

## Administration Guide

# Novell<sup>®</sup> Cloud Manager

1.1

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# About This Guide

This guide provides instructions for administering a Novell Cloud Manager 1.1 system. It includes the following sections:

- ◆ Part I, “Building a Cloud,” on page 9
- ◆ Part II, “Provisioning Services in the Cloud,” on page 27
- ◆ Part III, “Managing the Cloud,” on page 47
- ◆ Part IV, “Configuring the Cloud Manager System,” on page 75
- ◆ Part V, “Maintaining the Cloud Manager Server,” on page 93
- ◆ Part VI, “Security,” on page 103
- ◆ Part VII, “Cloud Manager Mobile,” on page 107

## Audience

This information is intended for Novell Cloud Manager administrators who are responsible for administration and maintenance of the Cloud Manager system. Consumers of this information should be experienced Linux and Windows system administrators who are familiar with virtual machine technology and datacenter operations.

## Feedback

We want to hear your comments and suggestions about this manual and the other documentation included with this product. Please use the User Comments feature at the bottom of each page of the online documentation, or go to [www.novell.com/documentation/feedback.html](http://www.novell.com/documentation/feedback.html) and enter your comments there.

## Documentation Updates

For the most recent version of this guide, visit the [Novell Cloud Manager 1.1 documentation Web site \(http://www.novell.com/documentation/ncm1\)](http://www.novell.com/documentation/ncm1).

## Additional Documentation

For other Novell Cloud Manager 1.1 documentation, see the [Novell Cloud Manager 1.1 documentation Web site \(http://www.novell.com/documentation/ncm1\)](http://www.novell.com/documentation/ncm1).

## Documentation Conventions

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# Building a Cloud

After your virtualization infrastructure (hypervisors and PlateSpin Orchestrate Servers) is in place and you've installed and configured the Novell Cloud Manager server, you are ready to build a cloud infrastructure that enables users to provision business services.








- ◆ [Chapter 1, “Quick Start,” on page 11](#)
- ◆ [Chapter 2, “Logging In,” on page 13](#)
- ◆ [Chapter 3, “Adding Zones,” on page 15](#)
- ◆ [Chapter 4, “Organizing Hosts into Groups,” on page 17](#)
- ◆ [Chapter 5, “Defining Service Levels,” on page 19](#)
- ◆ [Chapter 6, “Creating Workload Templates,” on page 21](#)
- ◆ [Chapter 7, “Adding Users,” on page 23](#)
- ◆ [Chapter 8, “Creating Business Groups,” on page 25](#)



# Quick Start

# 1

The following list explains the tasks you must complete to build your cloud:

Task	Details
 Log in	<p>Explains how to log in to the Cloud Manager console.</p> <p>For instructions, see <a href="#">Logging In</a>.</p>
 Add zones	<p>A Novell Cloud Manager zone consists of one PlateSpin Orchestrate Server and its managed VM hosts. You add a zone by defining a connection to the PlateSpin Orchestrate Server. Once you define the connection, the zone's hosts and VM templates become available for use in Novell Cloud Manager.</p> <p>For instructions, see <a href="#">Adding Zones</a>.</p>
 Organize hosts into groups	<p>A zone's hosts must be organized into host groups before they can be used to run Novell Cloud Manager business services.</p> <p>For instructions, see <a href="#">Organizing Hosts into Groups</a>.</p>
 Define service levels	<p>A service level identifies the class of hardware (host group) used to host a business service as well as optional quality objectives such as service availability and support response time.</p> <p>For instructions, see <a href="#">Defining Service Levels</a></p>
 Create workload templates	<p>A workload template identifies a VM template and the customizations (such as increased CPUs or decreased memory) that you want applied when creating a workload from the template.</p> <p>For instructions, see <a href="#">Creating Workload Templates</a></p>
 Add users	<p>Any user who needs to request, manage, or approve business services must have a Novell Cloud Manager user account.</p> <p>For instructions, see <a href="#">Adding Users</a>.</p>
 Create business groups	<p>A business group is an association of one or more users with the resources (workload templates, service levels, and networks) from which they can build their business services. Each business group supports a sponsor assignment for financial approval. A user must be a member of a business group to request a business service.</p> <p>For instructions, see <a href="#">Creating Business Groups</a>.</p>



# Logging In

# 2

Before logging in to the Cloud Manager console, you should have already configured the LDAP connection used to authenticate users to the Cloud Manager system. If you have not already done this, see “[Connecting to the LDAP Directory](#)” in the *Novell Cloud Manager 1.1 Installation Guide*.

- 1** Make sure you are using a supported Web browser. For information, see “[Console Requirements](#)” in the *Novell Cloud Manager 1.1 Installation Guide*.
- 2** In the browser, enter the following URL:

`http://domain:port`

where *domain* is the domain name of the server and *port* is the HTTP port (8080 by default) assigned when running the Cloud Manager configuration utility. The port number is not required if you completed the configuration in “[\(Optional\) Simplifying the Cloud Manager URL](#)” in the *Novell Cloud Manager 1.1 Installation Guide*.



# Adding Zones

# 3

A Novell Cloud Manager zone consists of one PlateSpin Orchestrate Server and its managed VM hosts. You add a zone by defining a connection to the PlateSpin Orchestrate Server. Once you define the connection, the zone's hosts and VM templates become available for use in Novell Cloud Manager.

- 1 In the Cloud Manager console, if the Zones page is not already displayed, click *Configuration*, then click *Zones*.
- 2 Click *Add* to display the Add Zone dialog box.
- 3 Provide the following information:
  - Name:** Provide a name for the zone. The name should be different than any other zone name. This name is displayed in Novell Cloud Manager to both administrators and users.
  - Description:** If desired, add more information to further identify the zone. The description is displayed in Novell Cloud Manager to administrators only.
  - Server Address:** Specify the DNS name or IP address of the PlateSpin Orchestrate Server.
  - Server Port:** Specify the port used by the PlateSpin Orchestrate Server Web Service.
  - Username:** Specify the Administrator username that enables login to the PlateSpin Orchestrate Server.
  - Password:** Specify and confirm the password for the username you supplied.
  - Secure Connection:** Select this option if the PlateSpin Orchestrate Server Web Service uses a secure connection.

---

**IMPORTANT:** After you define a PlateSpin Orchestrate Server as a zone, you are not allowed to modify the server address, server port, or connection type (secure or unsecure) for the zone definition. This means that if you change the address or port number of the Orchestrate Server, you must delete the zone, which requires removal of all business services, workload templates, service levels, and so forth associated with the zone, and then define the zone again with the new server address and port. For this reason, we strongly suggest that you not change the Orchestrate Server address and port after defining it as a zone.

---

- 4 Click *OK* to add the zone to the list.
- 5 Repeat [Step 2](#) to [Step 4](#) to add another zone.
- 6 When you have finished adding zones, click *OK* to close the System Configuration dialog box.





# Organizing Hosts into Groups

# 4

A zone's hosts must be organized into host groups before they can be used to run Novell Cloud Manager business services. As you organize hosts into groups, consider the following:

- ◆ A host can belong to only one group.
- ◆ All hosts in a group must reside in the same zone.
- ◆ All hosts in a group must be identical in terms of hypervisor technology and version, operating system version, network configuration, storage repository configuration, and hardware capabilities. This enables a workload to run on any of the group's hosts.
- ◆ All hosts that share the same repository must belong to the same host group. In other words, two different host groups cannot include hosts that share the same repository. You can view a host's details in the Cloud Manager console to see its repositories.
- ◆ If the host group is using the VMware hypervisor, the host group can contain hosts from one vCenter server only. Including hosts from multiple vCenter servers in the same host group is not supported.
- ◆ Both a cluster and its member hosts can be added to the same group. We recommend that you either add the cluster or its hosts, but not both.

For example, you might have a Business Critical host group that consists of high-performance hosts intended for mission critical applications and services. At the same time, you might have a Lab host group that consists of standard-performance hosts intended for software testing.

To create a host group:

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Host Groups* tab.
- 2 Click *Create* to display the Select Zone dialog box.
- 3 Select the zone that contains the hosts you want to add to the group, then click *OK*.
- 4 In the *General* fields, provide the following information for the host group:
  - Name:** Specify a name for the group. The name should be different than any other host group name. This name is seen by Novell Cloud Manager administrators only.
  - Zone:** Displays the zone whose hosts you can add to the group. You cannot change this setting.
  - Hypervisor:** Select the hypervisor technology for the group's hosts. You will be able to add only those hosts that meet the hypervisor criteria.
  - Description:** Provide any additional information for the host group.
- 5 In the *Monthly Resource Costs* fields, define the monthly cost associated with the host group resources:
  - vCPU:** Specify the cost per virtual CPU.
  - Memory:** Specify the cost per megabyte (MB) of memory.
  - Disk:** Specify the cost per gigabyte (GB) of disk space.
  - Network:** Specify the cost per network interface card.
- 6 In the *vCPUs per Host* field, select the maximum number of virtual CPUs allowed for each host.

For example, if you select 32, the total vCPUs for all business service workloads running on a host cannot exceed 32.

**7** Add hosts to the group:

**7a** In the *Hosts* list, click *Add* to display the Add Hosts dialog box.

The list displays all available hosts in the zone that meet the selected hypervisor criteria. Hosts that are already assigned to another host group are not displayed.

**7b** Select the hosts.

You can Shift-click and Ctrl-click to select multiple hosts.

**7c** Click *OK* to add the selected hosts to the *Hosts* list.

**8** Click *Save*.

# Defining Service Levels

# 5

Each business service workload is assigned a service level that identifies the class of hardware (host group) used to host the workload as well as objectives that provide specific measurable characteristics such as availability, throughput, frequency, response time, and quality.

The following sections help you create the quality objectives and service levels:

- ♦ [Section 5.1, “Creating Service Level Objectives,” on page 19](#)
- ♦ [Section 5.2, “Creating Service Levels,” on page 19](#)

## 5.1 Creating Service Level Objectives

Service level objectives define measurable characteristics such as availability, throughput, frequency, response time, and quality. Each of these characteristics typically has multiple objectives that identify a different level of service.

For example, you might define three availability objectives (97%, 98%, and 99%) and associate them with different service levels (Silver, Gold, and Platinum). By associating different costs with the objectives, you can establish the desired cost structure for your service levels.

When you create an objective, it is added to the Service Level Objectives catalog. An objective must exist in the catalog before it can be added to a service level.

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Level Objectives* tab.
- 2 Click *Create* to display the Create Service Level Objective dialog box.
- 3 Provide the following information:

**Name:** Specify a name for the objective. The name should be different than any other service level objective name. This name not only appears to administrators but also to business service requestors when they configure business services with service levels that include the objective.

**Cost:** Specify the cost associated with the objective. If the objective does not have a cost, leave the field empty.

**Type:** If this objective represents workload availability and you are using Novell Business Service Manager to monitor availability compliance, select *Availability*. Otherwise, select *General*.

**Value:** If the objective type is *Availability*, specify the target availability as a percentage (for example, 90). Novell Business Service Manager uses this target to measure the availability compliance. If the objective type is *General*, specify an appropriate objective value.

**Description:** Provide optional information to further identify the service level objective.

- 4 Click *Save*.
- 5 Repeat [Step 2](#) through [Step 4](#) for each objective you want to create.

## 5.2 Creating Service Levels

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Levels* tab.
- 2 Click *Create* to display the Select Zone dialog box.

- 3 Select the zone that contains the host group you want to associate with the service level, then click *OK*.
- 4 Provide the following details for the service level:
  - Name:** Specify a name for the service level. The name should be different than any other service level name. This name is used by business service requestors when associating the service level to their business service.
  - Zone:** Displays the service level's zone. You cannot change this setting.
  - Host Group:** Select the host group to associate with the service level. The host group determines the hardware provided for the service level. You can only select from the host groups associated with the zone.
  - Description:** Provide any additional information for the service level.
- 5 Add items to the service level:
  - 5a In the *Service Level Items* list, click *Add* to display the Add Service Level Items dialog box.
  - 5b Select the items to add.
    - You can Shift-click and Ctrl-click to select multiple items.
  - 5c Click *Add* to add the selected items to the *Service Level Items* list.
- 6 Click *Save*.
- 7 Repeat [Step 2](#) through [Step 6](#) for each service level you want to create.

# Creating Workload Templates

# 6

A workload template identifies a VM template and the customizations (such as increased CPUs or decreased memory) that you want applied when creating a workload from the template.

- 1 In the Cloud Manager console, click *Catalog*, then click the *Workload Templates* tab.
- 2 Click *Create* to display the Select Zone dialog box.
- 3 Select the zone that contains the VM template you want to associate with the workload template, then click *OK*.
- 4 In the *General* section, provide the following information for the workload template:
  - Name:** Specify a name for the workload template. The name should be different than any other workload template name.
  - License Costs:** Specify the license costs associated with the template's software. This cost is per month.
  - Zone:** Displays the zone you selected for the workload template. You cannot change this setting.
  - Creation Date:** Displays the current date. You cannot change this setting.
  - Description:** Provide any additional information to identify the workload template.
- 5 In the *Virtual Machine Settings* section:
  - 5a In the *VM Template* list, select a VM template.

After you select a VM template, the template's operating system, hypervisor, and primary disk information is displayed. You cannot change these settings.

The VM template's resource information (CPUs, memory, additional disk, and network interface cards) is also displayed. You can customize this information as necessary.
  - 5b Customize the settings to increase or decrease the workload resources:
    - Number of CPUs:** Select the number of CPUs for a workload. Currently, some hypervisor technologies do not support more than 8 CPUs per workload, so the maximum number allowed is 8.

Each host group includes a *vCPUs per Host* setting that defines the number of available vCPUs per host in the group. You should make sure the number you select here does not exceed the per host number for any host group that might service the workload. Otherwise, the workload will not be able to run.

    - Memory:** Select the megabytes (MB) of RAM to allocate to a workload.
    - Number of NICs:** Select the number of network interface cards (NICs) to allocate to the workload.
    - Disks Summary:** Displays the size of the mandatory workload disks and the number of optional workload disks defined in the template, Mandatory workload disks are always created. They are inherited from the VM template or manually defined (on the *Disks* tab). Optional workload disks are available to the user but are created only if the user specifies sizes for the disks.

