder and click **CREATE**; otherwise, click **Close** to exit this window without creating a folder.

Related Topics

- File Manager Page on page 253
- <u>Chapter 6 File Manager on page 253</u>

Maintaining Files and Folders

This topic provides information on the different tasks available for maintaining files and folders, including where to access the maintenance options.

In this topic:

- Available Maintenance Options on page 258
- Access Maintenance Options on page 258

Available Maintenance Options

Viewpoint provides these options for maintaining files and folders:

- **Compress** Lets you create a copy of the file/folder in a compressed (zipped) format.
- **Copy** Lets you save a copy of the file/folder in another location.
- **Delete** Removes the file/folder.
- **Download** Lets you download the file/folder.
- Move Lets you change the location of the folder/file (without creating a copy).
- **Permissions** Lets you view the read/write/execute permissions for Owner/Group/Others. The owner of the folder/file can also change the permissions.
- **Rename** Lets you change the name of the folder/file.

Access Maintenance Options

The File Manager page provides two places where you can access folder/file maintenance options.

In the main pane. Hover the mouse over the folder/file to display . Click this icon to display a drop-down containing the available maintenance functions. For example:



- You can also apply the same maintenance option to several files/folders as the same time. Click Select All or Select All Files or use the Shift or Ctrl key commands to select multiple files/folders and then display the drop-down. The item you select from the drop-down is applied to all the selected folders/files.
- After you have selected an individual file (clicked the file name, not the icon for the drop-down on the main pane), the file information displays in the main pane. A preview of the file displays and the different maintenance options are represented by icons. For example:



• You can also preview information about your file by clicking the x icon. Clicking this icon will bring up a menu that lets you choose your preview

mode as well as how many lines you wish to view.

Mode	Preview for	ooter 🔻	
Lines	10	Apply	

 When moving or copying a file, File Manager displays a destination dialog that lets you select a folder where you want the file to be moved or copied. The destination dialog includes controls to create a folder, filter files or folders by name, to select the number of file and folder entries displayed in the list, and to sort the file/folder list in ascending or descending order by name, file type, size, or last modified date. You can also delete a file or folder by hovering the mouse over the file/folder entry in the list and clicking the trashcan icon that appears next to the file entry.

Select Destination Folder				×
Remote File System / home / hgranger				
		Filter by	y Name	Q
↑ Name	Type	Size	Date	
🚞 tmp			2016/10/13	
file.txt	txt	111 Bytes	2016/10/13	
<u>filelist.xml</u>	xml	283 Bytes	2016/10/13	â
ask.txt	txt	27 Bytes	2016/10/13	J
Show 10 • entries				
		Clos	ie SELE	СТ

- File Manager Page on page 253
- Chapter 6 File Manager on page 253

Chapter 7 Remote Visualization Sessions

Viewpoint gives you a simple way to view important aspects of your jobs while also freeing up valuable resources that could be used for other tasks. This chapter provides information on the following aspects of remote visualization:

• The Sessions page (default) lists all of the remote sessions that you can access. Using this page you can create a session and perform various session maintenance options.

If you are an HPCAdmin, you can also create sessions that do not go through the regular scheduling process and a session will be allocated just for you. Admins can also see other user's sessions.

If you are a regular user, you will only be able to see your sessions and find jobs that represent each session.

In this chapter:

- Sessions Page on page 261
- <u>Creating a Session on page 264</u>
- <u>Connecting to a Session on page 265</u>

Sessions Page

The Sessions page is only available when Remote Visualization is installed and configured. See <u>Remote Visualization Configuration Page on page 31</u> for more information.

The Sessions page offers a place to create and manage sessions, view running sessions, running jobs, and other useful features.

- If you are a regular user, you will only be able to see your own sessions and find jobs that represent your sessions.
- Users with the HPCAdmin role or Session Page-admin role permission can create sessions that bypass the regular scheduling process.

This topic provides an example of the Sessions page and describes its layout and available information.

In this topic:

- Page Example on page 262
- Filter Search Area on page 262

- <u>Session List View Details on page 262</u>
- Additional Functions on page 263

Page Example

The following image is an example of the Sessions page.

erbernyartal-dala "34 in Mine andarapertal-dala "36 in Desitos andarapertal-dala (*) pusi	[2 Mahad Kani 3. a. (Mahamidan 3. a. β. 4. 2 Constraining an electric spin (a. 2) = age (a. 4) = 0 21. 4. 4. 5 ≤ (2) = 2.1 (a. 4) = 0 (2) = 4. 4. 5 ≤ (2) = 2.1 (a. 4) = 0 (2) = 4. 4. 5 ≤ (2) = 2.1 (a. 4) = 0 (2) = 4. 4. 5 ≤ (2) = 0.1 (a. 4) = 0.1 (b. 4) = 0	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			- Session I	Name -	
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	Constraints of the constraints o	$ \begin{array}{l} 0 & (1, 0) \\ 0 & (1, 0)$			- Submitte	er Id -	ЕШТЕР
Show 8 T	entries	←	prev 1 next	→		KESET	

Filter Search Area

The right side of this page a filter search feature you can use to limit what is displayed in the session list view.

You can choose to display:

- Specific sessions or groups of sessions based on the Session name, Job ID, or Submitter ID.
- Click Filter.

Click **Reset** at any time to remove all defined selection criteria options (restore the page defaults).

Session List View Details

The following information explains the layout and additional information available in the session list view.

- Display Refresh You can refresh the information displayed in the session list view (including specified search and filter criteria) to reflect the latest information about the nodes. At the top of the session list view, click
- **Columns** The session list view displays the data in a column format. Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

The following table describes the different columns and their contents. You can hover the mouse over a column's contents to view additional information).

Column Heading	Description
Session Name	Unique identifier for the session. You can click a Session Name in the column's contents to view additional information about that session.
Job ID	Identifier of the job running on the session.
Submitter ID	Identifier of the user that submitted the session.
Started	Time the session was initialized.
Last Connect	Time the session was last accessed.
Last Disconnect	Time the session was last disconnected from.

With the correct permissions, you can access the job details for a session if that session has a job associated with it by clicking the job id for the session you are interested in viewing.

• **Page Controls** – Page controls are available at the bottom of the session list view to let you customize how many sessions appear per page. The page controls also include options for selecting which page to display.

Additional Functions

The Sessions page also includes a drop-down with shortcuts to perform additional session-related functions. To access the shortcuts, hover the mouse near the application template name to display \equiv , and then click this icon to display the drop-down.

The following table lists the options you can use from the drop-down. From this drop-down, you can:

Chapter 7 Remote Visualization Sessions

Sessions Page Option	Description
Connect	Connect to the chosen session.
Disconnect	Disconnect from a session. This option is only available when you are connected to the session. This option disconnects all users that are connected to the session.
Terminate	End the chosen session.

Related Topics

<u>Chapter 7 Remote Visualization Sessions on page 261</u>

Creating a Session

Viewpoint lets you create and edit sessions that users may access to view information about your jobs.

Create or Terminate a Session

To create or terminate a session, do the following:

- 1. If you have not already done so, access the Sessions page. (Click **SESSIONS** in the menu bar.)
- 2. Click **CREATE SESSION** to create a new session.

The Create Sessions page displays with the command and screen resolution fields.

3. Enter the graphical command you want to run inside your remote visualization session. These include gnome-session, xterm, firefox, etc.

For a desktop like Gnome, the screen will auto-size to your browser. For single applications requested without a desktop, like xterm or Firefox, there is limited resizing.

- 4. Click **START SESSION** to start the session and stay on this page.
- 5. Click **TERMINATE** to terminate the chosen session.

- Sessions Page on page 261
- <u>Chapter 7 Remote Visualization Sessions on page 261</u>

Connecting to a Session

To connect to a running session, do the following:

- 1. If you have not already done so, access the Sessions page. (Click **SESSIONS** in the menu bar.)
 - Remote Visualization sessions open in a separate browser window. To access your sessions, you must enable pop-up windows. Firefox will show you an icon next to the browser bar asking you if you trust the page to launch a pop-up window. Click on this to allow access to your session.
- 2. Hover the mouse over the session you would like to connect to and click **CONNECT** from the \blacksquare icon.

- Sessions Page on page 261
- <u>Chapter 7 Remote Visualization Sessions on page 261</u>

Chapter 8 Reporting

Viewpoint lets you create aggregated data views that combine, organize, and summarize data from multiple sources. You can then create reports that summarize and present data from the aggregated views, and then combine reports into dashboards that display data from a variety of sources in ways that communicate job and workload data at a glance. Specifically:

- The Aggregated Views page lists available aggregated views that summarize and display data. You can extract and manipulate data from various sources to create new aggregated views. See <u>Aggregated Views</u> Page on page 268 for more information.
- The Reports page lists the reports available to you for customizing and including in dashboards. You can also create new reports. See <u>Reports</u> Page on page 299 for more information.
- The Dashboards page lists available dashboards for you to view or edit. You can also combine reports to create new dashboards. See <u>Dashboards</u> <u>Page on page 332</u> for more information.

Viewpoint is delivered with sample aggregated views, reports, and dashboards for you to customize or use as guides when creating your own aggregated views, reports, and dashboards.

In this chapter:

- <u>Reporting Roles on page 268</u>
- <u>Aggregated Views Page on page 268</u>
 - Viewing an Aggregated View on page 272
 - Viewing an Aggregated View Pipeline on page 275
 - Creating an Aggregated View on page 278
 - Importing an Aggregated View on page 280
 - Editing an Aggregated View on page 281
 - Designing an Aggregated View on page 282
 - Provided Aggregated Views on page 297
- <u>Reports Page on page 299</u>
 - Viewing Reports on page 303
 - <u>Report Types on page 305</u>
 - Creating a Report on page 306
 - Editing a Report on page 308
 - Designing a Report on page 308

- Exporting Reports on page 325
- Provided Reports on page 327
- Dashboards Page on page 332
 - Viewing a Dashboard on page 335
 - Creating a Dashboard on page 336
 - Importing a Dashboard on page 337
 - Editing a Dashboard on page 338
 - Designing a Dashboard on page 339
 - Provided Dashboards on page 346

Reporting Roles

Viewpoint provides a set of Reporting user roles that may be assigned to provide a user permissions to use, create, or manage aggregated views, reports, and dashboards. See <u>Default Roles on page 19</u> for more information about Reporting roles.

Related Topics

- About Roles on page 11
- Default Roles on page 19
- Chapter 8 Reporting on page 267

Aggregated Views Page

The Aggregated Views page lets you manage, create, and view aggregated data views that combine, summarize, and present data from multiple sources.

To access this page, click **REPORTING** in the menu bar, then click the **Aggregated Views** tab.

This topic provides an example of the Aggregated Views page and describes its layout and available information.

In this topic:

- Page Example on page 269
- Page Details on page 269
- Additional Functions on page 271

Page Example

The following image is an example of the Aggregated Views page.