You add, edit, and remove disks on the Disks page (see [Step 6](#) below).

- 5c** By default, each resource setting is locked, which means that a business service requestor cannot change it. If you want to enable a requestor to change a setting when creating a workload from the template, deselect the  check box.
- 6** If you want to add disks to the workload template, or if you want to specify whether or not the current disks should be included when calculating the cost of a business service:
  - 6a** Click the *Disks* tab.

The template can include up to 10 disks.
  - 6b** Click *Add* to add a disk to the list.
  - 6c** Make sure the disk is selected in the list, then specify a size (in the *Size* field below the list) to make the disk mandatory.

or

Leave the capacity set to 0 to make the disk optional.

The maximum size per disk is 1024 GB (1 TB). If you specify the size when adding a disk, the disk becomes mandatory. Users cannot remove or change a mandatory disk. If you add a disk with size set to 0, the disk becomes optional. Users can leave the size at 0, in which case the disk is not created with the workload, or they can specify a size and create the disk.
  - 6d** In the *Cost* field, select the check box if you want to charge money for the disk.

If you don't enable the Cost option, the disk becomes a free disk and is not included when calculating the cost of a business service.
  - 6e** Repeat to include up to 10 disks.
- 7** Click *OK*.
- 8** Repeat the steps for each workload template you want to create.

# Adding Users

# 7

Any user who needs to request, manage, or approve business services must have a Novell Cloud Manager user account.

- 1 Make sure that the user has an account in the LDAP authentication directory and is part of the LDAP user group created for Novell Cloud Manager.

Novell Cloud Manager authenticates users via their LDAP directory user accounts. Any user you add to Novell Cloud Manager must be located in the Search DN and user group that was specified when defining the Novell Cloud Manager connection to the LDAP directory.

- 2 In the Cloud Manager console, click *Business Groups*, then click the *Users* tab.
- 3 Click *Create* to display the Create User dialog box.
- 4 Provide the following details to define the user:

**User ID:** Specify the user's ID as defined in the LDAP authentication directory.

**Full Name:** Specify the user's full name as you want it to appear in Novell Cloud Manager.

**E-Mail Address:** Specify the e-mail address at which the user can receive messages generated by Novell Cloud Manager activities.

**Business Group:** This is a display-only field. After you add the user to a business group, the field displays the group name.

- 5 Select the user's role:

**User:** Provides the ability to manage business services, including requesting services, sponsoring (approving or denying) requested services, and monitoring and managing deployed services.

**Administrator:** Provides the ability to administer the Novell Cloud Manager system, including creation and management of all objects (users, business groups, host groups, workload templates, and service levels) used in business services.

- 6 If you want the user to always be able to view business service costs regardless of the *Costs* setting for the user's business group, select *Always show costs regardless of business group costs setting*.

A business group's *Costs* setting can be set to *Show* or *Hide*. The purpose of this setting is to enable you to ensure that business service costs are always visible to the user even if the business group *Costs* setting is set to *Hide*.

For example, you might want to select this option for users who are sponsors of business groups. This ensures that sponsors can always see costs even if their business group is set to hide costs.

- 7 Click *Save*.
- 8 Repeat [Step 3](#) through [Step 7](#) for each user you want to add.





# Creating Business Groups

# 8

A business group is an association of one or more users with the resources (workload templates, service levels, and networks) from which they can build their business services. Each business group supports a sponsor assignment for financial approval. A user must be a member of a business group to request a business service.

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**IMPORTANT:** Novell Cloud Manager administrators should not be added as members of business groups. Administrators have full Cloud Manager system rights without requiring group membership.

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**1** In the Cloud Manager console, click *Users*, then click the *Business Group* tab.

**2** Click *Create* to display the Create Business Group dialog box.

**3** Provide the following details to define the business group:

**Name:** Specify a name for the group. The name should be different than any other business group name.

**Discount (%):** If you want a discount applied to all business services created by members of the business group, select the discount percentage.

**Costs:** Select *Show* to allow group members to see cost information for workloads. Select *Hide* to prevent group members from seeing cost information.

The business group *Costs* setting can be overridden on individual user accounts. For example, if you select *Hide* for the group, you can override the setting for specific individuals by setting their user account *Costs* setting to *Show*.

**Auto Approval:** Business service requests require approval from both the group's sponsor and a Novell Cloud Manager administrator.

Select *Administrator* to automatically grant administrator approval for the group's business services. No approval task is sent to the Novell Cloud administrators group.

*Sponsor* is selected by default. If you don't want automatic sponsor approval, you must add a user to the group and assign the user as sponsor. See the next two steps.

**4** Add users to the group:

**4a** Under *Membership and Access*, click the *Users* tab.

**4b** Click *Add* to display the Add Users dialog box.

**4c** Select the users.

You can Shift-click and Ctrl-click to select multiple users.

**4d** Click *Add* to add the selected users to the *Users* list.

**5** If you want to assign a sponsor (rather than using Auto Approval for the sponsor):

**5a** In the *Users* list, select the user you want to assign.

**5b** Click *Assign as Sponsor*.

The user name is displayed in the Sponsor field. If you need to change the sponsor, click *Clear* to clear the sponsor, then assign a new user.

**6** Add workload templates to the group:

**6a** Under *Membership and Access*, click the *Workload Templates* tab.

**6b** Click *Add* to display the Add Workload Templates dialog box.

**6c** Select the workload templates.

You can Shift-click and Ctrl-click to select multiple workload templates.

**6d** Click *Add* to add the selected workload templates to the *Workload Templates* list.

**7** Add service levels to the group:

**7a** Under *Membership and Access*, click the *Service Levels* tab.

**7b** Click *Add* to display the Add Service Levels dialog box.

**7c** Select the service levels.

You can Shift-click and Ctrl-click to select multiple service levels.

**7d** Click *Add* to add the selected service levels to the *Service Levels* list.

**8** Add networks to the group:

Each service level has one or more networks associated with it (through the service level's assigned host group). For the service levels available to the group, you must decide which of the networks are visible to the group members. Each available service level must have at least one visible network.

**8a** Under *Membership and Access*, click the *Networks* tab.

**8b** Click *Add* to display the Add Networks dialog box.

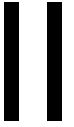
**8c** Select the networks.

You can Shift-click and Ctrl-click to select multiple workload templates.

**8d** Click *Add* to add the selected networks to the *Networks* list.

**9** Click *Save*.

# Provisioning Services in the Cloud



The following sections provide information to help you facilitate the provisioning of requested business services:








- ◆ [Chapter 9, “Provisioning a New Business Service,” on page 29](#)
- ◆ [Chapter 10, “Importing a Virtual Machine as a Business Service,” on page 35](#)
- ◆ [Chapter 11, “Managing a Deployed Business Service,” on page 37](#)
- ◆ [Chapter 12, “Requesting a Business Service as an Administrator,” on page 43](#)
- ◆ [Chapter 13, “Resolving Failed Builds,” on page 45](#)




# Provisioning a New Business Service

# 9

The following tasks walk you through the provisioning process for a new business service. All user, sponsor, and administrator tasks are covered.

Task	Person	Details
 Create a request	User	<p>A business service must be requested. The request defines the contract period for the business service as well as the workloads and their service levels.</p> <p>For instructions, see <a href="#">Create a Request (User)</a>.</p>
 Submit the request	User	<p>After a request is created. It must be submitted for approval by a Novell Cloud Manager administrator and the requestor's business group sponsor.</p> <p>For instructions, see <a href="#">Submit a Request (User)</a>.</p>
 Approve the request	Administrator	<p>If auto-approval is not enabled, a Novell Cloud Manager administrator must manually approve the request.</p> <p>For instructions, see <a href="#">Approve a Request (Administrator)</a>.</p>
 Approve the request	Sponsor	<p>If auto-approval is not enabled, the requestor's business group sponsor must approve the request.</p> <p>For instructions, see <a href="#">Approve a Request (Sponsor)</a>.</p>
 Pre-configure workloads	Administrator	<p>After approval, the process is paused to give you an opportunity to perform any pre-build configuration tasks for the workloads.</p> <p>For instructions, see <a href="#">Complete Pre-Build Configuration of the Business Service Workloads (Administrator)</a>.</p>
 Build the workloads	System	<p>The Novell Cloud Manager system builds the business service workloads.</p> <p>For information, see <a href="#">Build the Business Service (System)</a>.</p>
 Post configure workloads	Administrator	<p>After approval, the process is paused to give you an opportunity to perform any post-build configuration tasks for the workloads.</p> <p>For instructions, see <a href="#">Complete Post-Build Configuration of the Business Service Workloads (Administrator)</a>.</p>

Task	Person	Details
 Deploy the business service	System	The Novell Cloud Manager system deploys the business service for use by the requestor.  For information, see <a href="#">Deploy the Business Service (System)</a> .

## 9.1 Create a Request (User)

- 1 In the Cloud Manager console, click *Business Services*, then click *Requests*.
- 2 Click *Create* to display the Create Business Service Request dialog box.


Cloud Manager administrators have access to all objects in the Cloud Manager system. To create a request as an administrator, you must first add yourself to the business group for which you want to create the business service. Adding yourself to a business group limits your object access to the scope defined for the group and enables you to create business services appropriate for the business group. After you have requested the business service, you should delegate the business service to another user in the business group and remove yourself from the business group.


- 3 Provide the following details for the business service:

**Service Name:** Specify a name for the business service. The name should be unique among other business services you've created.

**Business Group:** Displays the business group in which you are a member.

**Requestor:** Displays your user ID.

**Start Date:** Click  to select the date you want the business service to be available.

**Expiration Date:** Click  to select the date you want the business service to no longer be available. If you don't want the business service to expire, leave the field empty.

**Business Purpose:** Provide details that explain the purpose or justification for the business service. This information is reviewed by a Novell Cloud Manager administrator and your group sponsor during the request approval process.

- 4 Add a workload to the business service:

- 4a Click *Add* to display the Add Workload dialog box.

The dialog box displays a list of workload templates. A template provides the base settings and costs for the workload.

- 4b Select the workload template from which to create the workload, then click *OK* to display the Configure Workload dialog box.

- 4c On the *Resources* tab, specify a name for the workload, specify a name for the virtual machine, select a service level, and customize the resources allocated to the workload.

The workload name is used as the workload's display name in the Cloud Manager console.

The virtual machine name is displayed only to Cloud Manager administrators; Cloud Manager users do not see it. The virtual machine name is used as the VM resource ID (`resource.ID` fact) and VM name (`resource.display` fact) in PlateSpin Orchestrate and the VM name in your hypervisor. If you have a specific naming scheme for your VMs in your hypervisor, you should customize the name according to your scheme. You can also customize the virtual machine name after the request is submitted as part of the


administrator approval task or pre-build configuration task. If you leave the Virtual Machine Name field empty, Cloud Manager automatically generates the virtual machine name using the workload template name and a unique ID.

If the resources are locked, you cannot customize them. For additional information about the Resources settings, click the  button.

- 4d** Click the *Networks* tab, select a network interface card, then assign the network and configure the network address and name servers.

For additional information about the Networks settings, click the  button.

- 4e** Click the *Windows Settings* tab (if displayed), then provide an Administrator account password, computer name, Windows product key, and registration name..

For additional information about the Windows Settings settings, click the  button.

- 4f** Click the *Console Access* tab, then set the password for VNC access to the workload.

For additional information about the Console Access settings, click the  button.

- 4g** Click OK to save the workload and add it to the *Workloads* list.

- 4h** Repeat [Step 4a](#) through [Step 4g](#) to add another workload.

- 5** Add any additional workloads to the business service.

You can add additional workloads by repeating [Step 4](#) or by copying an existing workload and then modifying it as necessary. To copy a workload:

- 5a** Select the workload to copy, then click *Copy*.

- 5b** Select the number of copies to create and provide a unique name for each copy.

- 5c** Click *OK*.

The new workloads are added to the *Workloads* list. The copies are identical to the original workload with the exception that all network IP addresses are set to DHCP (even if the original workload includes a static IP address).

- 5d** Edit each new workload as necessary.

- 6** Click *Save* to add the request to the *Requested Services* list without submitting it.

or

Click *Submit* to add the request and submit it for approval.

## 9.2 Submit a Request (User)

If you submitted the request in the previous section, skip to the next section, [Approve a Request \(Administrator\)](#). Otherwise, submit the request:

- 1** In the Cloud Manager console, click *Business Services*, then click *Requests*.
- 2** Select the request, then click *Submit*.

## 9.3 Approve a Request (Administrator)

After a user submits a business service request, the request is routed to the Novell Cloud Manager administrator group as an approval task. Unless the user's group is configured to automatically grant administrator approval, you must claim the approval task and then approve the request.

- 1** In the Cloud Manager console, click *Tasks*, then click the *Unclaimed* tab.

- 2 Select the task for the business service (the subject is *Administrator approval of a new Business Service*), then click one of the following options:
  - ♦ *Review*: Lets you review the request before approving or denying it.
  - ♦ *Approve*: Approves the request.
  - ♦ *Deny*: Denies the request.
  - ♦ *Claim*: Assigns the task to you and moves it to your My Tasks list. This is useful if you want to make sure that you are assigned the task but want to complete it at a later time.
- 3 If you clicked *Review*, you can do the following:
  - ♦ *Add Comment*: Type a comment then click this option to add it to the *Comments* list.
  - ♦ *View Details*: Click this option to view details for the requested business service. This includes the start and end dates, the workloads, and any notes that the requestor included. You can also select a workload and click *Edit* to modify settings for the workload.
  - ♦ *Approve*: Approves the request.
  - ♦ *Deny*: Denies the request.
  - ♦ *Close*: Closes the dialog box without approving or denying the request.

## 9.4 Approve a Request (Sponsor)

After you approve a business service request, the request is routed to the user's sponsor. Unless the user's business group is configured to automatically grant sponsor approval, the sponsor must approve the request.

- 1 In the Cloud Manager console, click *Tasks*, then click the *My Tasks* tab.

Unlike the administrator approval task which had to be claimed, the sponsor approval task is assigned directly to the sponsor and shows up in the sponsor's *My Tasks* list only.
- 2 Select the task for the business service (the subject is *Sponsor approval of a new Business Service*), then click one of the following options:
  - ♦ *Review*: Lets you review the request before approving or denying it.
  - ♦ *Approve*: Approves the request.
  - ♦ *Deny*: Denies the request.
  - ♦ *Unclaim*: Return the task to the *Unclaimed* list.
- 3 If you clicked *Review*, you can do the following:
  - ♦ *Add Comment*: Type a comment then click this option to add it to the *Comments* list.
  - ♦ *View Details*: Click this option to view details for the requested business service. This includes the start and end dates, the workloads, and any notes that the requestor included. You can also select a workload and click *Edit* to view details about the workload.
  - ♦ *Approve*: Approves the request.
  - ♦ *Deny*: Denies the request.
  - ♦ *Close*: Closes the dialog box without approving or denying the request.
  - ♦ *Unclaim*: Closes the dialog box and returns the request to the *Unclaimed* list.



## 9.5 Complete Pre-Build Configuration of the Business Service Workloads (Administrator)

After both you and the sponsor approve the business service request, a *Pre-build configuration* task is sent to the Novell Cloud Manager administrator group.

This task pauses the provisioning workflow to give you an opportunity to perform any pre-build configuration tasks for the workloads. You must complete the preparations (if any), then mark the task as completed to continue the provisioning workflow

- 1 Click *Tasks*, then click the *Unclaimed* tab.
- 2 Select the task (the subject is *Pre-build configuration of a new Business Service*)
- 3 If you want to claim the task so that no other Cloud Manager administrators attempt to work on it, click *Claim*.

Claimed tasks are moved to your My Tasks list.

- 4 Complete any pre-build configuration tasks required for the workloads.
- 5 When finished with the pre-build configuration tasks, mark the task as complete:
  - 5a If you claimed the task, it is your *My Tasks* list. Select the task, then click *Complete*.
  - 5b If you did not claim the task, it is in the *Unclaimed* list. Select the task, then click *Complete*.

## 9.6 Build the Business Service (System)

This task is completed by the Novell Cloud Manager system. It requires no administrator interaction unless a build problem occurs, in which case you will receive a build failure message.

## 9.7 Complete Post-Build Configuration of the Business Service Workloads (Administrator)

After the business service is successfully built, a *Post-build configuration* task is sent to the Novell Cloud Manager administrator group.

This task pauses the provisioning workflow to give you an opportunity to perform any post-build configuration tasks for the workloads. You must complete the configuration (if any), then mark the task as completed to continue the provisioning workflow

- 1 Click *Tasks*, then click the *Unclaimed* tab.
- 2 If you want to claim the task so that no other Cloud Manager administrators attempt to work on it, select the task, then click *Claim*.

Claimed tasks are moved to your My Tasks list.

- 3 If you want to review the business service request, select the task (the subject is *Post-build configuration of a new Business Service*), then click *Review*.
- 4 Complete any post-build configuration tasks required for the workloads.

**5** Mark the task as complete:

**5a** If you claimed the task, it is your *My Tasks* list. Select the task, then click *Complete*.

**5b** If you did not claim the task, it is in the *Unclaimed* list. Select the task, then click *Complete*.

## **9.8 Deploy the Business Service (System)**

This task is completed by the Novell Cloud Manager system. It requires no administrator interaction unless a deployment problem occurs, in which case you will receive a deployment failure message.

# Importing a Virtual Machine as a Business Service

# 10

If you have an existing virtual machine that is not part of a Cloud Manager business service, you can import it into Cloud Manager. Because the virtual machine is already provisioned, the request and provisioning processes are skipped and the virtual machine is imported directly as a deployed business service.

During the import, you assign an owner to the business service and a service level to the imported virtual machine. If you have multiple virtual machines that should be imported to the same business service, you can do so.

Importing of virtual machines is an administrator-only function. It cannot be performed by users.

In order to import a virtual machine, it must reside on a host within one of your Cloud Manager host groups. The virtual machine can be in any state (running, shut down, or paused).



- 1 In the Cloud Manager console, click *Business Services*, then click *Deployed*.
- 2 Click *Import* to display the Import Business Service dialog box.
- 3 Provide the following details for the business service:

**Service Name:** Specify a name for the business service. The name should be unique among other business services you've created.

**Business Group:** Select the business group for which you are importing the business service.

**User:** Select the user to assign as the owner.

**Start Date:** Defaults to the current date. You cannot change the start date.

**Expiration Date:** Click  to select the date you want the business service to no longer be available. If you don't want the business service to expire, click  and select *No End Date*.

**Business Purpose:** Provide details that explain the purpose or justification for the business service. This information is reviewed by a Novell Cloud Manager administrator and your group sponsor during the request approval process.

- 4 Import a virtual machine as a workload for the business service:

- 4a Click *Import* to display the Select Virtual Machine dialog box.

The dialog box displays a list of virtual machines that have been discovered on hosts residing within your host groups. The list is filtered to display only the virtual machines that meet the following conditions:

- ♦ Are in host groups assigned to service levels associated with the user's business group.
- ♦ Have networks that are assigned (visible) to the user's business group.

If the list does not display the virtual machine you want to import, cancel the import process and modify the user's business group to meet the conditions listed above.

- 4b Select the virtual machine to import, then click *OK* to display the Configure Imported Workload dialog box.
  - 4c On the *Resources* tab, select a service level.

The *Service Level* list displays only the service levels associated with the host group in which the virtual machine resides.

The service level defines the quality experience for the workload, ranging from the classification of the workload's hardware to the availability of support personnel if problems arise. After you select the service level, its objectives are listed below it.

- 4d** (Optional) On the *Resources* tab, customize the workload name and assign a licence cost.
  - Workload Name:** By default, the workload inherits the virtual machine name. However, the workload name is used as the display name in the Cloud Manager console. If you don't want the virtual machine name used as the workload display name, you can customize the name. Make sure the name is different than other workload names in the business service.
  - License Costs:** Specify the monthly cost for licenses associated with the workload.
- 4e** (Optional) On the *Disks* tab, select a disk, then enable the *Cost* check box to include the disk's cost in the business service cost or disable the check box to exclude the disk from the business service cost.
- 4f** Click *OK* to save the configuration and add the workload to the business service.
- 4g** Repeat [Step 4a](#) through [Step 4f](#) to import another virtual machine.
- 5** Click *OK* to add the imported business service to the list of deployed business services.

# Managing a Deployed Business Service

# 11

Novell Cloud Manager lets a business service owner perform various operations to manage a business service throughout its deployment period. As a Cloud Manager administrator, you can perform these same operations for deployed business services.

For example, you might need to stop or restart one of the business service's workloads. Or, you might need to change the business service's expiration date, to modify one of its workloads, or to add workloads. Or, you might need to delegate rights to the business service to another person.

- ♦ [Section 11.1, “Changing a Provisioned Business Service,” on page 37](#)
- ♦ [Section 11.2, “Changing an Imported Business Service,” on page 39](#)
- ♦ [Section 11.3, “Delegating a Business Service,” on page 40](#)
- ♦ [Section 11.4, “Starting or Stopping a Workload,” on page 40](#)
- ♦ [Section 11.5, “Opening a Workload Console,” on page 40](#)
- ♦ [Section 11.6, “Viewing Workload Events,” on page 41](#)



## 11.1 Changing a Provisioned Business Service

This section applies to changing a business service that was created through the provisioning process. For information about changing a business service that was created by importing existing virtual machines, see [Section 11.2, “Changing an Imported Business Service,” on page 39](#).

You can change a business service's expiration date and add, modify, or remove workloads. When modifying a workload, you can change the service level, increase or decrease any unlocked vCPU, RAM, and NIC resources, add disks (you cannot remove disks), change the network settings, and change the console password.

After you make changes, you must submit a change request to approve and deploy the changed business service.

If the change request includes a modification to an existing workload, the existing workload continues to be available until the build process starts. At that point, the existing workload becomes unavailable as it is reconfigured with the requested changes. When the build process is complete (including any post-build configuration tasks), the changed workload becomes available again.

- 1** If you plan to modify a workload, you need to make sure it is either running or stopped. Modifications cannot be made to suspended workloads.
  - 1a** In the Cloud Manager console, click *Business Services*, then click *Deployed*.
  - 1b** Select the business service, then click *View*.
  - 1c** Select the workload you plan to modify, then click  to start it or  to stop it.
  - 1d** Click *Close*.
- 2** Select the business service to modify, then click *Change*.
- 3** Modify the details for the business service:

**Service Name:** Specify a name for the business service. The name should be unique among business service names. If desired, you can use the original name.

**Expiration Date:** Specify the date you want the business service to no longer be available.

**Business Purpose:** Provide details that explain the purpose or justification for the business service. This information is reviewed by a Novell Cloud Manager administrator and your group sponsor prior to approving or denying your request.

#### 4 Add workloads:

**4a** Click *Add* to display the Select Workload Template dialog box.


The dialog box displays a list of workload templates. A template provides the base settings and costs for the workload.

**4b** Select the workload template from which to create the workload, then click *OK* to display the Configure Workload dialog box.

**4c** On the *Resources* tab, specify a name for the workload, specify a name for the virtual machine, select a service level, and customize the resources allocated to the workload.

The workload name is used as the workload's display name in the Cloud Manager console.

The virtual machine name is displayed only to Cloud Manager administrators; Cloud Manager users do not see it. The virtual machine name is used as the VM resource ID (`resource.ID` fact) and VM name (`resource.display` fact) in PlateSpin Orchestrate and the VM name in your hypervisor. If you have a specific naming scheme for your VMs in your hypervisor, you should customize the name according to your scheme. You can also customize the virtual machine name after the request is submitted as part of the administrator approval task or pre-build configuration task. If you leave the Virtual Machine Name field empty, Cloud Manager automatically generates the virtual machine name using the workload template name and a unique ID.

If the resources are locked, you cannot customize them. For additional information about the Resources settings, click the  button.


**4d** Click the *Networks* tab, select a network interface card, then assign the network and configure the network address and name servers.

For additional information about the Networks settings, click the  button.

**4e** Click the *Windows Settings* tab (if displayed), then provide an administrator account password, computer name, Windows product key, and registration name.

For additional information about the Windows settings, click the  button.

**4f** Click the *Console Access* tab, then set the password for VNC access to the workload.

For additional information about the Console Access settings, click the  button.

**4g** Click *OK* to save the workload and add it to the *Workloads* list.


**4h** Repeat [Step 4a](#) through [Step 4g](#) to add another workload.

#### 5 Modify workloads:

**5a** Select the workload to modify, then click *Edit*.

**5b** Modify the workload settings as desired.

You can change the service level, increase or decrease the vCPU, RAM, and NIC resources, add additional disks (you cannot remove disks), change the network settings, and change the console password.

For information about the workload settings, click the  button.

**5c** Click *OK* to save the workload changes.

**6** Remove workloads:

**6a** Select the workload to remove.

You can Shift-click and Ctrl-click to select multiple workloads.

**6b** Click *Remove*.

**7** Click *Save* to save the request without submitting it.


or

Click *Submit* to submit the request.

In the *Business Services* list, the status of the deployed business service is changed from *Deployed* to *Change Pending*. In addition, the business service change request is added to the *Requested Services* list so that you can track the deployment process.

**8** If you saved the change, when you are ready to submit it, click *Business Services*, click *Requests*, select the change request, then click *Submit*.

## 11.2 Changing an Imported Business Service

This section applies to changing a business service that was created by importing an existing virtual machine. These business services, referred to as imported business services, are identified in the *Deployed Services* list by a  icon next to their names. For information about changing a business service that was created through the provisioning process, see [Section 11.1, “Changing a Provisioned Business Service,” on page 37](#).

You can change the following for an imported business service:

- ◆ Import additional virtual machines as new workloads.
- ◆ Remove existing workloads.

All other business service data is locked and cannot be changed.

**1** In the Cloud Manager console, click *Business Services*, then click *Deployed*.

**2** Select the imported business service that you want to change, then click *Change*.

**3** Import a virtual machine as a workload for the business service:

**3a** Click *Import* to display the *Select Virtual Machine* dialog box.

The dialog box displays a list of virtual machines that have been discovered on hosts residing within your host groups

**3b** Select the virtual machine to import, then click *OK* to display the *Configure Imported Workload* dialog box.

**3c** On the *Resources* tab, specify a name for the workload and select a service level.

You cannot change the information on the other workload tabs during import.

**3d** Click *OK* to save the workload and add it to the *Workloads* list.

**3e** Repeat Step 3a through Step 3d to import another workload.

**4** Remove a workload:

**4a** Select the workload to remove.

You can Shift-click and Ctrl-click to select multiple workloads.

- 4b Click *Remove*.
- 5 Click *OK*.

## 11.3 Delegating a Business Service

You can delegate a business service to other users in the business group.

- 1 In the Cloud Manager console, click *Business Services*, then click *Deployed*.
- 2 Select the business service, then click *Delegate* to display the Delegate Business Service dialog box.

The Users list displays all users to whom you can delegate the business service.
- 3 Find the user to whom you want to delegate the business service, then select the delegation level:
  - ♦ **Full Control:** Gives the user shared ownership. The user has the same rights as you, including the ability to delegate the business service to other users and remove your rights.
  - ♦ **Read Only:** Gives the user the rights to view the business service but not modify it.
- 4 Click *Apply Changes*.

## 11.4 Starting or Stopping a Workload

You can start, pause, and shut down a workload.

- 1 In the Cloud Manager console, click *Business Services*, then click *Deployed*.
- 2 Select the business service whose workload status you want to change, then click *View*.
- 3 In the Workloads list, select the workload.
- 4 Click one of the following controls:
  - ▶ Start the workload.
  - ⏸ Pause the workload.
  - Shut down the workload.
- 5 Click *Close*.

## 11.5 Opening a Workload Console

Cloud Manager provides remote access to workloads via a VNC console.