AAGARDS REPORTS AGGREGATED VIEWS Status of processing application: RUNNING Name Description	OME	WORKLOA	AD REPORTING	;	TEMPLAT	res	NODES	FILI	E MANAGER	SESSIONS	CON	FIGURATIO
Status of processing application: RUNNING Name Description Createdate Deployed Used Owner Image: Construction of the second of the se	ASHBOARDS	REPORTS	AGGREGATED VIEWS									
Name Description Createdate Deployed Used Owner Filters: 23 results returned availability_and_utilization N/A 2016-12-13 Yes 1 moab-admin how_long_did_each_job_wai N/A 2016-12-13 Yes 1 moab-admin how_long_use_the_job_stuc N/A 2016-12-13 Yes 1 moab-admin how_many_unique_users_ra N/A 2016-12-13 Yes 1 moab-admin ist_of_the_reservations_that N/A 2016-12-13 Yes 1 moab-admin overall_availability_and_util N/A 2016-12-13 Yes 1 moab-admin filters: zareau N/A 2016-12-13 Yes 1 moab-admin filters: zareau N/A 2016-12-13 Yes 1 moab-admin overall_availability_and_util N/A 2016-12-13 Yes 1 moab-admin filters: zareau N/A 2016-12-13 Yes 1 moab-admin overa	Status of proce	essing applicati	on: RUNNING									
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how_long_did_each_job_wai N/A 2016-12-13 Yes 1 moab-admin how_long_was_the.job_stuc N/A 2016-12-13 Yes 1 moab-admin how_many_unique_users_ra N/A 2016-12-13 Yes 1 moab-admin list_of_the_reservations_that N/A 2016-12-13 Yes 1 moab-admin overall_availability_and_util N/A 2016-12-13 Yes 1 moab-admin show 10 • entries the prev 1 2 moab-admin	availablility_and	_utilization	N/A	2	016-12-13	Yes	1	moab-admin		RESET	F	ILTER
how_long_was_the_job_stuc N/A 2016-12-13 Yes 1 moab-admin how_many_unique_users_ra N/A 2016-12-13 Yes 1 moab-admin list_of_the_reservations_that N/A 2016-12-13 Yes 1 moab-admin overall_availability_and_util N/A 2016-12-13 Yes 1 moab-admin Show 10 entries t prev 1 2 moab-admin	how_long_did_e	each_job_wai	N/A	2	016-12-13	Yes	1	moab-admin				
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overall_availability_and_util N/A 2016-12-13 Yes 2 moab-admin Show 10 • entries ← prev 1 2 3 next →	list_of_the_rese	rvations_that	N/A	2	016-12-13	Yes	1	moab-admin				
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	Show 10	entr	ies		~	prev	1 2 3	next \rightarrow				

Page Details

This section describes the functional areas of the Aggregated Views page.

In this section:

- Aggregated View List on page 269
- Filters on page 270
- <u>Creating and Importing Aggregated Views on page 270</u>

Aggregated View List

The main pane of the Aggregated Views page lists the aggregated views and their corresponding information in a column format.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

Page controls are available at the bottom of the aggregated view list to let you customize how many aggregated views appear at a time in the list. These

controls also include options for moving between pages of listed aggregated views.

The following table describes the different columns and their contents.

Column Heading	Description
Name	Name used to identify the aggregated view. Click on the aggregated view's name to open the aggreg- ated view and view additional information about the aggregated view.
Descrption	A description of the aggregated view.
Create Date	Date the aggregated view was created.
Used	Number of times the aggregated view has been used in a report.
Owner	Name of the user who created the aggregated view.

Filters

Filters let you specify what is displayed in the list of aggregated views on the main pane.

To use a filter, click the check box next to the filter to activate it, enter in the information, and then click **Filter**. You can click **Reset** at any time to restore the page default view.

The following table describes the different filters.

Filter	Description
Name	Name used to identify the aggregated view. Returns partial matches. For example, entering "utilization" in the Name filter will match all aggregated views with the word "utilization" in the name. Name filters are not case sensitive.
Date Created	Date range during which the aggregated view was created. When this filter is selected, additional fields appear letting you specify the date range.
Owner	The owner of the aggregated view. An owner filter must match the full user name, and is case sensitive.

Creating and Importing Aggregated Views

Viewpoint lets you create a new aggregated view or import a saved aggregated view. To enable this functionality, two buttons are available towards the bottom

of this page.

- **CREATE AGGREGATED VIEW** Opens up a blank aggregated view. See <u>Creating an Aggregated View on page 278</u>.
- **IMPORT** Opens up a pop-window that lets you import a saved aggregated view. See <u>Importing an Aggregated View on page 280</u>.

Additional Functions

The Aggregated Views page also includes a pop-up menu with shortcuts to perform additional aggregated view-related functions. To access the shortcuts, hover the mouse near the aggregated view name to display \equiv , and then click this icon to display the pop-up menu.

DASHBOARDS REPORTS	AGGREGATED VIEWS				
Status of processing applicat	ion: RUNNING				
Name	View Data	♦ <u>Create date</u> ♦	Deployed	<u>Used</u>	<u>Owner</u>
dedication_and_utilization_b	Clone and Edit	2017-02-06	Yes	1	moab-admin
dedication_and_utilization_b	Export	2017-02-06	Yes	1	moab-admin
dedication_and_utilization_b	N/A	2017-02-06	Yes	1	moab-admin
dedication_and_utilization_b	N/A	2017-02-06	Yes	1	moab-admin
dedication_and_utilization_b	N/A	2017-02-06	Yes	1	moab-admin
how_long_did_each_job_wait	N/A	2017-02-06	Yes	1	moab-admin
how_long_was_the_job_stuc	N/A	2017-02-06	Yes	1	moab-admin
how_many_unique_users_ra	N/A	2017-02-06	Yes	1	moab-admin
list_of_the_reservations_tha	N/A	2017-02-06	Yes	1	moab-admin
overall_availablility_and_util	N/A	2017-02-06	Yes	2	moab-admin
Show 10 • ent	ries	←	prev 1	2 3	next →
		CREATE	AGGREGATED	VIEW	

From this pop-up menu, you can:

• Open and view the aggregated view. See <u>Viewing an Aggregated View on</u> page 272 for more information.

- Open and view the data pipeline that provides data for the aggregated view. See <u>Viewing an Aggregated View Pipeline on page 275</u> for more information.
- Clone this aggregated view and open the Edit Aggregated View page to edit the clone of the aggregated view. See <u>Editing an Aggregated View on</u> <u>page 281</u> for more information.
- Delete this aggregated view.
- Export this aggregated view. Clicking this menu item saves the aggregated view in a file that can be archived or imported into another Viewpoint installation.

Related Topics

- Viewing an Aggregated View on page 272
- Viewing an Aggregated View Pipeline on page 275
- Creating an Aggregated View on page 278
- Importing an Aggregated View on page 280
- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- <u>Chapter 8 Reporting on page 267</u>

Viewing an Aggregated View

This topic contains information on using the View Data page to view the data of an aggregated view.

To view the data of an aggregated view, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Aggregated Views tab, click the **Aggregated Views** tab.
- Click on the name of an aggregated view in the list of aggregated views. You can also hover the mouse over the name of the aggregated view until the pop-up menu appears and click View Data.

and ound	Var		Statistics	Data Processing /fee	last 24b)	llear
escription:	N/A		.]	Data Processing (10)	1051 2711	Users
wner:	moab-admin	1	175-	٨		ALL
reated:	2017-03-07		170-			Groups
				- 643 - 643		Accounts ALL
				Dubay (sec)		
keysseemane	keya.ta	keys,granularity	data.usemame	data.ta	datajobCount	
centos	1488922380000	MINUTE	centos	1488922380000	2	
centos	1488920400000	HOUR	centos	1488920400000	4	
centos	1485844500000	DAY	centos	1488844800000	4	
centos	1488326400000	MONTH	centos	1488326400000	4	
centos	1483228800000	YEAR	centos	1483228800000	4	
centos	1488922500000	MINUTE	centos	1488922500000	1	
centos	1488923100000	MINUTE	centos	1488923100000	1	
hpotter	1488991200000	MINUTE	hpotter	1488991200000	1	
hpotter	1488958800000	HOUR	hpotter	1488988800000	ő	
hpotter	1488931200000	DAY	hpotter	1488931200000	ő	
hpotter	1488325400000	MONTH	hpotter	1488326400000	٥	
hpotter	1483228800000	YEAR	hpotter	1483228800000	٥	
hpotter	1488991440000	MINUTE	hpotter	1488991440000	1	
hpotter	1488991740000	MINUTE	hpotter	1488991740000	2	
hpotter	1488991860000	MINUTE	hpotter	1488991860000	1	
hpotter	1488992040000	MINUTE	hpotter	1488792040000	1	
tamaker	1488992280000	MINUTE	tamaker	1488992280000	2	
	1488988800000	HOUR	tamaker	1488988800000	2	
tamaker		DAY	tamaker	1488931200000	38	
tamaker tamaker	1488931200000					

The View Data page for the aggregated view displays.

Each of the areas of the View Data page are described below.

Aggregated View Information

The View Data page displays the name of the aggregated view and information about the aggregated view above the data preview.

Field	Description
Deployed	Tells whether the aggregated view has been used in a report
Description	Description of the aggregated view
Owner	User name of the owner of the aggregated view
Created	Date the aggregated view was created

The Statistics Data Processing graph displays statistics related to the aggregated view, if available.

Aggregated View Permissions

You can restrict who is permitted to use the aggregated view when creating reports. This is done using the Permissions area at the top right of the page.

The following image is an example of the Permissions area.

Permissions
Users
×ALL
Groups
×ALL
Accounts
None

Using this area you can restrict access by:

- Users. In the Users field, type the IDs of the users. Viewpoint will check if the users you added are valid; that is, has a valid operating system account. If the user is valid, the user name turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Group associations. In the Groups field, type the IDs of the groups. Viewpoint will check if the groups you added are valid; that is, has a valid

operating system account. If the group is valid, the group ID turns green; otherwise it turns red. Use "ALL" to remove restrictions.

• Account associations. In the Accounts field, select from the available accounts listed in the drop-down. Leave blank to remove restrictions.

Data Preview

The main pane of the View Data page displays a preview of the aggregated data in a tabular format.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents. If the data preview is wider than the space available to display it, the data preview will include a scroll bar to scroll right and left to view the data.

There are two buttons at the bottom of the aggregated view data you can use to leave the View Data page.

Click **VIEW THE PIPELINE** to view the data pipeline that selects the data for the aggregated view.

Click **GO BACK** to return to the Aggregated Views page.

Related Topics

- Viewing an Aggregated View on page 272
- Viewing an Aggregated View Pipeline on page 275
- Creating an Aggregated View on page 278
- Importing an Aggregated View on page 280
- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Viewing an Aggregated View Pipeline

This topic contains information on using the View Pipeline page to view the data pipeline associated with an aggregated view.