- 1 In the Cloud Manager console, click *Business Services*, then click *Deployed*.
- 2 Select the business service with the workload you want to access, then click *View*.
- 3 In the Workloads list, select the workload, then click *Console*.

If the *Console* action is not available, remote console access through Cloud Manager is not enabled. For information about enabling remote console access, see [Chapter 25, “Configuring Remote Console Access to Workloads,”](#) on page 87.
- 4 Specify the console password to log in.



After you log in, a remote console session is opened to the workload. Most functions of the remote console work the same as the local console. However, if you need to use special key sequences such as Ctrl-Alt-Del, you must select them from the Send Special Key Sequence menu located at the top of the console.

- 5 When finished, close the browser window to end the session.

## 11.6 Viewing Workload Events

Cloud Manager lets you view all events that have occurred during the current run cycle for a workload. The events are cleared each time the workload starts.

- 1 In the Cloud Manager console, click *Business Services*, then click *Deployed*.
- 2 Select the business service with the workload events you want to view, then click *View*.
- 3 In the Workloads list, select the workload, then click *Events* to display the Workload Events window.

The *Events* list refreshes every 30 seconds.

You can leave the Workload Events window open while you navigate to other Novell Cloud Manager pages. The *Events* list continues to refresh until you log out of Novell Cloud Manager.

- 4 When finished, close the Workload Events window.



# Requesting a Business Service as an Administrator

# 12

As a Cloud Manager administrator, you have full rights to all business services in your system. However, to create a business service, you must add yourself to a business group. Adding yourself to a business group limits your object access to the scope defined for the group and enables you to create business services appropriate for the business group. After you have requested the business service, you should delegate the service to another user in the business group and then remove yourself from the business group.



# Resolving Failed Builds

# 13

When a business service is unable to be built, the following occurs:

- ◆ You receive a message indicating that the build failed and the reason it failed.
- ◆ The status of the business service request is changed to *Build Failed* in your *Business Services > All Requested Services* list.
- ◆ The requestor sees no change in status. The status remains *Building* so that you have time to resolve the issue if possible.

Build failures can occur for a variety of reasons, from misconfiguration of the business service by the requestor to problems with PlateSpin Orchestrate or the hypervisor building the workload. To resolve issues, we recommend the following approach:

- 1** Review the build failure message you received so that you know the cause.
- 2** If the build failure message does not provide sufficient information to understand the cause, review the job logs in the PlateSpin Orchestrate Development Client.
- 3** Make the configuration changes or system changes to resolve the problem, then resubmit the business service request.

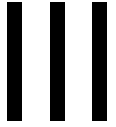
The request skips the administrator approval, sponsor approval, and pre-build configuration stages and goes directly to the building stage.

- 4** If the problem cannot be resolved, you can *Withdraw* the request or *Delete* it.

Withdrawing the request sets the status of the business service request to *Withdrawn* in the requestor's list; the requestor can either modify and resubmit the request or delete it. Deleting the request removes it from both your list and the requestor's list.



# Managing the Cloud



The following sections provide information to help you manage the resources that make up your cloud:

- ◆ [Chapter 14, “Monitoring Resource Capacity and Usage,” on page 49](#)
- ◆ [Chapter 15, “Managing Host Groups,” on page 51](#)
- ◆ [Chapter 16, “Managing Service Levels,” on page 55](#)
- ◆ [Chapter 17, “Managing Workload Templates,” on page 59](#)
- ◆ [Chapter 18, “Managing Users,” on page 63](#)
- ◆ [Chapter 19, “Managing Business Groups,” on page 67](#)
- ◆ [Chapter 20, “Generating Cost Reports,” on page 73](#)





# Monitoring Resource Capacity and Usage

# 14

Novell Cloud Manager provides a basic dashboard that lets you view the RAM and CPU capacity for zones and host groups, view service level and workload template usage, and track uncompleted tasks that are close to their due dates.

To view the dashboard:

- 1 In the Cloud Manager console, click *Home*.

The Home view includes four panels (Capacity, My Tasks, Service Levels, and Workload Templates). You can move and resize the panels to customize the view. Any changes you make persist across Novell Cloud Manager sessions.

**Capacity:** The Capacity panel shows the used capacity and total capacity for all RAM and CPUs within all zones, a specific zone, or a specific host group. The capacity statistics are updated every hour.

- ♦ **Zone:** Select *All Zones Combined* if you want to see capacity for all zones in your system. Select a zone to see capacity for all host groups within that zone, or select a host group to see capacity for that host group.
- ♦ **RAM:** Displays the *used/total* RAM capacity for the selected zones, zone, or host group. *Total* represents the total RAM of all hosts in the selected host group, zone, or zones. *Used* represents the actual RAM being used to run the workloads deployed on the hosts.
- ♦ **CPU:** Displays the *deployed/total* vCPU (virtual CPU) capacity for the selected zones, zone, or host group. *Total* represents the total number of vCPUs in the selected host group, zone, or zones. *Deployed* represents the total number of vCPUs allocated to workloads deployed to those hosts.

Note that *deployed* represents the total vCPUs for all workloads deployed to the hosts, not the total vCPUs of all actively running workloads. It is possible that the *deployed* number could exceed the *total* vCPU capacity for the selected host group, zone, or zones. This does not necessarily indicate a problem, provided that all deployed workloads are not running at the same time. It just indicates an overcommit of the vCPUs for the host group, zone, or zones.

**My Tasks:** The My Tasks panel displays all uncompleted tasks currently assigned to you. By default, the tasks are sorted by due date with the soonest due date listed first. Any task that is within 8 hours of its due date is displayed in red. Double-click a task to display it. Click the *Due Date* and *Subject* column headers to change the sort order.

**Service Levels:** The Service Levels panel shows the usage for each of the service levels in your system. The following information is displayed for each service level

- ♦ **Name:** The name of the service level.
- ♦ **Usage:** The number of times the service level is used in business services.
- ♦ **Zone:** The zone in which the service level's host group resides.
- ♦ **Host Group:** The host group associated with the service level.

By default, the list is sorted from the largest number of subscriptions to the lowest number. You can click the Subscription column header to reverse the sort order. You can also click another column header to sort on that column.

**Workload Templates:** The Workload Templates panel shows the usage for each of the workload templates in your system. The following information is displayed for each workload template:

- ◆ **Name:** The name of the workload template.
- ◆ **Usage:** The number of times the workload template has been used to create a workload.
- ◆ **Zone:** The zone to which the workload template is assigned.

By default, the list is sorted from the largest number of subscriptions to the lowest number. You can click the Subscription column header to reverse the sort order. You can also click another column header to sort on that column.

A host group is a collection of VM hosts that run business service workloads. The host group not only defines the VM hosts that are members of the group, but also defines the cost of using the host resources (CPU, RAM, storage, and networks).

- ♦ [Section 15.1, “Creating a Host Group,” on page 51](#)
- ♦ [Section 15.2, “Modifying a Host Group,” on page 52](#)
- ♦ [Section 15.3, “Deleting a Host Group,” on page 53](#)
- ♦ [Section 15.4, “Viewing the Hosts List,” on page 54](#)
- ♦ [Section 15.5, “Viewing Host or Cluster Details,” on page 54](#)

## 15.1 Creating a Host Group

As you create a host group, consider the following:

- ♦ A host group can include standalone hosts or clusters (collectively referred to simply as *hosts*).
- ♦ A host can belong to only one group.
- ♦ All hosts in a group must reside in the same zone.
- ♦ All hosts in a group must be identical in terms of hypervisor technology and version, operating system version, network configuration, storage repository configuration, and hardware capabilities. This enables a workload to run on any of the group’s hosts.
- ♦ All hosts that share the same repository must belong to the same host group. In other words, two different host groups cannot include hosts that share the same repository. You can view a host’s details in the Cloud Manager console to see its repositories.
- ♦ If the host group is using the VMware hypervisor, the host group can contain hosts from one vCenter server only. Including hosts from multiple vCenter servers in the same host group is not supported.

To create a host group:

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Host Groups* tab.
- 2 Click *Create*, select the zone that contains the hosts you plan to add to the host group, then click *OK* to display the Create Host Group dialog box.
- 3 In the *General* fields, provide the following information for the host group:
  - Name:** Specify a name for the group. The name should be different than any other host group name. This name is seen only by you and other Novell Cloud Manager administrators.
  - Zone:** Displays the zone whose hosts you can add to the group. You cannot change this setting.
  - Hypervisor:** Select the hypervisor technology for the group’s hosts. You will be able to add only those hosts that meet the hypervisor criteria.
  - Description:** Provide any additional information for the host group.
- 4 In the *Monthly Resource Costs* fields, define the monthly costs associated with the host group resources:
  - vCPU:** Specify the cost per virtual CPU.

**Memory:** Specify the cost per megabyte (MB) of memory.

**Disk:** Specify the cost per gigabyte (GB) of disk space.

**Network:** Specify the cost per network interface.

- 5 In the *vCPUs per Host* field, select the maximum number of virtual CPUs allowed for each host.

For example, if you select 32, the total vCPUs for all workloads running on a host cannot exceed 32.

- 6 Add hosts to the group:

- 6a In the *Hosts* list, click *Add* to display the Add Hosts dialog box.

The list displays all available hosts in the zone that meet the selected hypervisor criteria. Hosts that are already assigned to another host group are not displayed.

- 6b Select the hosts.

You can Shift-click and Ctrl-click to select multiple hosts.

- 6c Click *OK* to add the selected hosts to the *Hosts* list.

- 7 Click *Save*.

## 15.2 Modifying a Host Group

As you modify a host group, be aware of the following:

- ♦ Before removing a host from a host group, you should move or migrate the host's workloads to another host in the group.
- ♦ Do not remove all hosts from a host group if the host group is assigned business service workloads. The workloads continue to run on the assigned hosts until the workloads are restarted. At that time, the workloads remain in a provisioning state because there are no hosts on which to run them.
- ♦ Changing the cost of the host group resources might impact the cost of business services currently deployed in the host group. For more information, see [Chapter 26, "Configuring the Workload Update Schedule," on page 89](#).

To modify a host group:

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Host Groups* tab.

- 2 Select the host group you want to modify, then click *Edit*.

- 3 In the *General* fields, modify the following information for the host group:

**Name:** Specify a name for the group. The name should be different than any other host group name. This name is seen only by you and other Novell Cloud Manager administrators.

**Zone:** Displays the zone whose hosts you can add to the group. You cannot change this setting.

**Hypervisor:** Displays the hypervisor technology for the group's hosts. You cannot change this setting.

**Description:** Provide any additional information for the host group.

- 4 In the *Monthly Resource Costs* fields, define the monthly costs associated with the host group resources:

**vCPU:** Specify the cost per virtual CPU.

**Memory:** Specify the cost per megabyte (MB) of memory.

**Disk:** Specify the cost per gigabyte (GB) of disk space.

**Network:** Specify the cost per network interface.

- 5 In the *vCPUs per Host* field, select the maximum number of virtual CPUs allowed for each host.

For example, if you select 32, the total vCPUs for all workloads running on a host cannot exceed 32.

- 6 Add hosts to the group:

- 6a In the *Hosts* list, click *Add* to display the Add Hosts dialog box.

The list displays all available hosts in the zone that meet the selected hypervisor criteria. Hosts that are already assigned to another host group are not displayed.

- 6b Select the hosts.

You can Shift-click and Ctrl-click to select multiple hosts.

For VMware and Xen clusters, only the cluster is listed; you must add the cluster to the host group. For Hyper-V, both the cluster and its member hosts are listed; in addition to adding the cluster to the host group, you must add the member hosts.

- 6c Click *OK* to add the selected hosts to the *Hosts* list.

- 7 Remove hosts from the group:

- 7a In the *Hosts* list, select the hosts to remove.

You can Shift-click and Ctrl-click to select multiple hosts.

- 7b Click *Remove*.

---

**IMPORTANT:** When you add a host to a group, the host's `vmhost.vcpu.max` fact is set to the host group's *vCPUs per Host* number. For example, if the setting is 16 (so that each host supports a maximum of 16 vCPUs), the host's `vmhost.vcpu.max` fact is set to 16.

When you remove a host, the fact is not reset. If you want to change the maximum number of vCPUs for the host, you need to manually edit its `vmhost.vcpu.max` fact. For instructions, see “[Configuring vCPUs on VM Hosts](#)” in the *PlateSpin Orchestrate 2.6 Development Client Reference*.

This applies only to standalone hosts, not to clusters.

---

- 8 Click *Save*.

## 15.3 Deleting a Host Group

You cannot delete a host group that is associated with a service level.

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Host Groups* tab.

- 2 Select the host group you want to delete, click *Delete*, then click *Yes* to confirm the deletion.

If the host group is associated with a service level, you receive a message informing you of the association. You can go to the *Service Level* list to see which service level is associated with the group.

## 15.4 Viewing the Hosts List

You can use the *Hosts* list to see the hosts that are allocated to your Novell Cloud Manager zones. These hosts can be individual hosts or clusters.

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Hosts* tab.

For each host in the list, the following information is provided:

- ♦ **Name:** The host name.
- ♦ **Zone:** The Novell Cloud Manager zone in which the host resides.
- ♦ **Group:** The host group to which the host belongs. If the field is blank, the host is not yet assigned to a group. You use the *Groups* page to assign hosts to host groups.
- ♦ **Type:** The type of host object. *Host* indicates a standalone host and *Cluster* indicates a host cluster.

For VMware and Xen clusters, only the cluster is displayed in the *Hosts* list. You must view the cluster details to see the cluster hosts. For Hyper-V clusters, both the cluster and its hosts are listed.

- ♦ **Technology:** The hypervisor technology for the host.

## 15.5 Viewing Host or Cluster Details

If you need more information for a host or cluster than is displayed in the *Hosts* list, you can view its details.

- 1 In the Cloud Manager console, click *Host Groups*, then click the *Hosts* tab.

- 2 Select the host or cluster, then click *View*.

or

Double-click the host or cluster.

- 3 If you are viewing the details for a cluster, you can double-click a host to view its details.

Each business service workload is assigned a service level that identifies the class of hardware (host group) used to host the workload as well as objectives that provide specific measurable characteristics such as availability, throughput, frequency, response time, and quality.

The following sections provide instructions for managing service levels and service level objectives:

- ♦ [Section 16.1, “Creating a Service Level,” on page 55](#)
- ♦ [Section 16.2, “Modifying a Service Level,” on page 56](#)
- ♦ [Section 16.3, “Deleting a Service Level,” on page 56](#)
- ♦ [Section 16.4, “Creating a Service Level Objective,” on page 57](#)
- ♦ [Section 16.5, “Modifying a Service Level Objective,” on page 57](#)
- ♦ [Section 16.6, “Deleting a Service Level Objective,” on page 58](#)

## 16.1 Creating a Service Level

**1** In the Cloud Manager console, click *Service Levels*, then click the *Service Levels* tab.

**2** Click *Create* to display the *Select Zone* dialog box.

The dialog box lists all of the zones in which you can create the service level. You must select the zone where the host group resides that you plan to associate with the service level.

**3** Select the desired zone, then click *Select* to display the *Create Service Level* dialog box.

**4** Provide the following details for the service level:

**Name:** Specify a name for the service level. The name should be different than any other service level name.

**Zone:** Displays the service level’s zone. You cannot change this setting.

**Host Group:** Select the host group to associate with the service level. The host group determines the hardware provided for the service level. You can only select from the host groups associated with the zone.

**Creation Date:** Displays the current date.

**Description:** Provide any additional information for the service level.

**5** Add objectives to the service level:

**5a** In the *Service Level Objectives* list, click *Add* to display the *Add Service Level Objectives* dialog box.

**5b** Select the objectives to add.

You can Shift-click and Ctrl-click to select multiple objectives. If you need to create a service level objective, save the current service level, create the objective, then edit the service level to add the objective. For information about creating objectives, see [Section 16.4, “Creating a Service Level Objective,” on page 57](#).

**5c** Click *Add* to add the selected objectives to the *Service Level Objectives* list.

**6** Click *Save*.

## 16.2 Modifying a Service Level

You can modify a service level to add or remove objectives and to change its host group assignment.

Changing a service level might impact the cost of business services currently using the service level. For more information, see [Chapter 26, “Configuring the Workload Update Schedule,”](#) on page 89.

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Levels* tab.
- 2 Select the service level you want to modify, then click *Edit*.
- 3 Modify the following details for the service level:
  - Name:** Specify a name for the service level. The name should be different than any other service level name.
  - Zone:** Displays the service level’s zone. You cannot change this setting.
  - Host Group:** Select the host groups to associate with the service level. The host group determines the hardware provided for the service level. You can only select from the host groups associated with the zone.
  - Creation Date:** Displays the date the service level was created.
  - Description:** Provide any additional information for the service level.
- 4 Add objectives to the service level:
  - 4a In the *Service Level Objectives* list, click *Add* to display the Add Service Level Objectives dialog box.
  - 4b Select the objectives to add.
    - You can Shift-click and Ctrl-click to select multiple objectives.
  - 4c Click *Add* to add the selected items to the *Service Level Items* list.
- 5 Remove objectives from the service level:
  1. In the *Service Level Objectives* list, select the objectives you want to remove.
    - You can Shift-click and Ctrl-click to select multiple objectives.
  2. Click *Remove*.
- 6 Click *Save*.

## 16.3 Deleting a Service Level

If a service level is associated with a business service, the *Delete* action is disabled and you cannot delete the service level.

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Levels* tab.
- 2 Select the service level you want to delete, then click *Delete*.
- 3 Click *Yes* to confirm the deletion.
  - If the service level is associated with a workload, you receive a message informing you of the association.



## 16.4 Creating a Service Level Objective

Service level objectives define measurable characteristics such as availability, throughput, frequency, response time, and quality. Each of these characteristics typically has multiple objectives that identify a different level of service.

For example, you might define three availability objectives (97%, 98%, and 99%) and associate them with different service levels (Silver, Gold, and Platinum). By associating different costs with the objectives, you can establish the desired cost structure for your service levels.

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Level Objectives* tab.

- 2 Click *Create* to display the Create Service Level objective dialog box.

- 3 Provide the following details:

**Name:** Specify a name for the service level objective. The name should be different than any other objective name. This name not only appears to administrators but also to business service requestors when they configure workloads with service levels that include the objective.

**Monthly Cost:** Specify the cost associated with the objective. If the objective does not have a cost, leave the field empty.

**Description:** Provide optional text to further identify the service level objective.

**Objective Type:** If this objective represents workload availability, select *Availability*. Otherwise, select *General*.

**Value:** If the objective type is *Availability*, specify the target availability as a percentage (for example, 99.9). If the objective type is *General*, specify an appropriate objective value.

- 4 Click *Save*.

## 16.5 Modifying a Service Level Objective

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Level Objectives* tab.

- 2 Select the objective you want to modify, then click *Edit*.

- 3 Modify the following details:

**Name:** Specify a name for the service level objective. The name should be different than any other objective name. This name not only appears to administrators but also to business service requestors when they configure workloads with service levels that include the objective.

**Monthly Cost:** Specify the cost associated with the objective. If the objective does not have a cost, leave the field empty.

**Description:** Provide optional text to further identify the service level objective.

**Objective Type:** If this objective represents workload availability, select *Availability*. Otherwise, select *General*.

**Value:** If the objective type is *Availability*, specify the target availability as a percentage (for example, 99.9). If the objective type is *General*, specify an appropriate objective value.

- 4 Click *Save*.

## 16.6 Deleting a Service Level Objective

You cannot delete a service level objective that is associated with a service level. Remove the objective from any service levels before deleting it.

- 1 In the Cloud Manager console, click *Service Levels*, then click the *Service Level Objectives* tab.
- 2 Select the service level you want to delete, then click *Delete*.
- 3 Click *Yes* to confirm the deletion.

If the objective is associated with a service level, you receive a message informing you of the association.

A workload template identifies a VM template and the customizations (such as increased CPUs or decreased memory) that you want applied when creating a workload from the template.

If you have not yet created VM templates, see your hypervisor documentation or the [PlateSpin Orchestrate 2.6 Development Client Reference](#)

- ♦ [Section 17.1, “Creating a Workload Template,” on page 59](#)
- ♦ [Section 17.2, “Modifying a Workload Template,” on page 60](#)
- ♦ [Section 17.3, “Deleting a Workload Template,” on page 62](#)

## 17.1 Creating a Workload Template

- 1 In the Cloud Manager console, click *Catalog*, then click the *Workload Templates* tab.
- 2 Click *Create* to display the Select Zone dialog box.
- 3 Select the zone that contains the VM template you want to associate with the workload template, then click *OK*.
- 4 In the *General* section, provide the following information for the workload template:
  - Name:** Specify a name for the workload template. The name should be different than any other workload template name.
  - License Costs:** Specify the license costs associated with the template’s software. This cost is per month.
  - Zone:** Displays the zone you selected for the workload template. You cannot change this setting.
  - Description:** Provide any additional information to identify the workload template.
- 5 In the *Virtual Machine Settings* section:
  - 5a In the *VM Template* list, select a VM template.

After you select a VM template, the template’s operating system, hypervisor, and primary disk information is displayed. You cannot change these settings.

The VM template’s resource information (CPUs, memory, additional disk, and network interface cards) is also displayed. You can customize this information as necessary.
  - 5b Customize the settings to increase or decrease the workload resources:
    - Number of CPUs:** Select the number of CPUs for a workload. Currently, some hypervisor technologies do not support more than 8 CPUs per workload, so the maximum number allowed is 8.

Each host group includes a *vCPUs per Host* setting that defines the number of available vCPUs per host in the group. You should make sure the number you select here does not exceed the per host number for any host group that might service the workload. Otherwise, the workload will not be able to run.
    - Memory:** Select the megabytes (MB) of RAM to allocate to a workload.
    - Number of NICs:** Select the number of network interface cards (NICs) to allocate to the workload.

**Disks Summary:** Displays the size of the mandatory workload disks and the number of optional workload disks defined in the template, Mandatory workload disks are always created. They are inherited from the VM template or manually defined (on the *Disks* tab). Optional workload disks are available to the user but are created only if the user specifies sizes for the disks.

You add disks on the Disks page (see [Step 6](#) below) and the disk information is then displayed in these fields.

- 5c** By default, each resource setting is locked, which means that a business service requestor cannot change it. If you want to enable a requestor to change a setting when creating a workload from the template, deselect the  check box.
  - 6** If you want to add disks to the workload template, or if you want to specify whether or not the current disks should be included when calculating the cost of a business service:
    - 6a** Click the *Disks* tab.

The template can include up to 10 disks beyond the disks inherited with the VM template.
    - 6b** Click *Add* to add a disk to the list.
    - 6c** Make sure the disk is selected in the list, then specify a size (in the *Size* field below the list) to make the disk mandatory.

or

Leave the capacity set to 0 to make the disk optional.

The maximum size per disk is 1024 GB (1 TB). If you specify the size when adding a disk, the disk becomes mandatory. Users cannot remove or change a mandatory disk. If you add a disk with size set to 0, the disk becomes optional. When creating a workload, users can add optional disks and specify their sizes (1 to 1024 GB).

  - 6d** In the *Cost* field, select the check box if you want to charge for the disk.

If you don't enable the Cost option, the disk becomes a free disk and is not included when calculating the cost of a business service.
  - 6e** Repeat to include up to 10 disks.
- 7** Click *OK*.
- 8** Repeat the steps for each workload template you want to create.

## 17.2 Modifying a Workload Template

You can modify a workload template to change the general information (name, license costs, and description) and the VM resource settings. Modifications do not affect currently requested or deployed business services.

- 1** In the Cloud Manager console, click *Catalog*, then click the *Workload Templates* tab.
- 2** Select the workload template you want to modify, then click *Edit*.
- 3** In the *General* section, modify the following information for the workload template:
  - Name:** Specify a name for the workload template. The name should be different than any other workload template name.
  - License Costs:** Specify the license costs associated with the template's software. This cost is per month.

**Zone:** Displays the zone you selected for the workload template. You cannot change this setting.

**Creation Date:** Displays the date the template was created. You cannot change this setting.

**Description:** Provide any additional information to identify the workload template.

**4** In the *Virtual Machines Settings* section:

**4a** Select a different VM template if desired.

If the workload template is associated with a currently deployed business service, you cannot change the VM template. In this case, the *VM Template* field is read-only.

**4b** Customize the resource settings associated with the VM template.

You cannot change the VM template. However, you can change any of the values to increase or decrease the resources for workloads created from the VM template.

**Number of CPUs:** Select the number of CPUs for a workload. Currently, some hypervisor technologies do not support more than 8 CPUs per workload, so the maximum number allowed is 8.

Each host group includes a *vCPUs per Host* setting that defines the number of available vCPUs per host in the group. You should make sure the number you select here does not exceed the per host number for any host group that might service the workload. Otherwise, the workload will not be able to run.

**Memory:** Select the megabytes (MB) of RAM to allocate to a workload.

**Number of NICs:** Select the number of network interface cards (NICs) to allocate to the workload.

**Disks Summary:** Displays the size of the mandatory workload disks and the number of optional workload disks defined in the template, Mandatory workload disks are always created. They are inherited from the VM template or manually defined (on the *Disks* tab). Optional workload disks are available to the user but are created only if the user specifies sizes for the disks.

You add, edit, and remove disks on the *Disks* page (see [Step 5](#) below).

**4c** By default, each resource setting is locked, which means that a business service requestor cannot change it. If you want to enable a requestor to change a setting when creating a workload from the template, deselect the  check box.

**5** If you want to change the additional disks, click the *Disks* tab, then do any of the following:

- ♦ **Add a disk:** You can include up to 10 disks. Click *Add* to add a disk to the list. Make sure the disk is selected, then specify a size in the *Size* field (below the list) to make the disk mandatory. Or, leave the size set to 0 to make the disk optional. The maximum size per disk is 10240 GB (1 TB).

If you specify the size when adding a disk, the disk becomes mandatory. Users cannot remove or change a mandatory disk. If you add a disk with size set to 0, the disk becomes optional. When creating a workload, users can add optional disks and specify their sizes (1 to 1024 GB).

In the *Cost* field, select the check box if you want to charge money for the disk. If you don't enable the *Cost* option, the disk becomes a free disk and is not included when calculating the cost of a business service.

- ♦ **Remove a disk:** Select the disk in the list, then click *Remove*. You cannot remove disks that have the  icon in front of them. These are non-removable disks inherited from the VM template.

- ♦ **Change a disk size or cost calculation:** Select the disk in the list, then modify the *Size* and *Cost* fields.

6 Click *OK*.

## 17.3 Deleting a Workload Template

If a workload template is associated with any currently deployed business services, the *Delete* action is disabled and you cannot delete the template.

- 1 In the Cloud Manager console, click *Catalog*, then click the *Workload Templates* tab.
- 2 Select the workload template you want to delete, then click *Delete*.
- 3 Click *Yes* to confirm the deletion.

To provision business services through Novell Cloud Manager, a user must have a Cloud Manager user account and be a member of a business group. The user account defines the user's access and the business group associates the user with the resources (service levels, workload templates, and so forth) from which he or she can build business services. A user can be a member of only one business group.

The following sections provide information about managing user accounts and access to Cloud Manager. For information about managing business groups, see [Chapter 19, “Managing Business Groups,”](#) on page 67.

- ◆ [Section 18.1, “Giving Cloud Manager Access to a User,”](#) on page 63
- ◆ [Section 18.2, “Modifying a User’s Information,”](#) on page 64
- ◆ [Section 18.3, “Removing a User’s Access to Cloud Manager,”](#) on page 65
- ◆ [Section 18.4, “Removing a User from a Business Group,”](#) on page 65

## 18.1 Giving Cloud Manager Access to a User

To enable a user to access Cloud Manager, you must do the following:

- ◆ Provide the user with an account in the LDAP authentication directory. The account must be located within the user search base defined in the Cloud Manager LDAP configuration (Cloud Manager console > Configuration > LDAP).
- ◆ In the LDAP directory, add the user as a member of the Novell Cloud Manager user group. Membership in this group grants the user access to Cloud Manager. If a user who is not a member of the group attempts to log in to Cloud Manager, the login fails.
- ◆ Provide the user with an account in Cloud Manager. The user ID for the two accounts (LDAP and Cloud Manager) must match.