To view an aggregated view pipeline, do the following:

1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)

- 2. If you are not on the Aggregated Views tab, click the **Aggregated Views** tab.
- 3. Do one of the following:
 - a. Click on the name of an aggregated view in the list of aggregated views. When Viewpoint displays the aggregated view, click the **View the Pipeline** button.
 - b. Hover the mouse over the name of the aggregated view until the popup menu appears and click **View the Pipeline**.

The View Pipeline page for the aggregated view displays.

DASHBOARDS REPORTS	AGGREGATED VIEWS		
View the Pipelin	e		Permissions
Name dedicat	tion_and_utilization_by_most_active_accounts		Users
			×ALL
Description Descri	ption		Groups
			(XALL)
			Accounts
			APPLY CHANGES
Pipeline Designer			*
Source		job	
Group and Reduce		Filter	
Distinct -			
Fork 👝		Fork	
Flatten 👝			
Join 📥	G	roup & Reduce Group & Redu	.e
State 👝		Transform	
Transform			
Union 😄			
		t.	
		<u> </u>	
	•		· · · · · · · · · · · · · · · · · · ·
	Properties (read-only mode)		Node Type: Data Source
	Comment	Comment	
	Source Stream	joo	Y
	Description re	coro or job used by reporting tramework	
			GO BACK

The View Pipeline page allows you to browse the nodes comprising the aggregated view in read-only mode. Click on a node in the aggregated view to view the node's properties. Click the **Inspect incoming JSON structure** link to view the JSON code on which the node operates. See <u>Using the Pipeline</u>

<u>Designer on page 283</u> for more information about the function of the various node types in aggregated view pipelines.

The View Pipeline page provides controls for some limited editing of the aggregated view pipeline. You can edit the description of the aggregated view by clicking in the **Description** field. You can also modify the permissions for the aggregated view. See <u>Aggregated View Permissions on page 282</u> for more information about permissions.

When you are finished viewing the aggregated view pipeline, click **Go Back** to return to the Aggregated Views page.

Related Topics

- Viewing an Aggregated View Pipeline on page 275
- Viewing an Aggregated View Pipeline on page 275
- Creating an Aggregated View on page 278
- Importing an Aggregated View on page 280
- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Creating an Aggregated View

Viewpoint lets you create aggregated data views to view data extracted from one or more data sources.

To create an aggregated view, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Aggregated Views tab, click the **Aggregated Views** tab.

3. Click CREATE AGGREGATED VIEW.

cute rige	- Succa Field		
Name	Name	Us	ers
		×AL	L
Description	Description	Gr	oups
		(×AL	L
		Act	counts
		×AL	L
Filter 👄			
Distinct -			ф
Fork Company and Reduce		Select a pipeline item to edit the properties	\$

The Create Aggregated View page displays.

- 4. Fill in the a name and description for the aggregated view in the Name and Description fields.
- 5. Design your aggregated view using the controls on the Create Aggregated View page. See <u>Designing an Aggregated View on page 282</u> for more information.
- 6. Click **SAVE AND CLOSE** to save the aggregated view. To exit without saving your data click a link to a different tab or page and confirm that you want to leave the Create Aggregated View page.

- <u>Creating an Aggregated View on page 278</u>
- Creating an Aggregated View on page 278
- Viewing an Aggregated View Pipeline on page 275
- Importing an Aggregated View on page 280

- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Importing an Aggregated View

This topic provides information and instructions on importing aggregated views.

Viewpoint lets you import aggregated views that were previously saved. You can import a single or multiple aggregated views at the same time.

Do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. Click the **Aggregated Views** tab.
- 3. Click **IMPORT**.

-

The Import Aggregated View window appears.

Import Aggregated View	×
L BROWSE	
	Close IMPORT

- 4. Click **BROWSE** and navigate to where the aggregated view file is saved. You can select multiple files by pressing *Ctrl* and then clicking on each file.
- 5. Once you have chosen which files to include, click **Open**.
- When the file appears in the Import window, click **IMPORT**. The imported aggregated view(s) appears in the list of available aggregated views and can be edited as needed.

- Importing an Aggregated View on page 280
- Importing an Aggregated View on page 280

- Viewing an Aggregated View Pipeline on page 275
- <u>Creating an Aggregated View on page 278</u>
- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Editing an Aggregated View

Although you cannot edit an aggregated view, Viewpoint lets you edit a copy of an existing aggregated view.

To copy and edit an aggregated view, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Aggregated Views tab, click the **Aggregated Views** tab.
- 3. Hover the mouse next to the name of an aggregated view. When the pop-up menu appears, click **Clone and Edit**.
- 4. Design your aggregated view using the controls on the Create Aggregated View page. See <u>Designing an Aggregated View on page 282</u> for more information.
- 5. Click **SAVE AND CLOSE** to save the aggregated view. To exit without saving your data, click a link to a different tab or page and confirm that you want to leave the Create Aggregated View page.

- Editing an Aggregated View on page 281
- Editing an Aggregated View on page 281
- Viewing an Aggregated View Pipeline on page 275
- Creating an Aggregated View on page 278
- Importing an Aggregated View on page 280
- Designing an Aggregated View on page 282
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Designing an Aggregated View

Viewpoint enables you create new aggregated views and edit the provided aggregated views or aggregated views you have created. This topic identifies how aggregated view components are organized and the resources available when designing an aggregated view.

See <u>Creating an Aggregated View on page 278</u> for instructions on how to create an aggregated view.

See <u>Editing an Aggregated View on page 281</u> for instructions on how to edit an aggregated view.

In this topic:

- <u>Aggregated View Information on page 282</u>
- <u>Aggregated View Permissions on page 282</u>
- Using the Pipeline Designer on page 283

Aggregated View Information

There are two fields at the top of the Create and Edit Aggregated View pages where you can enter identifying information about the aggregated view you are designing:

Name – The name of the aggregated view. This is a plain text field, which may contain uppercase or lowercase letters, numbers, spaces, or special characters.

Description – A description of the aggregated view. May also be used to provide instructions to report designers on how to use the aggregated view to create reports.

Aggregated View Permissions

You can restrict who has access to your aggregated view. This is done using the **Permissions** area at the top right of the page.

The following image is an example of the **Permissions** area.
Permissions	
Users	
×ALL	
Groups	
×ALL	
Accounts	
None	

Using this area you can restrict access by:

- Users. In the **Users** field, type the IDs of the users. Viewpoint will check if the users you added are valid; that is, has a valid operating system account. If the user is valid, the user name turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Group associations. In the Groups field, type the IDs of the groups. Viewpoint will check if the groups you added are valid; that is, has a valid operating system account. If the group is valid, the group ID turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Account associations. In the **Accounts** field, select from the available accounts listed in the drop-down. Leave blank to remove restrictions.

Using the Pipeline Designer

When you create a new aggregated view, the Pipeline Designer for the view appears as shown below:

Pipeline Designer		
Source		
Filter 💭		
Group and Reduce 🔵		
Distinct		
Fork		4
Flatten 💭		*
Join 📥	Select a pipeline item to edit the properties	
State 💳		
Transform		
Union C		
	SAVE AND CLOSE	

The available node types are represented by icons on the left side of the page (source, filter, etc.). The current pipeline design is represented by icons placed in the design area on the right side of the pipeline designer. To increase the size of the design area, click and drag the (icon on the lower right corner of the design area.

An aggregated view consists of a connected series of nodes (the "pipeline") that operate on data from a data source to produce a database layout. The Pipeline Designer places nodes representing the data source and database layout for you in a new pipeline. To complete the design of your aggregated view pipeline, place and connect the nodes that operate of the data from the data source to produce your desired database layout.

There are a few basic steps in placing a node in a pipeline:

- 1. Drag a node from the left side of the page and drop it in the design area.
- 2. Connect the node to the previous node in the pipeline.
- 3. Edit the node's properties.
- 4. Add a comment describing the node (optional).
- 5. Click **Apply** to apply the properties to the node.

A finished aggregated view pipeline is shown below:



Pipeline Data

Data flowing through the aggregated view pipeline is represented using JavaScript Object Notation (JSON). JSON is a standard format for data interchange, designed to be easily readable.

The data flowing through a pipeline consists of a stream of timestamped messages:

```
{
    "msg": {
        //message data
    },
    "ts": <timestamp of the message>
}
```

The structure and content of the data portion of each message depends on whether the data source is a job, reservation, cluster sample, or job state journal stream.

You can view the structure of the data stream at any point in a pipeline design by clicking on a node, then clicking the **Inpsect Incoming JSON structure** link below the design area. For example, in the pipeline design shown above, if you click the **Filter** node, then click **Inspect Incoming JSON structure**, you will see the structure of the stream of job messages passed from the **job** data source to the **Filter** node.

JSON Schema Navigator	×
Schema of the message from "job" stream	<u>۸</u>
4msg	
arrayIndex	
arrayMasterName	
commandFile	_
commandLineArguments	
completionCode	
4credentials	
account	
class	
group	
qos	
user	
customName	
4dates	
completedDate	
lastChargedDate	-
Path	
Туре	
Description	
	Close
	Close

Pipeline Nodes

The nodes in a pipeline operate on and transform the incoming data stream. A description of the operation of each node type is given in the table below.

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
Source	One of the registered sources of messages	Source Stream	job	Job data
			reser- vation	Resource reser- vation records
			cluster- Sample	How cluster resources are alloc- ated

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
	Filter Removes messages from the stream that do not meet spe- cified criteria		Match All (And)	Data must meet all criteria to continue through the pipeline
		Туре	Match Any (Or)	Data may meet any criterion to con- tinue through the pipeline
Filter		Field		Message field
		Oper- ator		Operator used to compare Field to Value
		Туре		Data type of Value
		Value		Value being compared to Field

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
<pre>Accumulates the set of messages having the same and then reduces the set to a single message by r an aggregate function. A Group and Reduce node message with the following output JSON:</pre>		Key to Group- by		Key in message record to group records by
	Accumulates the set of messages having the same key value and then reduces the set to a single message by means of an aggregate function. A Group and Reduce node is a single message with the following output JSON:	Aggreg- ation	Count, sum, min, max	Aggreg- ation func- tion (count of records in group, sum of selected field, field minimum, field max- imum
	<pre>"key": <key by="" grouping="" is="" performed="" which=""> "value": <result aggregate="" function="" of="" the=""> }, "ts": <timestamp message="" of="" the=""> }</timestamp></result></key></pre>	Field Type to Aggreg- ate	Field value, Field value to integer, field value to double	Use field value or convert to integer or double
		Field to Aggreg- ate		Name of message field to aggregate using the aggreg- ation func- tion

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
Distinct	Removes duplicate messages within a given time window.	Key field		Field to remove duplicate values
		Window		Time win- dow (seconds)
Fork	Splits the input stream into arbitrary number of outgoing streams. Every message from the incoming stream will appear in every forked output stream.	None		

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
Flatten	<pre>Unwraps a collection within a single message into the stream of messages. //JSON before flattening where key="msg.arr", type=integer, value=1 { "msg": { "arr": ["one", "two"] }, "ts": 123 } //JSON after flattening { "msg": { "key": "one", "value": 1 }, "ts": 123 }, { "msg": { "msg": { "key": "two", "value": 1 }, "ts": 123 }, </pre>	Key Field		An array or key- value object (map) to be unwrapp- ed
		Value Type	Boolean, double, integer, string, field value, field value to integer, field value to double	Data type to be asso- ciated with each extracted collection item
		Value		Value to be asso- ciated with the extracted collection item

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
		Window		Time win- dow in which to accu- mulate messages (seconds)
Join	Takes two streams as the input, accumulates them in a time window, combines the messages from different streams together and sends the joined messages into the output stream.	Join Type	One to one	Takes the whole structure of a mes- sage from left stream, adds a new field, places a matching messages from the right stream under that field.