If necessary, refer to your LDAP directory documentation for information about performing the first two tasks.

To provide a user with an account in Cloud Manager, you can use either of the following methods:

- ◆ After giving the user an LDAP account and adding the LDAP account to the Novell Cloud Manager user group, have the user log in to Cloud Manager using his or her LDAP user ID. Cloud Manager automatically creates an account for the user. If you want to change the user's full name (which is set to the user ID), add an e-mail address to support sending of Cloud Manager messages to the user's external address, or change the cost visibility for the user, you must edit the user account; see [Section 18.2, “Modifying a User’s Information,”](#) on page 64. Otherwise, you can skip editing of the account.
- ◆ Manually add the user account in Cloud Manager. See the steps below for instructions.

To manually add a user account to Cloud Manager:

- 1 In the Cloud Manager console, click *Business Groups*, then click the *Users* tab.
- 2 Click *Create* to display the Create User dialog box.

- 3 Provide the following details to define the user:

**User ID:** Specify the user's ID as defined in the LDAP authentication directory.

**Full Name:** Specify the user's full name as you want it to appear in Novell Cloud Manager.

**E-Mail Address:** Specify the e-mail address at which the user can receive messages generated by Novell Cloud Manager activities. This applies only if you have configured Cloud Manager to send messages to an external SMTP server. For information, see [Chapter 23, "Connecting to an SMTP Server to Send External E-Mail,"](#) on page 83.

**Business Group:** This is a display-only field. After you add the user to a business group, the field displays the group name.

- 4 Select the user's role:

**User:** Provides the ability to manage business services, including requesting services, sponsoring (approving or denying) requested services, and monitoring and managing deployed services.

**Administrator:** Provides the ability to administer the Novell Cloud Manager system, including creation and management of all objects (users, business groups, host groups, workload templates, and service levels) used in business services.

- 5 (User Role Only) If you want the user to always be able to view business service costs regardless of the *Costs* setting for the user's business group, select *Always show costs regardless of business group costs setting*.

A business group's *Costs* setting can be set to *Show* or *Hide*. The purpose of this setting is to enable you to ensure that business service costs are always visible to the user even if the business group *Costs* setting is set to *Hide*.

For example, you might want to select this option for users who are sponsors of business groups. This ensures that sponsors can always see costs even if their business group is set to hide costs.

- 6 Click *Save*.

- 7 Repeat [Step 2](#) through [Step 6](#) for each user you want to add.

## 18.2 Modifying a User's Information

- 1 In the Cloud Manager console, click *Business Groups*, then click the *Users* tab.

- 2 Select the user you want to modify, then click *Edit*.

- 3 Modify the following details as desired:

**User ID:** You cannot change the user ID.

**Full Name:** Specify the user's full name as you want it to appear in Novell Cloud Manager.

**E-Mail Address:** Specify the e-mail address at which the user can receive messages generated by Novell Cloud Manager activities. This applies only if you have configured Cloud Manager to send messages to an external SMTP server. For information, see [Chapter 23, "Connecting to an SMTP Server to Send External E-Mail,"](#) on page 83.

**Business Group:** This is a display-only field. To change the business group assignment, you must edit the business group.

- 4 Select the user's role:



**User:** Provides the ability to manage business services, including requesting services, sponsoring (approving or denying) requested services, and monitoring and managing deployed services.

**Administrator:** Provides the ability to administer the Novell Cloud Manager system, including creation and management of all objects (users, business groups, host groups, workload templates, and service levels) used in business services.

- 5 (User Role Only) If the user's business group is configured to hide costs, you can select *Always show costs, regardless of business group costs settings* to override the group setting and enable the user to view costs.
- 6 Click *Save*.

## 18.3 Removing a User's Access to Cloud Manager

To remove a user's access to Cloud Manager, you delete the user from the Novell Cloud Manager user group in your LDAP directory. This prohibits the user from logging in to Cloud Manager.

Removing a user from the LDAP user group does not remove the user's Cloud Manager account. You must manually delete the account in Cloud Manager. Before deleting a user account, you should be aware of the following::

- ♦ If the user owns deployed business services, and the deployed business services do not have other owners, the business services are reassigned to you. You can then delegate ownership to another user in the business group.
- ♦ If the user is a sponsor, make sure that there are no business service requests awaiting approval in the sponsor's queue. If there are unapproved requests and you delete the sponsor, the requests are orphaned. After a new sponsor is assigned, the requestors must withdraw the requests and resubmit them to route them to the new sponsor.

To delete a user account in Cloud Manager:

- 1 In the Cloud Manager console, click *Business Groups*, then click the *Users* tab.
- 2 Select the user you want to delete, then click *Delete*.
- 3 Click *Yes* to confirm the deletion.

## 18.4 Removing a User from a Business Group

Removal of a user from a business group occurs through the business group. For information, see [Section 19.2, "Modifying a Business Group," on page 68](#).



A business group is an association of one or more users with the resources (workload templates, service levels, and networks) from which they can build their business services. Each business group supports a sponsor assignment for financial approval. A user must be a member of a business group to request a business service.

- ♦ [Section 19.1, “Creating a Business Group,” on page 67](#)
- ♦ [Section 19.2, “Modifying a Business Group,” on page 68](#)
- ♦ [Section 19.3, “Deleting a Business Group,” on page 71](#)

## 19.1 Creating a Business Group

- 1 In the Cloud Manager console, click *Users*, then click the *Business Group* tab.
- 2 Click *Create* to display the Create Business Group dialog box.
- 3 Provide the following details to define the business group:

**Name:** Specify a name for the group. The name should be different than any other business group name.

**Discount (%):** If you want a discount applied to all business services created by members of the business group, select the discount percentage.

**Costs:** Select *Show* to allow group members to see cost information for workloads. Select *Hide* to prevent group members from seeing cost information.

The business group *Costs* setting can be overridden on individual user accounts. For example, if you select *Hide* for the group, you can override the setting for specific individuals by setting their user account *Costs* setting to *Show*.

**Auto Approval:** Business service requests require approval from both the group’s sponsor and a Novell Cloud Manager administrator.

Select *Administrator* to automatically grant administrator approval for the group’s business services. No approval task is sent to the Novell Cloud administrators group.

*Sponsor* is selected by default. If you don’t want automatic sponsor approval, you must add a user to the group and assign the user as sponsor. See the next two steps.

- 4 Add users to the group:

Novell Cloud Manager administrators should not be added as members of business groups. The only time an administrator should be a member of a business group is if the administrator needs to create a business service for the business group. For more information, see [Chapter 12, “Requesting a Business Service as an Administrator,” on page 43](#).

**4a** Under *Membership and Access*, click the *Users* tab.

**4b** Click *Add* to display the Add Users dialog box.

**4c** Select the users.

You can Shift-click and Ctrl-click to select multiple users.

**4d** Click *Add* to add the selected users to the *Users* list.

- 5** If you want to assign a sponsor (rather than using Auto Approval for the sponsor):
  - 5a** In the *Users* list, select the user you want to assign.
  - 5b** Click *Assign as Sponsor*.

The user name is displayed in the Sponsor field. If you need to change the sponsor, click *Clear* to clear the sponsor, then assign a new user.
- 6** Add workload templates to the group:
  - 6a** Under *Membership and Access*, click the *Workload Templates* tab.
  - 6b** Click *Add* to display the Add Workload Templates dialog box.
  - 6c** Select the workload templates.

You can Shift-click and Ctrl-click to select multiple workload templates.
  - 6d** Click *Add* to add the selected workload templates to the *Workload Templates* list.
- 7** Add service levels to the group:
  - 7a** Under *Membership and Access*, click the *Service Levels* tab.
  - 7b** Click *Add* to display the Add Service Levels dialog box.
  - 7c** Select the service levels.

You can Shift-click and Ctrl-click to select multiple service levels.
  - 7d** Click *Add* to add the selected service levels to the *Service Levels* list.
- 8** Add networks to the group:

Each service level has one or more networks associated with it (through the service level's assigned host group). For the service levels available to the group, you must decide which of the networks are visible to the group members. Each available service level must have at least one visible network.

  - 8a** Under *Membership and Access*, click the *Networks* tab.
  - 8b** Click *Add* to display the Add Networks dialog box.
  - 8c** Select the networks.

You can Shift-click and Ctrl-click to select multiple workload templates.
  - 8d** Click *Add* to add the selected networks to the *Networks* list.
- 9** Click *Save*.

## 19.2 Modifying a Business Group

You can edit a business group to change basic group information (name and costs visibility), user membership, and resource access (workload templates, service levels, and networks).

- 1** In the Cloud Manager console, click *Users*, then click the *Business Group* tab.
- 2** Select the business group you want to modify, then click *Edit*.
- 3** Perform any of the following tasks to modify the group:

Task	Steps
Change the name, discount percentage, and costs visibility	<ol style="list-style-type: none"> <li data-bbox="584 273 1360 493">1. In the <i>Name</i> field, specify the new name. The name should be different than any other business group name. Changing the business group name does not affect the relationship of other objects (such as users and workload templates) with the group. The new group name is included only with business services requested after the name change.</li> <li data-bbox="584 493 1360 661">2. In the <i>Discount (%)</i> field, select the discount percentage to apply to the group's business services. The new discount is applied only to new or changed business services, and to existing business services that have no end date (per the Workload Updates schedule).</li> <li data-bbox="584 661 1360 892">3. In the <i>Costs</i> field, select <i>Show</i> to allow group members to see cost information for workloads. Select <i>Hide</i> to prevent group members from seeing cost information.  If you hide costs for the group, you can override the setting on group members' user accounts to enable selected group members (such as the group sponsor) to view costs. For information, see <a href="#">Section 18.2, "Modifying a User's Information,"</a> on page 64.</li> </ol>
Change the Administrator auto-approval	<ol style="list-style-type: none"> <li data-bbox="584 892 1360 1176">1. In the <i>Auto-Approval</i> field, select the <i>Administrator</i> check box to turn on automatic Administrator approval of business service requests from members of the business group.  or  Deselect the <i>Administrator</i> check box to turn off automatic Administrator approval. All business service requests from the group's members must be manually approved by a Novell Cloud Manager administrator.</li> </ol>
Turn on automatic Sponsor approval	<ol style="list-style-type: none"> <li data-bbox="584 1176 1360 1428">1. If no sponsor is selected, automatic Sponsor approval is enabled. This is indicated by the dimmed, but selected, Sponsor check box.  or  If a sponsor is selected, you can click <i>Clear</i> next to the <i>Sponsor</i> field to remove the sponsor and turn on automatic Sponsor approval. If you don't want to remove the sponsor, simply select the <i>Auto-Approval Sponsor</i> check box; this overrides the selected sponsor.</li> </ol>
Assign a sponsor	<ol style="list-style-type: none"> <li data-bbox="584 1428 1360 1491">1. Under <i>Membership and Access</i>, click the <i>Users</i> tab to display the <i>Users</i> list.</li> <li data-bbox="584 1491 1360 1690">2. If the user you want to assign as sponsor is not a member of the group, you must add the user to the group: <ol style="list-style-type: none"> <li data-bbox="633 1564 1360 1606">a. Click <i>Add</i> to display the Add Users dialog box.</li> <li data-bbox="633 1606 1360 1648">b. Select the user.</li> <li data-bbox="633 1648 1360 1690">c. Click <i>Add</i> to add the selected user to the <i>Users</i> list.</li> </ol> </li> <li data-bbox="584 1690 1360 1732">3. In the <i>Users</i> list, select the user you want to assign.</li> <li data-bbox="584 1732 1360 1812">4. Click <i>Assign as Sponsor</i>.  The user name is displayed in the Sponsor field.</li> </ol>

Task	Steps
Change the sponsor	<ol style="list-style-type: none"> <li>1. Click <i>Clear</i> next to the <i>Sponsor</i> field to remove the current sponsor.</li> <li>2. Click the <i>Users</i> tab to display the <i>Users</i> list.</li> <li>3. If the user you want to assign as sponsor is not a member of the group, you must add the user to the group: <ol style="list-style-type: none"> <li>a. Click <i>Add</i> to display the Add Users dialog box.</li> <li>b. Select the user.</li> <li>c. Click <i>Add</i> to add the selected user to the <i>Users</i> list.</li> </ol> </li> <li>4. In the <i>Users</i> list, select the user you want to assign.</li> <li>5. Click <i>Assign as Sponsor</i>. The user name is displayed in the Sponsor field.</li> </ol>
Add users	<ol style="list-style-type: none"> <li>1. Under <i>Membership and Access</i>, click the <i>Users</i> tab.</li> <li>2. Click <i>Add</i> to display the Add Users dialog box.</li> <li>3. Select the users. You can Shift-click and Ctrl-click to select multiple users.</li> <li>4. Click <i>Add</i> to add the selected users to the <i>Users</i> list.</li> </ol>
Remove users	<ol style="list-style-type: none"> <li>1. Under <i>Membership and Access</i>, click the <i>Users</i> tab.</li> <li>2. Select the users to remove. You can Shift-click and Ctrl-click to select multiple users.</li> <li>3. Click <i>Remove</i>.</li> </ol>
Add workload templates	<ol style="list-style-type: none"> <li>1. Under <i>Membership and Access</i>, click the <i>Workload Templates</i> tab.</li> <li>2. Click <i>Add</i> to display the Add Workload Templates dialog box.</li> <li>3. Select the workload templates. You can Shift-click and Ctrl-click to select multiple workload templates.</li> <li>4. Click <i>Add</i> to add the selected workload templates to the <i>Workload Templates</i> list.</li> </ol>
Remove workload templates	<p>If a workload template is associated with any business services created by members of the business group, the <i>Remove</i> action is disabled and you cannot remove the template.</p> <ol style="list-style-type: none"> <li>1. Under <i>Membership and Access</i>, click the <i>Workload Templates</i> tab.</li> <li>2. Select the workload templates to remove. You can Shift-click and Ctrl-click to select multiple workload templates.</li> <li>3. Click <i>Remove</i>.</li> </ol>
Add service levels	<ol style="list-style-type: none"> <li>1. Under <i>Membership and Access</i>, click the <i>Service Levels</i> tab.</li> <li>2. Click <i>Add</i> to display the Add Service Levels dialog box.</li> <li>3. Select the service levels. You can Shift-click and Ctrl-click to select multiple service levels.</li> <li>4. Click <i>Add</i> to add the selected service levels to the <i>Service Levels</i> list.</li> </ol>