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
	One to many	Takes the whole structure of a mes- sage from left stream, adds a new field, places a list of all matching messages from the right stream under that field.	One to many	
		Left Key		Field from the left stream used for matching messages from right stream.
		Right Key		Field from the right stream used for matching messages from the left stream.

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
State		Key Field		Field by which the state iden- tifier can be extrac- ted
	Perform calculations based on indirect connections between different messages in the single stream.	Timeout		Timeout of the state life- time (seconds). If no new messages appear that relate to the given key before timeout, the state for the given key is removed auto- matically.
		Source Field		
		Target Field Name		

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
Trans- form	Defines a single structural change in the incoming JSON. Examples: add a JSON field with a constant value, ref- erencing a value from another field, or the result of a DateToTimestamp or string/array length function.	Target Field		The field to be writ- ten to. If new, the new field is added to the JSON. If an exist- ing field, the field is rewrit- ten. May be null if New Value Kind is function, in which case the function result is saved in the origin field.
		Field Descrip- tion		Descrip- tion of the target field.
		New Value Kind	Constant	Boolean, double, integer, or string value
Union	Combines two input streams to form a single output stream. All messages from the input streams appear in the output stream unchanged and ordered by timestamp.	None		

Node Type	Description	Prop- erty	Prop- erty Val- ues	Prop- erty Value Descrip- tion
		Per- sistence Gran- ularity	Minute, Hour, Day, Month, Year	Data gran- ularities to be included in the des- tination data stream.
DB Lay- out	Defines the layout of the destination data stream that will be available to reports based on the aggregated view.	Column Map		Maps fields in the incom- ing JSON structure to columns in the des- tination data stream.

Saving an Aggregated View Design

When you have finished designing your aggregated view, click **SAVE AND CLOSE** to save the aggregated view and close the page *or* click **SAVE AND RUN** to save and view the aggregated view.

Related Topics

- Designing an Aggregated View on page 282
- Designing an Aggregated View on page 282
- Viewing an Aggregated View Pipeline on page 275
- <u>Creating an Aggregated View on page 278</u>
- Importing an Aggregated View on page 280
- Editing an Aggregated View on page 281
- Provided Aggregated Views on page 297
- Chapter 8 Reporting on page 267

Provided Aggregated Views

Viewpoint comes configured with several aggregated views that you can copy, customize for your environment, and use as the basis for reports you create. The provided aggregated views include:

Name	Description
account_share_of_jobs	The share of completed jobs associated with an account
class_completed_job_activity	Conpleted jobs categorized by class (e.g., batch, interactive)
class_share_of_jobs	The share of completed jobs associated with a class
dedication_and_utilization_by_most_act- ive_accounts	Processor time dedicated and utilized, by account
dedication_and_utilization_by_most_act- ive_classes	Processor time dedicated and utilized, by class
dedication_and_utilization_by_most_act- ive_groups	Processor time dedicated and utilized, by group
dedication_and_utilization_by_most_act- ive_qoses	Processor time dedicated and utilized, by QoS
dedication_and_utilization_by_most_act- ive_users	Processor time dedicated and utilized, by user
feature_completed_job_activity	Completed jobs, categorized by required feature
generic_resource_completed_job_activ- ity	Completed jobs, categorized by generic resource
how_long_did_each_job_wait_to_start	Wait time for each job
how_many_unique_users_ran_a_job	Number of jobs submitted by each user
list_of_the_reservations_that_were_in_ effect_during_some_time_period	Reservations in effect during a time period, with reservation properties
overall_availablility_and_utilization	System processor time available and utilized

Name	Description
partition_completed_job_activity	Completed jobs categorized by partition
qos_completed_job_activity	Completed jobs categorized by QoS
qos_share_of_jobs	The share of completed jobs associated with a QoS
support_node_state_outage_report	Node state (e.g., up, down, running, drained, idle) for a time period
wait_time_by_individual_account	Wait time for each account's jobs
wait_time_by_individual_class	Wait time for jobs in each job class
wait_time_by_individual_group	Wait time for each group's jobs
wait_time_by_individual_qos	Wait time for jobs in each QoS
wait_time_by_individual_user	Wait time for each user's jobs
what_percentage_of_jobs_ran_on_dif- ferent_intervals	Percentage of jobs with wait time in each time interval (<1 min, 1-30 min, 30-60 min, 1-12 hours, 12-24 hours, >24 hours)
who_are_the_most_active_users	Job count by user

Related Topics

- Provided Aggregated Views on page 297
- Provided Aggregated Views on page 297
- Viewing an Aggregated View Pipeline on page 275
- Creating an Aggregated View on page 278
- Importing an Aggregated View on page 280
- Editing an Aggregated View on page 281
- Designing an Aggregated View on page 282
- Chapter 8 Reporting on page 267

Reports Page

The Reports page lets you manage, create, and view reports that summarize job and workload data.

To access this page, click **REPORTING** in the menu bar. The Reports tab on the Reports page opens by default.

This topic provides an example of the Reports page and describes its layout and available information.

In this topic:

- Page Example on page 299
- Page Details on page 299
- Additional Functions on page 301

Page Example

The following image is an example of the Reports page.

Moab 🗸	EWPOINT						Welcome, hgranger	Sign Out 🌣 😧
HOME	WORKLOAD	REPORTING	TEMPLATES	NODES	FILE	MANAGER	SESSIONS	CONFIGURATION
DASHBOARDS	REPORTS AGGRE	GATED VIEWS						
Name			▲ <u>Create date</u> ♦	Used \$	<u>Owner</u> \$	Filte	rs: 24 results returned	
Dedication and	utilization by most active Q	oSes	2017-02-06	3	moab-admin		- Name -	
Dedication and	utilization by most active a	counts	2017-02-06	2	moab-admin		Date Created	
Dedication and	utilization by most active cl	asses	2017-02-06	1	moab-admin			
Dedication and	utilization by most active g	roups	2017-02-06	1	moab-admin		- Owner -	
Dedication and	utilization by most active u	sers	2017-02-06	1	moab-admin		RESET	FILTER
Job queue time	per class		2017-02-06	3	moab-admin			
Job start wait ti	mes		2017-02-06	1	moab-admin			
Job state transi	tion times		2017-02-06	1	moab-admin			
Most Jobs Com	pleted by User		2017-02-06	1	moab-admin			
Most requested	l QoS		2017-02-06	1	moab-admin			
Show 10	▼ entries		← prev 1	2 3	next →			
			CREATE NEW R	EPORT				

Page Details

This section describes the functional areas of the Reports page. In this section:

- <u>Report List on page 300</u>
- Filters on page 300
- Creating a New Report on page 301

Report List

The main pane of the Reports page lists the reports and their corresponding information in a column format. Several reports are provided with Viewpoint for you to customize or use as guides when creating your own reports. See <u>Provided Reports on page 327</u> for more information.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents. Hover the mouse over a column's contents to view additional information.

Page controls are available at the bottom of the report list to let you customize how many reports appear at a time in the list. These controls also include options for moving between pages of listed reports.

Column Heading	Description
Name	Name used to identify the report. You can hover the mouse over the report name to view a descrip- tion of the report. Click on the report's name to open the report and view additional information about the report.
Create Date	Date the report was created.
Used	Number of times the report has been used in a dashboard.
Owner	Name of the user who created the report.

The following table describes the different columns and their contents.

Filters

Filters let you specify what is displayed in the list of reports on the main pane.

To use a filter, click the check box next to the filter to activate it, enter in the information, and then click **Filter**. You can click **Reset** at any time to restore the page default view.

The following table describes the different filters.

Filter	Description
Name	Name used to identify the report. Returns partial matches. For example, entering "utilization" in the Name filter will match all reports with the word "utilization" in the name. Name filters are not case sensitive.
Date Created	Date range during which the report was created. When this filter is selected, additional fields appear letting you specify the date range.
Owner	The owner of the report. An owner filter must match the full user name, and is case sensitive.

Creating a New Report

Viewpoint lets you create a new report or import an existing report. To enable this functionality, two buttons are available towards the bottom of this page.

- **CREATE REPORT** Opens up a blank report. See <u>Creating a Report on</u> page 306.
- **IMPORT** Opens up a pop-window that lets you import an existing report. See <u>Importing a Report on page 307</u>.

Additional Functions

The Reports page also includes a pop-up menu with shortcuts to perform additional report-related functions. To access the shortcuts, hover the mouse near the report name to display \blacksquare , and then click this icon to display the pop-up menu.

Name	Run 🗣 <u>Used</u> 🖨 <u>Owner</u>
Dedication and utilization by most active QoSes	Edit Delete 3 moab-admir
Dedication and utilization by most active accounts	Export 2 moab-admir
Dedication and utilization by most active classes	2017-02-06 1 moab-admir
Dedication and utilization by most active groups	2017-02-06 1 moab-admin
Dedication and utilization by most active users	2017-02-06 1 moab-admir
Overall availability and utilization	2017-02-06 1 moab-admir
Show 10 • entries	← prev 1 next →

From this pop-up menu, you can:

- Run the report and view the output. See <u>Viewing Reports on page 303</u> for more information.
- Open the Edit Report page to modify this report. See <u>Editing a Report on</u> page 308 for more information.
- Delete this report.
- Export this report. Saves an image of a report in a PDF or PNG format file that may be printed or incorporated into a document. See <u>Exporting</u> <u>Reports on page 325</u> for more information.

Related Topics

- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- <u>Reports Page on page 299</u>
- Importing a Report on page 307
- Editing a Report on page 308
- Designing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- <u>Chapter 8 Reporting on page 267</u>

Viewing Reports

This topic provides information on how to view or export an individual report.

To view a report, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Reports tab, click the **Reports** tab.
- 3. On the Reports page, click the report name to view the report.

You can also view the report by hovering the mouse near the report name to display \blacksquare , clicking this icon to display the pop-up menu, then clicking **Run**.

Name	A	Run	♦ <u>Used</u> ♦	<u>Owner</u>
Dedication and utilization by most active QoSes	贏	Edit Delete	3	moab-admin
Dedication and utilization by most active accounts		Export	2	moab-admin
Dedication and utilization by most active classes	20	017-02-06	1	moab-admin
Dedication and utilization by most active groups	20	017-02-06	1	moab-admin
Dedication and utilization by most active users	20	017-02-06	1	moab-admin
Overall availability and utilization	20	017-02-06	1	moab-admin
Show 10 • entries		←	prev 1	next \rightarrow



Viewpoint displays the selected report.