Task	Steps
Remove service levels	<ol style="list-style-type: none"> <li>Under <i>Membership and Access</i>, click the <i>Service Levels</i> tab.</li> <li>Select the service levels to remove. You can Shift-click and Ctrl-click to select multiple service levels.</li> <li>Click <i>Remove</i>.</li> </ol>
Add networks	<p>Each service level has one or more networks associated with it (through the service level's assigned host group). For the service levels available to the group, you must decide which of the networks are visible to the group's members. Each available service level must have at least one visible network.</p> <ol style="list-style-type: none"> <li>Make sure you've added at least one service level. Networks are determined by a service level's host group; therefore, a service level's networks are not available until after you add the service level to the business group.</li> <li>Under <i>Membership and Access</i>, click the <i>Networks</i> tab.</li> <li>Click <i>Add</i> to display the Add Networks dialog box.</li> <li>Select the networks. You can Shift-click and Ctrl-click to select multiple workload templates.</li> <li>Click <i>Add</i> to add the selected networks to the <i>Networks</i> list.</li> <li>Repeat these steps to make sure that at least one network associated with each available service level is added to the <i>Networks</i> list.</li> </ol>
Remove networks	<ol style="list-style-type: none"> <li>Under <i>Membership and Access</i>, click the <i>Networks</i> tab.</li> <li>Select the networks to remove. You can Shift-click and Ctrl-click to select multiple service levels.</li> <li>Click <i>Remove</i>.</li> </ol>

4 Click *Save* to save your modifications.

## 19.3 Deleting a Business Group

You can only delete business groups that have no dependencies. If you attempt to delete a business group that includes users, workload templates, and service levels or that has deployed business services, you are informed of the dependencies and the deletion fails.

- In the Cloud Manager console, click *Users*, then click the *Business Group* tab.
- Select the business group, then click *Delete*.
- Click *Yes* to confirm the deletion.





# Generating Cost Reports

# 20

Novell Cloud Manager provides a variety of cost-related reports for business services:

Report Title	Description
Business Service Cost Details	A detailed cost breakdown of each deployed business service and associated workloads for all business groups.
Business Service Cost Details per Business Group	A detailed cost breakdown of each deployed business service and associated workloads for a single business group.
Business Service Cost Summary	A cost summary of each deployed business service for all business groups.
Business Service Cost Summary per Business Group	A cost summary for each deployed business service for a single business group.
Business Service Cost History	The cost of each deployed business service and cost history for associated workloads for all business groups.
Business Service Cost History per Business Group	The cost of each deployed business service and cost history for associated workloads for a single business group.

You can generate the report in PDF, CSV, and XLS format. The generated report is not viewable in the Cloud Manager console, but is sent to your e-mail account. To receive the e-mailed report, you need to make sure the following configuration has been performed:

- ◆ An SMTP server connection is defined for your Novell Cloud Manager system. See [Chapter 23, “Connecting to an SMTP Server to Send External E-Mail,” on page 83.](#)
- ◆ Your Cloud Manager user account includes your e-mail address. See [Section 18.2, “Modifying a User’s Information,” on page 64.](#)

To generate a report:

- 1** In the Cloud Manager console, click *Reports*.
- 2** In the *Report Templates* list, select the report you want to generate.
- 3** Click *Generate*, review the report status, then click *Close*. Skip the remaining step.  
or  
If you selected a *per Business Group* report, click *Next*, then continue with the next step.
- 4** In the Business Group list, select the business group whose cost data you want in the report.
- 5** Click *Generate*, review the report status, then click *Close*.  
Successfully generated reports are sent to your e-mail address.



# Configuring the Cloud Manager System

# IV

The following sections provide information about the system configuration options available in the Novell Cloud Manager console:

- ◆ [Chapter 21, “Configuring Zone Connections,” on page 77](#)
- ◆ [Chapter 22, “Connecting to an LDAP Directory for User Authentication,” on page 81](#)
- ◆ [Chapter 23, “Connecting to an SMTP Server to Send External E-Mail,” on page 83](#)
- ◆ [Chapter 24, “Configuring Notification Schedules,” on page 85](#)
- ◆ [Chapter 25, “Configuring Remote Console Access to Workloads,” on page 87](#)
- ◆ [Chapter 26, “Configuring the Workload Update Schedule,” on page 89](#)
- ◆ [Chapter 27, “Configuring the Currency Display Symbol,” on page 91](#)



# Configuring Zone Connections

# 21

A zone is a PlateSpin Orchestrate Server, its managed VM hosts, and its defined VM templates. The following sections explain how to add, remove, and edit zones in the Cloud Manager console:

- ♦ [Section 21.1, “Adding a Zone,” on page 77](#)
- ♦ [Section 21.2, “Modifying a Zone,” on page 78](#)
- ♦ [Section 21.3, “Removing a Zone,” on page 79](#)

## 21.1 Adding a Zone

- 1 In the Cloud Manager console, click *Configuration*, then click *Zones*.
- 2 Click *Add*.
- 3 Fill in the following information:

**Name:** Provide a name for the zone. This name is displayed in Novell Cloud Manager to both administrators and users.

**Description:** If desired, add details to further identify the zone. The description is displayed in Novell Cloud Manager to administrators only.

**Enabled:** Deselect this option to disable the zone. The primary purpose for disabling a zone is to perform maintenance tasks on the PlateSpin Orchestrate Server without receiving error messages and exceptions in Novell Cloud Manager because the server is down.

While the zone is disabled, the following occurs:

- ♦ Any objects (hosts, VM templates, and so forth) provided by the zone’s PlateSpin Orchestrate Server are no longer displayed in Cloud Manager. However, Cloud Manager objects (host groups, service levels, workload templates, and so forth) are still displayed. A user receives a “Zone Disabled” error when adding, editing, or deleting any Cloud Manager object that includes a PlateSpin Orchestrate Server object.
- ♦ Any workloads deployed in the zone continue in their current state (unless an issue with the zone causes them to be stopped). The workload’s state displays as “Unknown” and the owner cannot cycle the workload.

**Server Address:** Specify the DNS name or IP address of the PlateSpin Orchestrate Server.

**Server Port:** Specify the port used by the PlateSpin Orchestrate Server Web Service.

**Username:** Specify the Administrator username that enables login to the PlateSpin Orchestrate Server.

**Password:** Specify and confirm the password for the username you supplied.

**Secure Connection:** Select this option if the PlateSpin Orchestrate Server Web Service uses a secure connection.

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**IMPORTANT:** After you define a PlateSpin Orchestrate Server as a zone, you are not allowed to modify the server address, server port, or connection type (secure or unsecure) for the zone definition. This means that if you change the address or port number of the Orchestrate Server, you must delete the zone, which requires removal of all business services, workload templates,

service levels, and so forth associated with the zone, and then define the zone again with the new server address and port. For this reason, we strongly suggest that you not change the Orchestrate Server address and port after defining it as a zone.

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- 4 Click *OK* to add the zone to the list

## 21.2 Modifying a Zone

You can change the name and description for a zone, and disable the zone to perform maintenance on the zone's PlateSpin Orchestrate Server.

You cannot modify the server address, server port, or connection type (secure or unsecure) for the zone. If you change the Orchestrate Server's address or port number, you must delete the zone, which requires removal of all objects (business services, workload templates, service levels, and so forth) associated with the zone, and then define the zone again with the new server address and port. For this reason, we strongly suggest that you not change the Orchestrate Server address and port after defining it as a zone.

- 1 In the Cloud Manager console, click *Configuration*, then click *Zones*.
- 2 Select the zone you want to modify, then click *Edit*.
- 3 Modify any of the following information:

**Name:** Provide a name for the zone. This name is displayed in Novell Cloud Manager to both administrators and users.

**Description:** If desired, add details to further identify the zone. The description is displayed in Novell Cloud Manager to administrators only.

**Enabled:** Deselect this option to disable the zone. The primary purpose for disabling a zone is to perform maintenance tasks on the PlateSpin Orchestrate Server without receiving error messages and exceptions in Novell Cloud Manager because the server is down.

While the zone is disabled, the following occurs:

- ♦ Any objects (hosts, VM templates, and so forth) provided by the zone's PlateSpin Orchestrate Server are no longer displayed in Cloud Manager. However, Cloud Manager objects (host groups, service levels, workload templates, and so forth) are still displayed. A user receives a "Zone Disabled" error when adding, editing, or deleting any Cloud Manager object that includes a PlateSpin Orchestrate Server object.
- ♦ Any workloads deployed in the zone continue in their current state (unless an issue with the zone causes them to be stopped). The workload's state displays as "Unknown" and the owner cannot cycle the workload.

**Server Address:** This setting cannot be changed. It is the DNS name or IP address of the PlateSpin Orchestrate Server.

**Server Port:** This setting cannot be changed. It is the port used by the PlateSpin Orchestrate Server Web Service.

**Username:** Specify the Administrator username that enables login to the PlateSpin Orchestrate Server.

**Password:** Specify and confirm the password for the username you supplied.

**Secure Connection:** This setting cannot be changed.

- 4 Click *OK* to save the changes.

## 21.3 Removing a Zone

You cannot remove a zone that has 1) business service workloads running in the zone, 2) business service requests in process, or 3) host groups, service levels, and workload templates associated with the zone.

- 1 In the Cloud Manager console, click *Configuration*, then click *Zones*.
- 2 Select the zone, then click *Remove*.
- 3 Click *OK* to confirm the removal.





# Connecting to an LDAP Directory for User Authentication

# 22

Novell Cloud Manager authenticates users via their LDAP directory accounts. To enable this authentication to occur, you must define the connection to the LDAP directory server, specify the containers where the Novell Cloud Manager users and user group reside, provide the credentials required to search the containers, then test the configuration.

Microsoft Active Directory and Novell eDirectory are the supported LDAP directories for Cloud Manager.

- 1 In the Cloud Manager console, click *Configuration*, then click *LDAP*.
- 2 Provide the LDAP server connection information:
  - Host:** Specify the FQDN (fully qualified domain name) or IP address of the host machine running the LDAP server. For example, `ldap.mycompany.com` or `123.45.67.8`.
  - Port:** Specify the TCP port (on the host machine) where the LDAP server is listening for LDAP connections. The standard port for non-SSL connections is 389. The standard port for SSL connections is 636.
  - Use SSL:** If you have configured the Cloud Manager Server to support an SSL connection to the LDAP server, select this option to enable the secure connection. For information about supporting an SSL connection, see “[Connecting to the LDAP Directory](#)” in the *Novell Cloud Manager 1.1 Installation Guide*.
- 3 Set the search base for the Cloud Manager users and user group:
  - Search Base DN:** Specify the base location where user searches begin. All portions of the LDAP tree located below the base DN are searched. For example, `cn=Users,dc=MyCompany,dc=com`.
  - User Group:** Specify the name of the LDAP user group used for Novell Cloud Manager users. A user must be a member of this group to authenticate to Novell Cloud Manager.
  - Group Base DN:** Specify the base location where the search for the Novell Cloud Manager user group begins. All portions of the LDAP tree located below the base DN are searched. For example, `cn=Groups,dc=MyCompany,dc=com`.
- 4 Provide an LDAP account that has search rights to the user and group base DN:
  - DN:** Specify an account that has rights to search the locations defined by the Search Base DN. For example, `cn=Administrator,cn=Users,dc=MyCompany,dc=com`
  - Password:** Specify the password for the account.
  - Password Confirm:** Confirm the password for the account.
- 5 Click *Test LDAP Configuration* to display the Test LDAP Configuration dialog box.
  - User Name:** Specify the user ID of a Cloud Manager user. This user must exist in the search base DN and be a member of the Cloud Manager user group. This is the user that Cloud Manager will attempt to authenticate to test the configuration settings.
  - Password:** Specify the user’s password.

- 6** If the test is successful, click *OK* to save the configuration. Otherwise, check the configuration information and repeat the test.

If the test fails, make sure of the following:

- ◆ The Novel Cloud Manager user group exists and is located in the specified group base DN.
- ◆ The search bind account has sufficient rights to the user search base and group search base.
- ◆ The Cloud Manager user you entered to test the configuration exists in the user search base and is a member of the Cloud Manager user group.

# Connecting to an SMTP Server to Send External E-Mail

# 23

By default, messages are posted to the Messages view in the Cloud Manager console. If you also want Cloud Manager to route messages to users' external e-mail clients via an SMTP server, you must provide Cloud Manager with the server's connection and authentication information.

- 1 In the Cloud Manager console, click *Configuration*, then click *SMTP*.
- 2 Fill in the following fields:
  - Host:** Specify the IP address or DNS name of the host running the SMTP server.
  - Server Port:** Specify the port on which the SMTP server listens for incoming messages.
  - Use Authentication:** If the SMTP server requires an authentication username and password, select this option, then specify the username and password.
- 3 Click *OK*.



# Configuring Notification Schedules

# 24

Cloud Manager sends messages to remind administrators and sponsors about tasks that need to be completed and to notify users of business services that are about to expire or that have expired. You can determine the schedule for these message notifications.

1 In the Cloud Manager console, click *Configuration*, then click *Notification*.

2 To modify the notification schedule for task completion, configure the following settings:

**Complete within:** Select how long a task owner has to complete a task before it becomes overdue. The default is 5 days.

If the start date for a requested business service is sooner than the number of days allowed to complete a task, notification occurs on the start date. For example, if the start date is 2 days after the request date and this option is set to 5 days, the task recipient (administrator or sponsor) receives a reminder notification on the second day.

**Begin notification:** Select when a task owner receives the first reminder notification about the due date. The notification appears in the owner's Messages list and e-mail account (if enabled). The default is 3 days before the task due date.