4. If desired, you can change report setting by clicking the x icon next to the report title.

Auto Refresh	OFF	Ŧ
Granularity	Hour	Ŧ
Interval	Day	Ŧ
Limit	10	Ŧ
Order Type	Most to Least	Ŧ
	Į.	APPLY

Report settings vary according to the data type displayed in the report, and may include:

- Auto Refresh How frequently the report data is refreshed and the report redisplayed. Select **OFF** to turn off auto refresh.
- **Granularity** Time interval for data to be summarized. For example, the **Unique user job count** report displays a line graph where each data point represents the number of unique users whose job was completed during the time interval. Varying Granularity and Interval can facilitate data analysis.
- Interval Time interval to be presented in the report.
- Limit The maximum number of data values to be displayed.
- Order Type The order in which to display the data values (Most to Least or Least to Most).

When you are done viewing the report, click **GO BACK** to close the report and go back to the Reports page.

Related Topics

- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- Viewing Reports on page 303
- Importing a Report on page 307
- Editing a Report on page 308
- Designing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- <u>Chapter 8 Reporting on page 267</u>

Report Types

Viewpoint comes configured with several reports that you can use or customize for your environment. The available report types are:

- Bar report Colored bars compare the magnitude of several values.
- Line report Lines track the magnitude of one or more values relative to another value (usually time).
- Pie report Sections of a circle represent proportions of each value relative to the total of all values.
- Table report A table displaying the data provided by the aggregated view associated with the table.

Examples of several of these report types are included with Viewpoint. See <u>Provided Reports on page 327</u> for more information.

Related Topics

- <u>Report Types on page 305</u>
- <u>Report Types on page 305</u>
- <u>Report Types on page 305</u>
- Importing a Report on page 307
- Editing a Report on page 308
- Designing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Creating a Report

Viewpoint lets you create reports that summarize job or workload data.

To create a report, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Reports tab, click the **Reports** tab.
- 3. Click **CREATE NEW REPORT**.

The Create Report page displays.

- 4. Design your report, using the controls on the Create New Report page. See <u>Designing a Report on page 308</u> for more information.
- 5. Click **SAVE REPORT** to save the report and stay on this page *or* click **SAVE AND CLOSE** to save the report and close this page.

Related Topics

- Creating a Report on page 306
- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- Importing a Report on page 307
- Editing a Report on page 308
- Designing a Report on page 308

- Exporting Reports on page 325
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Importing a Report

This topic provides information and instructions on importing reports.

Viewpoint lets you import reports that were previously saved. You can import a single or multiple reports at the same time.

Do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. Click the **Reports** tab.
- 3. Click IMPORT.

The Import Report window appears.

Import Report	×
BROWSE	
	Close IMPORT

- 4. Click **BROWSE** and navigate to where the report file is saved. You can select multiple files by pressing *Ctrl* and then clicking on each file.
- 5. Once you have chosen which files to include, click **Open**.
- 6. When the file appears in the Import window, click **IMPORT**. The imported report(s) will appear in the list of available reports and can be edited as needed.

Related Topics

- Importing a Report on page 307
- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- Importing a Report on page 307

- Editing a Report on page 308
- Designing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Editing a Report

Viewpoint lets you edit the provided reports or reports you have created.

To edit a report, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Reports tab, click the **Reports** tab.
- 3. Hover the mouse next to the name of a report. When the \equiv pop-up menu appears, click **Edit**.
- 4. Edit your report design, using the controls on the Edit Report page. See <u>Designing a Report on page 308</u> for more information.
- 5. Click **SAVE AND CLOSE** to save the report and close the page.

Related Topics

- Editing a Report on page 308
- Viewing Reports on page 303
- Report Types on page 305
- Editing a Report on page 308
- Importing a Report on page 307
- Designing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Designing a Report

Viewpoint enables you create new reports and edit the provided reports or reports you have created. This topic identifies how report components are organized and the resources available when designing a report.

See <u>Creating a Report on page 306</u> for instructions on how to create a report.

See <u>Editing a Report on page 308</u> for instructions on how to edit a report.

In this topic:

- <u>Report Information on page 309</u>
- Report Permissions on page 309
- Using the Report Designer on page 310

Report Information

There are two fields at the top of the Create and Edit Report pages where you can enter identifying information about the report you are designing:

Name – The name of the report. This is a plain text field, which may contain uppercase or lowercase letters, numbers, spaces, or special characters.

Description – A description of the report. This is a formatted field that may contain formatted text, numbered or bulleted lists, links, tables, pictures, etc.

Report Permissions

You can restrict who has access to your report. This is done using the **Permissions** area at the top right of the page.

The following image is an example of the **Permissions** area.

Permissions
Users
×ALL
Groups
×ALL
Accounts
None

Using this area you can restrict access by:

- Users. In the **Users** field, type the IDs of the users. Viewpoint will check if the users you added are valid; that is, has a valid operating system account. If the user is valid, the user name turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Group associations. In the Groups field, type the IDs of the groups. Viewpoint will check if the groups you added are valid; that is, has a valid operating system account. If the group is valid, the group ID turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Account associations. In the **Accounts** field, select from the available accounts listed in the drop-down. Leave blank to remove restrictions.

Using the Report Designer

In addition to the report information and permissions described above, a report design consists of three parts:

- 1. An output query that specifies fields in an aggregated view on which the report will be based
- 2. Report settings
- 3. A report layout

To construct the output query, the Report Designer operates in two modes, Basic and Advanced. In Basic mode, you select an aggregated view and specify the data to be included in the report based on the data provided by the selected aggregated view. In Advanced mode, you construct the output query textually. You can toggle between Basic and Advance modes by clicking the **Output Query** button, labeled **Switch to Basic** or **Switch to Advanced**.

Example reports have been provided to illustrate how to create reports in both Basic and Advanced mode. See for more information.

Basic Report Design

In Basic mode, the output query design portion of the Report Designer appears as shown below:

Output Query SWIT	CH TO ADVANCED					
Aggregated View Explorer	Select an Aggregated View	•	VIEW STRUCTURE			
Please select an aggregated view first.						

To begin constructing an output query, click on the name of an aggregated view in the **Aggregated View Explorer** drop-down menu.

Aggregated View Explorer	user_completed_job_count	
Source Type	Source Column	Result Column Name
Column 🔻	Select Column	\$ Result Column Name 🛍 ADD
	Filter Criteria ("where" clause)	
	Order By Select Column	

You can view the structure of the selected aggregated view by clicking the **VIEW STRUCTURE** button. In the example shown above, the user_completed_job_count aggregated view has the structure shown below:

JSON Sche	ma Navigator	×
Schema St data jo 	ructure oCount er	
Path Type	data.jobCount integer	
Description	Completed job count	
		Close

The aggregated view includes user names with a count of completed jobs (jobCount). In the example shown below, the user and jobCount fields from the aggregated view are identified as the source columns and the result column names for the report are **User** and **Jobs**, respectively.

Aggregated View Explorer	user_completed_job_count		•	VIEW STRUCTURE
Source Type	Source Column		Result Column Name	
Column •	data.user	٥	User	ADD ADD
Column	data.jobCount	٥	Jobs	a
	 Filter Criteria ("where" clause) Ørder By datauser 			
	🗆 Limit			

In this example, no **Filter Criteria ("where" clause)** or **Limit** is specified. The results are ordered by user name. Filter Criteria could, for example, limit the resulting data set to jobCounts greater than 10. Limit could be used to limit the data to the top 10 jobCount values.

Advanced Report Design

In Advanced mode, you construct the output query textually. You can view the structure of an aggregated view by clicking the name of the aggregated view from the **Aggregated View Explorer** drop-down menu, then clicking the **VIEW STRUCTURE** button. When referencing an aggregated view in the output query, type the name of the aggregated view; the **Aggregated View Explorer** does not enter the name for you.

An example of an output query created in Advanced mode is shown below:

Out	tput Query SWITCH TO BASIC		
Aggre	gated View Explorer Select an Aggregated View	▼ VIEW ST	TRUCTURE
	In Advanced Mode Aggregated View Explorer is used just to see Aggregated View structure. You should ty	pe Aggregated View Name manually.	
1 2 3	In Advanced Mode Aggregated View Explorer is used just to see Aggregated View structure. You should ty SELECT TO_CHAR(TO_TIMESTAMP(preparedData.ts/1000), 'YYYY-NM-dd HH:mm z') AS `Timestamp', COUNT(DISTINCT preparedData.username) AS `User Count', 'Unique Users' as 'line'	pe Aggregated View Name manually. current_user_groups current_user_accounts	
1 2 3 4	In Advanced Mode Aggregated View Explorer is used just to see Aggregated View structure. You should ty SELECT TO_CHAR(TO_TIMESTAMP(preparedData.ts/1000), 'YYYY-NM-dd HH:mm z') AS `Timestamp`, COUNT(DISTINCT preparedData.username) AS `User Count`, 'Unique Users' as 'line` FROM(SELECT t.data.ts AS ts, t.data.username AS username	pe Aggregated View Name manually. current_user_groups current_user_accounts start_date	1
1 2 3 4 5 6	In Advanced Mode Aggregated View Explorer is used just to see Aggregated View structure. You should ty SELECT TO_CHAR(TO_TIMESTAMP(preparedData.ts/1000), 'YYYY-MM-dd HH:mm z') AS `Timestamp`, COUNT(DISTINCT preparedData.username) AS `User Count`, 'Unique Users' as 'line` FROM(SELECT t.data.ts AS ts, t.data.username AS username FROM mongo.reporting.how_many_unique_users_najob t WHERE t.keys.granularity = 'Seranularity'	pe Aggregated View Name manually. current_user_groups current_user_accounts start_date end_date	1
1 2 3 4 5 6 7	In Advanced Mode Aggregated View Explorer is used just to see Aggregated View structure. You should ty SELECT TO_CHAR(TO_TIMESTAMP(preparedData.ts/1000), 'YYYY-MM-dd HH:mm z') AS `Timestamp', COUNT(DISTINCT preparedData.username) AS `User Count', 'Unique Users' as 'line' FROM(SELECT t.data.ts AS ts, t.data.username AS username FROM mongo.reporting.how_many_unique_users_ran_a_job t WHERE t.keys.granularity 'Sgranularity' AND t.data.ts between Sstart_date AND Send_date []	pe Aggregated View Name manually. current_user_groups current_user_accounts start_date end_date granularity	1 1 1 1

To assist you in constructing the output query, the Advanced mode output query designer provides the predefined variables defined in the table below.

Variable Name	Data Type	Description
\$current_ user	String	The username of the person who runs the report. Can be used to apply per-user per- missions for the output dataset.
\$current_ user_groups	String	Comma-separated list of the groups the report runner belongs to.
\$current_ user_ accounts	String	Comma-separated list of the accounts the report runner belongs to.
\$start_date	Long Integer	Time stamp of the beginning of the time interval to show in the report.
\$end_date	Long Integer	Time stamp of the end of the time interval to show in the report.
\$granularity	String	One of the following values: "MINUTE", "HOUR", "DAY", "MONTH", "YEAR"
\$limit	Integer	How many top rows of the result set should be given to the report. Should be used inside LIMIT clause.
\$order_by	String	Defines the sort order of the query result set, typically by specifying a column in the select list. Should be used inside ORDER BY clause.
\$order_type	String	Specifies that the results should be returned in ascending or descending order. Should be used inside ORDER BY clause.

You must convert data to the appropriate data types when used in expressions or for display. For example, the expression TO_CHAR(TO_TIMESTAMP (t.data.ts / 1000), 'YYYY-MM-dd HH:mm z') as 'Timestamp' divides

(t.data.ts / 1000) , 'YYYY-MM-dd HH:mm z') as 'Timestamp' divides the t.data.ts timestamp value (an integer) by 1000, converts the value to a timestamp, then converts the timestamp to a string formatted according to the 'YYYY-MM-dd HH:mm z' format string for display in the report.

The basic data type conversion functions are shown in the table below.

Function	Description	Example
CAST (<expres- sion> AS <data type>)</data </expres- 	Convert a value from one type to another	CAST(b.'Timestamp' AS BIGINT)

Function	Description	Example
TO_CHAR (expression, 'format')	<pre>expression is a INTEGER, FLOAT, DOUBLE, DATE, TIME, or TIMESTAMP expression. 'format' is a format specifier enclosed in single quotation marks that sets a pattern for the output formatting.</pre>	TO_CHAR(t.data.`value` / t.data.`count`, '#.##')
TO_DATE (expression [, 'format'])	<pre>expression is a character string enclosed in single quotation marks. 'format' is a format specifier enclosed in single quotation marks that sets a pattern for the output formatting.</pre>	TO_DATE('2016-07-20', 'yyyy- MM-dd')
TO_NUMBER ('string', 'format')	<pre>'string' is a character string enclosed in single quotation marks. 'format' is one or more Java DecimalFormat class specifiers enclosed in single quotation marks that set a pattern for the output formatting.</pre>	TO_NUMBER(t.data configuredProcessors, '#')
TO_TIMESTAMP (expression [, 'format'])	<pre>expression is a character string enclosed in single quotation marks. 'format' is an optional format specifier enclosed in single quotation marks that sets a pattern for the output formatting.</pre>	TO_TIMESTAMP(t.data.ts / 1000)

See <u>Data Type Conversion</u> for more information about type conversion functions and the associated format specifiers.

In addition to data conversion functions, many SQL functions are available for use in output queries. See <u>Drill SQL Reference</u> for more information.

Configuring Report Default Settings

You can set default values for several variables that determine how your report is initially displayed. The user can modify the values of these variables to change the data displayed in the report. For example, the Interval variable determines the period of time for which data is selected for display in the report. You may set the default value to Day to display data from the previous day. The user may change the Interval setting to Week to view data from the previous week.

Variable	Description	Possible Values
Interval	Time period of data included in the report.	5 minutes 30 minutes Hour Day Week Month Quarter Year
		Custom range
Granularity	Period of time for which data is aggregated. For example, a report may show the number of jobs submitted in each hour over a period of a month. In this case, the interval is a month; the granularity is an hour.	Minute Hour Day Month Year
Order Type	Sort order of data values.	Least to Most Most to Least
Limit	Number of data values included in the report.	5 10 20 50 100 500

Report Layouts

You can choose between a table layout or chart layout for your report using the **Layout** buttons at the bottom of the Report Designer .

Layout	Table Output	Chart Output
Layout	Table Output	

If you select Table Output, there are no additional layout settings for your report; Viewpoint formats the table for you. If you select Chart Output, the Report Designer displays a drop-down menu where you select your desired chart type. The Report Designer displays additional controls for you to enter

additional layout settings, based on the selected chart type. Additional report layout settings for each of the chart types are shown in the table below.

Layout Set- ting	Used in	Description
Title	Pie Chart Line Chart Bar Chart	Title displayed at the top of the chart
Label Field	Pie Chart Line Chart Bar Chart	Result column containing labels for data points.
Value Field	Pie Chart Line Chart Bar Chart	Result column containing data to be used as data points in the chart (for example, points on a line chart or the height of bars in a bar chart).
Value Legend	Pie Chart Line Chart Bar Chart	Label for data values (typically units, such as jobs, hours, processors). Displayed on y- axis in line and bar charts; with data values in pie charts.
Show Per- cent/Show Value	Pie Chart	Check boxes indicating whether to display data as raw values or percents.
Show Empty Data as Zero	Line Chart	Check box indicating whether to display empty data values as zero.
X-Value Field	Line Chart Bar Chart	Result column containing labels for data values to be plotted.

Layout Set- ting	Used in	Description
X-Value Legend	Line Chart Bar Chart	Label describing x-value labels. Displayed on x-axis.
X-Value Rota- tion	Line Chart Bar Chart	Angle to rotate x-axis labels. 0-90 degrees.

A sample chart with the various components labeled is shown below.



Generating a Report Preview

If you are designing a chart report, a **View Data** button appears that will generate a table with a preview of data on which the chart will be based.

Whether you are designing a table report or chart report, clicking the **Generate Preview** button will generate a preview of the table or chart. To minimize the time required to generate the preview, it is based on the first 10 data records. The final report may appear different from the preview.

Saving a Report Design

When you have finished designing your report, click **SAVE AND CLOSE** to save the report and close the page *or* click **SAVE AND RUN** to save and view the

report.

Related Topics

- Designing a Report on page 308
- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- Designing a Report on page 308
- Importing a Report on page 307
- Editing a Report on page 308
- Exporting Reports on page 325
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Example Reports

Versions of two reports created in both Basic and Advanced mode have been provided as examples. This topic describes the example reports to assist you in designing your own reports using the Report Designer in both Basic and Advanced modes.

See <u>Designing a Report on page 308</u> for instructions on how to use the Report Designer.

In this topic:

- Node Access Policy Wasted Processors Report on page 318
- <u>Node State/Outage Report on page 322</u>

Node Access Policy Wasted Processors Report

The Node Access Policy Wasted Processors report is a table report that shows the number of idle processors on partially dedicated nodes that cannot be dedicated to or utilized by any job because of a node access policy of SINGLEJOB or SINGLETASK.
DASHBOARDS REPOR	AGGREGATED VIE	:WS				
Node Access I The number of idle proces This report was created us Reporting period: 2017-0 Granularity: MINUTE	Policy Waster sors on partially dedicate sing the advanced (SQL) v 3-14 01:01:49 -06:00 &#	d Processors ed nodes that cannot be de version of the Output Que #8212; 2017-03-14 17:01:	c violated to or utilized by a violated to or utilized by a violater.	ny job because of a node a	access policy of SINGLEJC	Export
Timestamp	Utilized Processors	Dedicated Processors	<u>Configured Processors</u>	Available Processors	Wasted Processors	Reserved Nodes
2017-03-14 16:57 +00:00	0	0	80	80	0	30%
2017-03-14 16:58 +00:00	0	0	80	80	0	30%
2017-03-14 16:59 +00:00	0	9	80	71	27	30%
2017-03-14 17:00 +00:00	0	10	80	70	30	30%
2017-03-14 17:01 +00:00	0	10	80	70	30	30%
Show 10 • en	ntries			← prev	1 2 3 4 5	6 7 next →

Basic Mode

The Basic mode version of the Node Access Policy Wasted Processors report is based on the <code>overall_availability_and_utilization</code> aggregated view, which provides a data view based on the <code>clusterSample</code> stream with the schema shown below.



The Node Access Policy Wasted Processors report transforms some of the fields of the aggregated view using the expressions shown below and names the resulting data columns as shown.

Source Type		Source Column	Result Column Name	
Expression	•	TO_CHAR(TO_TIMESTAMP(tbl.data.ts / 1000) ,'YYYY-MM-dd HH:mm z')	Timestamp	
Expression	•	TO_CHAR(tbl.data.utilizedProcessors / tbl.data.countMessages, '#')	Utilized Processors	
Expression	•	TO_CHAR(tbl.data.dedicatedProcessors / tbl.data.countMessages, '#')	Dedicated Processors	
Expression	•	TO_CHAR(tbl.data.configuredProcessors / tbl.data.countMessages, '#')	Configured Processors	s
Expression	•	TO_CHAR(tbl.data.availableProcessors / tbl.data.countMessages, '#')	Available Processors	
Expression	•	TO_CHAR(tbl.data.wastedProcessors / tbl.data.countMessages, '#')	Wasted Processors	
Expression	•	TO_CHAR(tbl.data.reservedNodes / tbl.data.countMessages, '#.##"%''')	Reserved Nodes	

Before displaying the data, the report filters the data, either using the default time interval and granularity values or the values set by the user.

Match all (AND)	clause)			
data.ts	¢	greater or equal	•	\$start_date
data.ts	\$	less or equal	T	\$end_date
keys.granularity	\$	equal to	•	'\$granularity

Advanced Mode

The Advanced mode version of the Node Access Policy Wasted Processors report creates the same table shown above for the Basic mode report.

The Advanced mode version queries the overall_availability_and_utilization aggregated view in the Mongo database using the SQL query shown below. Comparing the SQL query below to the expressions in the Basic mode version of the report above shows how the Basic mode of the Report Designer helps you construct a query without having to write SQL code.

SELECT TO_CHAR(TO_TIMESTAMP(t.data.ts / 1000), 'YYYY-MM-dd HH:mm z') as 'Timestamp',
Processors',
TO_CHAR(t.data.dedicatedProcessors / t.data.countMessages, '#') as 'Dedicated
Processors',
TO_CHAR(t.data.configuredProcessors / t.data.countMessages, '#') as 'Configured
Processors',
TO_CHAR(t.data.availableProcessors / t.data.countMessages, '#') as 'Available
Processors',
TO CHAR(t.data.wastedProcessors / t.data.countMessages, '#') as 'Wasted Processors',
TO CHAR(t.data.reservedNodes / t.data.countMessages, '#.##''%''') as 'Reserved
Nodes '
FROM mongo.reporting.overall availablility and utilization t
WHERE t.data.ts >= \$start date
AND t.data.ts <= \$end date
AND t.keys.granularity = '\$granularity'

The report defines the default Interval, Granularity, Sort By, and Limit values of the report parameters as shown below.

Variables E	Default Values			
Interval	Day	•	Granularity	Minute 🔻
Sort By	Least to Most	•	Limit 10	¥

Node State/Outage Report

The Node State/Outage Report is a line graph report that shows what percent of nodes were in each of the various states (busy, down, idle, reservedNodes, running, etc.) over a time interval.



Basic Mode

The Node State/Outage report is based on the support_node_state_
outage_report aggregated view, which creates a data view based on the clusterSample stream with the schema shown below.

Schema processed by Transform(AddField) Node
4 −−−msg
·····count
key
value
ts

The Node State/Outage report transforms some of the fields of the aggregated view using the expressions shown below and names the resulting data columns as shown.

Source Type		Source Column	Result Column Name
Column	•	data.state	\$ State
Expression	•	TO_CHAR(tbl.data.`value` / tbl.data.`count`, '#.##')	Value
Expression	•	CAST(tbl.data.ts AS BIGINT)	Timestamp

Before displaying the data, the report filters the data, either using the default time interval and granularity values or the values set by the user.

keys.ts	\$ greater or equal	T	\$start_date
keys.ts	\$ less or equal	•	\$end_date
keys.granularity	\$ equal to	•	'\$granularity
data.value	\$ not equal to	•	0

The fields shown below format the report for display.

Chart Type	Line Chart	T	Show Empty Data as Zero
Title	Node state/outage		
Label Field	State	• •	
Value Field	Value	• •	
X-Value Field	Timestamp	• •	

Advanced Mode

The Advanced mode version of the Node State/Outage report creates the same graph shown above for the Basic report.

The Advanced mode version queries the support_node_state_outage_report aggregated view in the Mongo database using the SQL query shown below.

Comparing the SQL query below to the expressions in the Basic mode version of the report above shows how the Basic mode of the Report Designer helps you construct a query without having to write SQL code.

<pre>SELECT t.data.state AS 'State', TO_CHAR(t.data.'value' / t.data.'count', '#.##') AS 'Value',</pre>
CAST(t.data.ts AS BIGINT) AS 'Timestamp'
FROM mongo.reporting.support_node_state_outage_report t
WHERE t.keys.ts >= \$start_date
AND t.keys.ts <= \$end_date
AND t.keys.granularity = '\$granularity'
AND t.'data'.'value' <> 0
ORDER BY t.keys.ts ASC

The report defines the default Interval, Granularity, Sort By, and Limit values of the report parameters as shown below.

/ariables [Default Values					
Interval	Day	•	Granul	larity	Hour	•
Sort By	Most to Least	*	Limit	10	•	

The report uses the same format as the Basic mode report.

Chart Type	Line Chart	•	Show Empty Data as Zero
Title	Node state/outage		
Label Field	State	•	
Value Field	Value	•	
X-Value Field	Timestamp	¢ v	

Related Topics

- <u>Reports Page on page 299</u>
- Viewing Reports on page 303
- Creating a Report on page 306
- Editing a Report on page 308
- Designing a Report on page 308
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Exporting Reports

This topic provides information on how to export an image of an individual report as a PDF or PNG file.

To export a report, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. If you are not on the Reports tab, click the **Reports** tab.
- 3. On the Reports page, hover the mouse near the report name to display \equiv , and then click this icon to display the pop-up menu.

<u>Name</u>	Run 🗣 <u>Used</u> 🗣 <u>Owner</u>
Dedication and utilization by most active QoSes	Edit Delete 3 moab-adm
Dedication and utilization by most active accounts	Export 2 moab-adm
Dedication and utilization by most active classes	2017-02-06 1 moab-adm
Dedication and utilization by most active groups	2017-02-06 1 moab-adm
Dedication and utilization by most active users	2017-02-06 1 moab-adm
Overall availability and utilization	2017-02-06 1 moab-adm
Show 10 • entries	← prev 1 next -

4. Click **Run** to view the selected report.



5. Click the **Export** button and select whether you want to export the report as a PDF or PNG image file.



The image file is downloaded to the download directory configured for your browser. The file name is the name of the report.

Related Topics

- Exporting Reports on page 325
- Viewing Reports on page 303
- <u>Report Types on page 305</u>
- Exporting Reports on page 325
- Importing a Report on page 307
- Editing a Report on page 308

- Designing a Report on page 308
- Provided Reports on page 327
- Chapter 8 Reporting on page 267

Provided Reports

Viewpoint comes configured with several reports that you can copy, customize for your environment, and include in dashboards you design. The provided reports include examples of several of the available report types. See <u>Report</u> <u>Types on page 305</u> for more information. The available reports are:

	R		Default Values					
Report Name	Report Description	rt Type	Auto Refres- h	Gran- ularity	Inter- val	Lim- it	Ord- er Type	
Account job count	The number of completed jobs per account.	Pie Chart	OFF	Minute	Pre- vious Day	10	Least to Most	
Average queue time per QoS	The average number of hours each QoS's jobs waited in the queue before starting.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Average queue time per account	The average number of hours each account's jobs waited in the queue before starting	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Average queue time per class	The average number of hours each class's jobs waited in the queue before starting.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Average queue time per group	The average number of hours each group's jobs waited in the queue before starting.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	

		Dene	Default Values					
Report Name	Report Description rt Type		Auto Refres- h	Gran- ularity	Inter- val	Lim- it	Ord- er Type	
Average queue time per user	The average number of hours each user's jobs waited in the queue before starting.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Class com- pleted job activity	Each data point shows the number of jobs associated with a class that com- pleted during the time range covered by that data point.	Line Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Class job count	The number of completed jobs per class.	Pie Chart	OFF	Minute	Pre- vious Day	10	Least to Most	
Dedication and util- ization per QoSes	Average number of pro- cessor hours dedicated and utilized for each QoS's jobs.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Dedication and util- ization per accounts	Average number of pro- cessor hours dedicated and utilized for each account's jobs.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Dedication and util- ization per classes	Average number of pro- cessor hours dedicated and utilized for each class's jobs.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Dedication and util- ization per groups	Average number of pro- cessor hours dedicated and utilized for each group's jobs.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	

		Dene	Default Values					
Report Name	Report Description	керо- rt Туре	Auto Refres- h	Gran- ularity	Inter- val	Lim- it	Ord- er Type	
Dedication and util- ization per users	Average number of pro- cessor hours dedicated and utilized for each user's jobs.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Feature completed job activity	Each data point shows the number of jobs that com- pleted during the time range covered by that data point that required a specific feature.	Line Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Generic resource completed job activity	Each data point shows the number of dedicated gen- eric resources during the time range.	Line Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Job queue time per class	What percentage of the jobs associated with a class/queue had a queue time within a specified interval.	Bar Chart	OFF	Hour	Pre- vious Day			
Most Jobs Completed by User	Shows the most active users based on the num- ber of jobs from each user that completed over the reporting period.	Bar Chart	OFF	Hour	Pre- vious Day	10	Most to Least	
Node Access Policy Was- ted Pro- cessors	The number of idle pro- cessors on partially ded- icated nodes that cannot be dedicated to or utilized by any job because of a node access policy of SINGLEJOB or SINGLETASK. (Created using the advanced report builder.)	Table	OFF	Minute	Pre- vious Day			

		Popo		Defau	ılt Values		
Report Name	Report Description	rt Type	Auto Refres- h	Gran- ularity	Inter- val	Lim- it	Ord- er Type
Node Access Policy Was- ted Pro- cessors (Basic Mode)	The number of idle pro- cessors on partially ded- icated nodes that cannot be dedicated to or utilized by any job because of a node access policy of SINGLEJOB or SINGLETASK. (Created using the basic report builder.)	Table	OFF	Minute	Pre- vious Day		
Node state/outa- ge	The percentage of nodes were run- ning/idle/reserved over the reporting period. (Created using the advanced report builder.)	Line Chart	OFF	Hour	Pre- vious Day		
Node state/outa- ge (Basic Mode)	The percentage of nodes were run- ning/idle/reserved over the reporting period. (Created using the basic report builder.)	Line Chart	OFF	Hour	Pre- vious Day		
Partition completed job activity	Each data point shows the number of jobs that com- pleted during a time win- dow that required a specific partition.	Line Chart	OFF	Hour	Pre- vious Day	10	Most to Least
QoS com- pleted job activity	Each data point shows the number of jobs associated with a QoS that completed during the time range covered by that data point.	Line Chart	OFF	Hour	Pre- vious Day	10	Most to Least

				Defau	lt Values		
Report Name	Report Description	rt Type	Auto Refres- h	Gran- ularity	Inter- val	Lim- it	Ord- er Type
QoS job count	The number of completed jobs per QoS.	Pie Chart	OFF	Minute	Pre- vious Day	10	Least to Most
Queue time per job	The number of hours each job waited in the queue before starting.	Bar Chart	OFF		Pre- vious Day	10	Most to Least
Reser- vations by time	List of the reservations that were in effect during some time period.	Table	OFF		Pre- vious Day		
System CPU and memory	The percentage of CPU and memory dedication and utilization over the reporting interval.	Line Chart	OFF	Hour	Pre- vious Day		
System CPU avail- ability and utilization	The number of CPUs util- ized/ded- icated/configured over the reporting interval.	Line Chart	OFF	Hour	Pre- vious Day		
Unique user job count	Each data point shows how many unique users had a job complete since the last data point.	Line Chart	OFF	Minute	Pre- vious Day		

Related Topics

- Provided Reports on page 327
- Viewing Reports on page 303
- Report Types on page 305
- Provided Reports on page 327
- Importing a Report on page 307
- Editing a Report on page 308
- Designing a Report on page 308

- Exporting Reports on page 325
- Chapter 8 Reporting on page 267

Dashboards Page

The Dashboards page lets you manage, create, and view dashboards that combine reports that summarize job and workload data.

To access this page, click **Reporting** in the menu bar, then click the **Dashboards** tab.

This topic provides an example of the Dashboards page and describes its layout and available information.

In this topic:

- Page Example on page 332
- Page Details on page 332
- Additional Functions on page 334

Page Example

The following image is an example of the Dashboards page.

Moab VI	EWPOINT						Welcome, hgranger	<u>Sign Out</u>	¢ø
HOME	WORKLOAD	REPORTING	TEMPLATES	NODES	FILE M	ANAGER	SESSIONS	CON	FIGURATION
DASHBOARDS	REPORTS AGGREO	GATED VIEWS							
Name	* [Description	\$	<u>Create date</u> 🔶 9	<u>Owner</u>	Filter	S: 1 results returned		
Sample Dashboard	1	N/A		2017-02-06	moab-admin		- Name -		
Show 10	▼ entries		-	prev 1	next →		Date Created		
				ASHBOARD			- Owner -		
							RESE	т	FILTER

Page Details

This section describes the functional areas of the Dashboards page.

In this section:

- Dashboard List on page 333
- Filters on page 333
- <u>Creating a New Dashboard on page 334</u>

Dashboard List

The main pane of the Dashboards page lists the dashboards and their corresponding information in a column format.

Column titles that are underlined indicate that you can sort (ascending or descending) the column contents.

Page controls are available at the bottom of the dashboard list to let you customize how many dashboards appear at a time in the list. These controls also include options for moving between pages of listed dashboards.

The following table describes the different columns and their contents.

Column Heading	Description
Name	Name used to identify the dashboard. Click on the dashboard's name to open the dashboard and view additional information about the dashboard.
Description	A description of the dashboard.
Create Date	Date the dashboard was created.
Owner	Name of the user who created the dashboard.

Filters

Filters let you specify what is displayed in the list of dashboards on the main pane.

To use a filter, click the check box next to the filter to activate it, enter in the information, and then click **Filter**. You can click **Reset** at any time to restore the page default view.

The following table describes the different filters.

Filter	Description
Name	Enter a string to search by the name used to identify the dashboard. Displays all dashboards with the string in the dashboard name.
Date Created	Date range during which the dashboard was created. When this filter is selected, additional fields appear letting you specify the date range.
Owner	The owner of the dashboard.

Creating a New Dashboard

Viewpoint lets you create a new dashboard or import an existing dashboard. To enable this functionality, two buttons are available towards the bottom of this page.

- **CREATE DASHBOARD** Opens up a blank dashboard. See <u>Creating a</u> <u>Dashboard on page 336</u>.
- **IMPORT** Opens up a pop-window that lets you import an existing dashboard. See <u>Importing a Dashboard on page 337</u>.

Additional Functions

The Dashboards page also includes a pop-up menu with shortcuts to perform additional dashboard-related functions. To access the shortcuts, hover the mouse near the dashboard name to display $\boxed{=}$, and then click this icon to

display the pop-up menu.

Name	Run		<u>Create date</u>	<u>Owner</u>
Sample Dashboard	Edit Delete		2017-02-06	moab-admin
Show 10 • entries	Export	-	prev 1	next \rightarrow

From this pop-up menu, you can:

- Open and view the dashboard. See <u>Viewing a Dashboard on page 335</u> for more information.
- Open the Edit Dashboard page to modify this dashboard. See <u>Editing a</u> <u>Dashboard on page 338</u> for more information.
- Delete this dashboard.
- Export this dashboard. Saves the dashboard to a file that can be archived or imported into another Viewpoint installation.

Related Topics

- Viewing a Dashboard on page 335
- Creating a Dashboard on page 336
- Importing a Dashboard on page 337
- Editing a Dashboard on page 338

- Designing a Dashboard on page 339
- Provided Dashboards on page 346
- <u>Chapter 8 Reporting on page 267</u>

Viewing a Dashboard

This topic provides information on how to view a dashboard.

To view a dashboard, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** from the menu.)
- 2. If you are not on the Dashboards tab, click the Dashboards tab.
- 3. On the Dashboards page, click the name of the dashboard you want to display.
- 4. You can also hover the mouse near the dashboard name and then click this icon \equiv to display the pop-up menu.

Name	Run	<u>Create date</u> <u>Owner</u>
Sample Dashboard	Edit Delete Export	2017-02-06 moab-admin
Show 10 • entr	ries	← prev 1 next →

Click **RUN** to view the selected dashboard.



Related Topics

- Viewing a Dashboard on page 335
- Creating a Dashboard on page 336
- Importing a Dashboard on page 337
- Editing a Dashboard on page 338
- Designing a Dashboard on page 339
- Provided Dashboards on page 346
- <u>Chapter 8 Reporting on page 267</u>

Creating a Dashboard

Viewpoint lets you create new dashboards that users may use to view multiple reports.

To create a dashboard, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** in the menu bar.)
- 2. Click **DASHBOARDS** to access the Dashboards page.

3. Click **CREATE DASHBOARD** to create a new dashboard.

The Create Dashboard page displays.

- 4. Fill in the necessary information or make the necessary changes. See <u>Designing a Dashboard on page 339</u> for more information.
- 5. Click **SAVE AND CLOSE** to save the dashboard and close the page *or* click **SAVE AND RUN** to save and view the dashboard.

Related Topics

- <u>Creating a Dashboard on page 336</u>
- Viewing a Dashboard on page 335
- Importing a Dashboard on page 337
- Editing a Dashboard on page 338
- Designing a Dashboard on page 339
- Provided Dashboards on page 346
- Chapter 8 Reporting on page 267

Importing a Dashboard

This topic provides information and instructions on importing dashboards.

Viewpoint lets you import dashboards that have previously been exported. You can import a single dashboard or multiple dashboards at the same time.

Do the following:

- 1. If you have not already done so, access the Reporting page. (Click **Reporting** in the menu bar.)
- 2. Click the **Dashboards** tab.
- 3. Click IMPORT.

The Import Dashboard window appears.

Import Dashboard		×
BROWSE		
	Close	IMPORT

- 4. Click **BROWSE** and navigate to where the dashboard, file is saved. You can select multiple files by pressing *Ctrl* and then clicking on each file.
- 5. Once you have chosen which files to include, click **Open**.
- 6. When the file appears in the Import window, click **IMPORT**. The dashboard appears in the list of dashboards and can be edited as needed.

Related Topics

- Importing a Dashboard on page 337
- Viewing a Dashboard on page 335
- <u>Creating a Dashboard on page 336</u>
- Editing a Dashboard on page 338
- Designing a Dashboard on page 339
- Provided Dashboards on page 346
- <u>Chapter 8 Reporting on page 267</u>

Editing a Dashboard

Viewpoint lets you edit the provided dashboards or dashboards you have created.

To edit a dashboard, do the following:

- 1. If you have not already done so, access the Reporting page. (Click **REPORTING** from the menu.)
- 2. If you are not on the Dashboards tab, click the Dashboards tab.
- 3. Hover the mouse next to the name of a dashboard. Click the pop-up menu when it appears, then click **Edit**.

- 4. Fill in the necessary information or make the necessary changes. See <u>Designing a Dashboard on page 339</u> for more information.
- 5. Click **SAVE AND CLOSE** to save the dashboard and close the page *or* click **SAVE AND RUN** to save and view the dashboard.

Related Topics

- Editing a Dashboard on page 338
- Viewing a Dashboard on page 335
- Creating a Dashboard on page 336
- Importing a Dashboard on page 337
- Designing a Dashboard on page 339
- Provided Dashboards on page 346
- <u>Chapter 8 Reporting on page 267</u>

Designing a Dashboard

Viewpoint enables you create new dashboards and edit the provided dashboards or dashboards you have created. This topic identifies how dashboard components are organized and the resources available when designing a dashboard.

See <u>Creating a Dashboard on page 336</u> to create a dashboard.

See <u>Editing a Dashboard on page 338</u> to open an existing dashboard for editing.

In this topic:

- Dashboard Information on page 339
- Dashboard Permissions on page 340
- Using the Dashboard Designer on page 340

Dashboard Information

At the top of the Create or Edit Dashboard pages, there are **Name** and **Description** fields for the dashboard you are designing. The dashboard name and description are displayed in the dashboard list shown in the Dashboards page.

Click in the **Name** and **Description** fields to enter a name and description for the dashboard you are designing.

Dashboard Permissions

You can restrict who has access to your dashboard. This is done using the **Permissions** area at the top right of the page.

The following image is an example of the **Permissions** area.

Permissions
Users
×ALL
Groups
×ALL
Accounts
None

Using this area you can restrict access by:

- Users. In the **Users** field, type the IDs of the users. Viewpoint will check if the users you added are valid; that is, has a valid operating system account. If the user is valid, the user name turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Group associations. In the Groups field, type the IDs of the groups. Viewpoint will check if the groups you added are valid; that is, has a valid operating system account. If the group is valid, the group ID turns green; otherwise it turns red. Use "ALL" to remove restrictions.
- Account associations. In the **Accounts** field, select from the available accounts listed in the drop-down. Leave blank to remove restrictions.

Using the Dashboard Designer

The main part of the Create or Edit Dashboard pages is the Dashboard Designer, which you use to add and configure the reports to be displayed on your dashboard. The Dashboard Designer for a newly created dashboard is shown below.

Dashboard Designer		
Expand Report Lanes		
Add Report	Add Report	Add Report
	SAVE AND CLOSE	SAVE AND RUN

Adding a Report to a Dashboard

A dashboard can have up to three report lanes where reports can be displayed.

Do the following to add a report to a report lane:

1. Click the **Add Report** button at the bottom of the report lane where you would like the report to be displayed.

The Dashboard Designer displays a drop-down list of available reports.



- 2. Click the name of the report you would like to display in the report lane
- 3. Click the check icon 📀 next to the name of the selected report.

Viewpoint adds a report summary to the report lane in which you clicked the **Add Report** button.



4. You can change the position of the report on the dashboard by dragging and dropping the report summary to a different position in the report lane or to a different report lane. You can remove the report from the dashboard by clicking the in the upper right corner of the report summary.

Viewing a Report Description

You can view a description of a report by clicking the icon in the lower right corner of the report summary. The report description is added to the report by the report designer and may include instructions for how to use the report.

Configuring Report Settings

If desired, you can set default report settings by clicking the 🙀 icon in the

lower right corner of the report summary.

[
Auto Refresh	OFF	•
Granularity	Hour	•
Interval	Day	•
Limit	10	•
Order Type	Most to Least	•
		APPLY

Report settings vary according to the data type displayed in the report, and may include:

- Auto Refresh How frequently the report data is refreshed and the report redisplayed. Select **OFF** to turn off auto refresh.
- Granularity Time interval for data to be summarized. For example, the Unique user job count report displays a line graph where each data point represents the number of unique users whose job was completed during the time interval. Varying Granularity and Interval can facilitate data analysis.
- **Interval** Time interval to be presented in the report.
- Limit The maximum number of data values to be displayed.
- Order Type The order in which to display the data values (Most to Least or Least to Most).

Modifying the Dashboard Display

At the top of the Dashboard Designer, there is a checkbox labeled **Expand Report Lanes**. When the checkbox is checked, Viewpoint expands the width of a dashboard's report lanes to fill the Viewpoint page (when the dashboard is designed to have reports in just one or two report lanes; the checkbox has no effect when the dashboard has reports in three report lanes).

A dashboard with reports in two report lanes and the **Expand Report Lanes** checkbox unchecked is shown below.



And this is how the same dashboard appears when the **Expand Report Lanes** checkbox has been checked.



Saving a Dashboard Design

When you have finished designing your dashboard, click **SAVE AND CLOSE** to save the dashboard and close the page *or* click **SAVE AND RUN** to save and view the dashboard.

Related Topics

- Designing a Dashboard on page 339
- Viewing a Dashboard on page 335
- Creating a Dashboard on page 336
- Importing a Dashboard on page 337
- Editing a Dashboard on page 338
- Provided Dashboards on page 346
- Chapter 8 Reporting on page 267

Provided Dashboards

Viewpoint comes configured with a dashboard that you can copy or customize for your environment. The provided dashboard is:

 Sample dashboard – A simple dashboard that displays a set of reports in a two-column format.

The following image shows the Sample dashboard.



Related Topics

- Provided Dashboards on page 346
- Viewing a Dashboard on page 335
- Creating a Dashboard on page 336
- Importing a Dashboard on page 337
- Editing a Dashboard on page 338
- Designing a Dashboard on page 339
- Chapter 8 Reporting on page 267