**Notification interval:** Select how often, after the first reminder notification, a task owner receives follow-up notifications about the due date. The default is every day.

3 To modify the notification schedule for business service expiration, configure the following settings:

**Begin notification:** Select when a business service owner receives initial notification that the business service is about to expire. The notification appears in the owner's Messages list and e-mail account (if enabled). The default is 7 days before the expiration date.

**Notification interval:** Select how often, after the initial notification, a business service owner receives follow-up notifications about the expiration date. The default is every 2 days

**Expired notification interval:** Select how often, after a business service has expired, the business service owner receives follow-up notifications about the expired business service. The default is every day.

4 Click *OK*.



# Configuring Remote Console Access to Workloads

# 25

The Cloud Manager console provides remote console access to business service workloads via an embedded Flash VNC application. The application can connect to workloads either directly or through a VNC repeater (proxy).

By default, the Cloud Manager console is configured to use the VNC repeater included with the Cloud Manager Server. Alternately, you can set up an external VNC repeater or configure the VNC application to connect directly to workloads. Each solution has advantages and disadvantages

Solution	Advantages	Disadvantages
Built-In Repeater	<ul style="list-style-type: none"><li>◆ Minimal setup</li><li>◆ Supports NAT and firewalls</li><li>◆ If used with NAT or firewall, use can be limited to Novell Cloud Manager users</li></ul>	<ul style="list-style-type: none"><li>◆ VNC traffic flows through Cloud Manager Server, increasing workload on single server</li></ul>
External Repeater	<ul style="list-style-type: none"><li>◆ Supports NAT and firewalls</li><li>◆ Offloads VNC traffic from Cloud Manager Server</li><li>◆ Scalable by clustering the repeater</li></ul>	<ul style="list-style-type: none"><li>◆ Increased setup</li><li>◆ VNC requests not authenticated through Cloud Manager</li></ul>
Direct Connection	<ul style="list-style-type: none"><li>◆ Most scalable</li></ul>	<ul style="list-style-type: none"><li>◆ Each workload must include a VNC server</li><li>◆ No support for NAT or firewalls</li><li>◆ VNC requests not authenticated through Cloud Manager</li></ul>

The following sections provide instructions for configuring each of the remote console access solutions:

- ◆ [Section 25.1, “Setting Up the Built-In VNC Repeater,” on page 87](#)
- ◆ [Section 25.2, “Setting Up an External VNC Repeater,” on page 88](#)
- ◆ [Section 25.3, “Setting Up Direct Connections,” on page 88](#)
- ◆ [Section 25.4, “Disabling Remote Console Access,” on page 88](#)

## 25.1 Setting Up the Built-In VNC Repeater

To have the Cloud Manager console use the built-in VNC repeater:

- 1 In the Cloud Manager console, click *Configuration*, then click *Remote Console*.
- 2 In the *Connection* field, select *Use built-in VNC repeater*.

- 3** If the VNC repeater requires a static port for reasons such as firewall support, specify the port in the *Repeater Port* field. Otherwise, leave the field blank so that the VNC repeater dynamically selects an available port when it starts.
- 4** Click *OK*.

## 25.2 Setting Up an External VNC Repeater

To have the Cloud Manager console use an external VNC repeater:

- 1** Install the VNC repeater using the product's documentation.
- 2** Configure the repeater to respond to both Flash policy requests and VNC proxy requests.
- 3** In the Cloud Manager console, configure the remote console to use the external repeater:
  - 3a** Click *Configuration*, then click *Remote Console*.
  - 3b** In the *Connection* field, select *Use external VNC repeater*.
  - 3c** In the *Repeater Address* field, specify the DNS or IP address of the VNC repeater's server.
  - 3d** In the *Repeater Port* field, specify the port assigned to the repeater.
  - 3e** Click *OK*.

## 25.3 Setting Up Direct Connections

To have the Cloud Manager console connect directly to workloads:

- 1** Make sure that each VM host or VM is configured with a VNC Server.

Depending on the hypervisor, the VM host might handle the VNC requests for the VM or the VM might handle the requests. Refer to your hypervisor documentation for information about how your hypervisor handles VNC requests to VMs.
- 2** Configure the VNC Server to respond to Flash policy requests.
- 3** In the Cloud Manager console, configure the remote console to use a direct connection:
  - 3a** Click *Configuration*, then click *Remote Console*.
  - 3b** In the *Connection* field, select *Connect directly*.
  - 3c** Click *OK*.

## 25.4 Disabling Remote Console Access

If you don't want users to be able to access workloads through the Cloud Manager console, you can disable remote console access. This disables remote console access to all workloads through the Cloud Manager console only. It does not disable VNC on the host or the workload.

- 1** In the Cloud Manager console, click *Configuration*, then click *Remote Console*.
- 2** In the *Connection* field, select *Disable*.
- 3** Click *OK*.



# Configuring the Workload Update Schedule

# 26

When a business service is deployed, Novell Cloud Manager takes a snapshot of the business service's workloads. This snapshot maintains a record of the service levels, resource allocations, and costs associated with the workloads at deployment time.

For business services with an expiration date, the snapshot is updated only if the owner changes the business service and redeploys it. At that time, Cloud Manager takes a new snapshot that reflects any changes to the service levels, resource allocations, and costs associated with the workloads. For example, if the cost of the host group's resources increased since the first deployment, the second deployment reflects the cost increase.

For business services without an expiration date, you can determine when workload snapshots are updated so that non-expiring business services accurately reflect changes in the service levels, resource allocations, and costs associated with their workloads. You can update workloads either weekly or monthly. The update occurs on the last day of the selected period. You can also force an immediate update.

- 1 In the Cloud Manager console, click *Configuration*, then click *Workload Updates*.
- 2 Select *Weekly* or *Monthly* for the update frequency.
- 3 If you want to force an update immediately, click *Update Now*.
- 4 Click *OK*.



# Configuring the Currency Display Symbol

# 27

You can select the currency symbol associated with the currency fields in the Cloud Manager console. The setting affects only the display symbol. It does not affect the format of the currency fields. All fields are formatted as 00.00 regardless of the currency symbol. In addition, it does not affect the currency symbol in reports.

The setting applies to all users who log in to the Cloud Manager console.

- 1** In the Cloud Manager console, click *Configuration*, then click *Currency*.
- 2** Click *Currency Symbol*, then select the symbol you want to use.

The symbols are listed by currency code. For example, to select the Euro symbol (€), select the *Euro (EUR)* code.

- 3** Click *OK* to save your change.

Any users that log in after the change see the new currency symbol. For you to see the change, you must log out and then log in again.



# Maintaining the Cloud Manager Server



The following sections provide information to help you maintain the Novell Cloud Manager Server and its associated PostgreSQL database:

- ♦ [Chapter 28, “Starting and Stopping the Cloud Manager Server,” on page 95](#)
- ♦ [Chapter 29, “Viewing and Maintaining the Audit File,” on page 97](#)
- ♦ [Chapter 30, “Viewing and Maintaining the Log File,” on page 99](#)
- ♦ [Chapter 31, “Maintaining the PostgreSQL Database,” on page 101](#)



# Starting and Stopping the Cloud Manager Server

# 28

You can use an `init.d` script to start and stop the Cloud Manager Server.

**1** Make sure you have root (or sudo) access on the server.

**2** At command prompt, enter the following:

```
/etc/init.d/novell-soaframework.NovellCloudManager option
```

where *option* is one of the following:

- ♦ `start`
- ♦ `stop`
- ♦ `status`
- ♦ `restart` (stop the server and start it again)
- ♦ `try-restart` (restart only if the server was already running)





# Viewing and Maintaining the Audit File

# 29

The Cloud Manager Server generates audit files that record all activities performed in the Cloud Manager system.

The audit files are named `NCMAudit $nn$ .xdas`, where  $nn$  is a number from 0 to 20. Each file is a maximum of 1 GB in size. The Cloud Manager server records data to `NCMAudit0.xdas` until it reaches 1 GB, then moves to the next file, `NCMAudit1.xdas`. When it finishes with `NCMAudit20.xdas`, it returns to the first file (`NCMAudit0.xdas`) and overwrites the file with new data.

You cannot change the name, number, or file size of the audit file. If you want to retain the complete set of files, you must move the files to another directory before they are overwritten.

The files are located in the following directory on the Cloud Manager Server:

```
/opt/novell/soaframework10/domains/NovellCloudManager/audit
```



# Viewing and Maintaining the Log File

# 30

Novell Cloud Manager uses the GlassFish Enterprise Server as its application server. You can view the information logged to the application server log file and configure the logging settings.

By default, the server uses the `/var/opt/novell/soaframework10/domains/NovellCloudManager/logs/server.log` file and logs INFO, WARNING, and SEVERE messages. When the log file reaches 2 MB in size, it is renamed to `server.log_date`, where *date* is the date and time the file was renamed. A new `server.log` file is then started.

- ♦ [Section 30.1, “Viewing the Log File,” on page 99](#)
- ♦ [Section 30.2, “Changing the Logging Settings,” on page 99](#)

## 30.1 Viewing the Log File

You can view the log file in an editor by opening it from the following location:

```
/var/opt/novell/soaframework10/domains/NovellCloudManager/logs/server.log
```

You can also use the GlassFish administration console to view the log file. The administration console provides searching of log records based on log levels (INFO, WARNING, and so forth) and timestamp.

- 1 Log in to the Cloud Manager Server application server (GlassFish) using the following URL:

```
http://server_address:4848
```

where *server\_address* is the IP address of DNS host name of the machine running the Cloud Manager server.

- 2 Provide the username and password for accessing the GlassFish application server, then click *Login*.
- 3 Under *Common Tasks*, click *Search Log Files*.

## 30.2 Changing the Logging Settings

You can change the location, name, and maximum size of the file. To do so:

- 1 Log in to the Cloud Manager Server application server (GlassFish) using the following URL:

```
http://server_address:4848
```

where *server\_address* is the IP address of DNS host name of the machine running the Cloud Manager server.

- 2 Provide the username and password for accessing the GlassFish application server, then click *Login*.
- 3 In the left-navigation panel, click *Application Server*.

- 4 Click the *Logging* tab.
- 5 Configure the settings on the General and Log Levels pages. Click *Help* for information about each of the options.

# Maintaining the PostgreSQL Database

# 31

You should perform the following maintenance tasks periodically on the Novell Cloud Manager PostgreSQL database.

- ◆ Back up the database
- ◆ Reclaim unused spaced (VACUUM command)

Refer to the PostgreSQL documentation for help performing these tasks.



# Security

# VI

The following section provides information about Novell Cloud Manager security:

- ◆ [Chapter 32, “Security Considerations,” on page 105](#)





You should be aware of the following security considerations when using Novell Cloud Manager:

- ♦ [Section 32.1, “LDAP Password Caching,” on page 105](#)

## 32.1 LDAP Password Caching

To provide faster user authentication, the Java LDAP implementation used by the Novell Cloud Manager Server maintains a cached pool of connections. Each connection includes a paired user ID and password. By default, the cache is retained until the Cloud Manager Server is restarted.

A potential security hole can arise if a user’s password is changed in the LDAP source. When this occurs, both the new and old passwords can be used until the connections in the cache are cleared during a server restart.

If this is an issue for your organization, two possible solutions are:

- ♦ Disable the cache. This slows down authentication but completely eliminates the issue.
- ♦ Set a timeout value for entries stored in the cache. If a connection is not used within the designated time out period, it is removed from the cache. This is not as secure as disabling the cache because a user could repeatedly authenticate within the time interval to retain the old connection (user/password).

### Disabling the Cache

Use the following Java system property:

```
com.sun.jndi.ldap.connect.pool=false
```

For example, you could set it at the command line:

```
# java -Dcom.sun.jndi.ldap.connect.pool=false
```

### Setting a Timeout Value for the Cache

Use the following Java system property:

```
com.sun.jndi.ldap.connect.pool.timeout=milliseconds
```

For example, you could set the timeout at the command line:

```
# java -Dcom.sun.jndi.ldap.connect.pool.timeout=1200000
```

We recommend a timeout value that is greater than the timeout value for the Cloud Manager console (15 minutes). For example, you could set the timeout to 20 minutes (1200000 milliseconds).



# Cloud Manager Mobile

# VII

The following sections provide information about the mobile client for Cloud Manager:

- ◆ [Chapter 33, “Overview,” on page 109](#)
- ◆ [Chapter 34, “Downloading and Installing the Mobile Client,” on page 111](#)
- ◆ [Chapter 35, “Connecting to the Cloud Manager Server,” on page 113](#)
- ◆ [Chapter 36, “Logging In,” on page 117](#)
- ◆ [Chapter 37, “Using the Mobile Client,” on page 119](#)



In addition to be available as a Web client, the Cloud Manager console is available as a mobile client.

- ◆ [Section 33.1, “Supported Mobile Devices,” on page 109](#)
- ◆ [Section 33.2, “Mobile Client Features,” on page 109](#)

## 33.1 Supported Mobile Devices

Currently, the mobile client is available for the following devices:

- ◆ Apple iPhone (iOS 4.1 or later)
- ◆ Apple iPod touch (iOS 4.1 or later)

## 33.2 Mobile Client Features

The Cloud Manager console features available in the mobile client are comparable to those available in the Web client. The following table provides a feature comparison for the two clients.

Feature	Mobile Client	Web Client
Dashboard for Administrator	✓	✓
Dashboard for User	✓	
Dashboard for Sponsor	✓	
Refresh Dashboard	✓	
View Cloud Map	✓	
View Messages	✓	✓
Send and Reply To Messages		✓
Manage Tasks	✓	✓
Manage Service Levels	✓	✓
Manage Service Level Objectives	✓	✓
View Host List	✓	✓
Manage Host Groups	✓	✓
Manage Workload Templates	✓	✓
Manage Users	✓	✓

Feature	Mobile Client	Web Client
Manage Business Groups	✓	✓
Manage Business Service Requests	✓	✓
Configure Workloads	✓	✓
Copy Workloads	✓	✓
Cycle Workload States	✓	✓
Access Workload Console		✓
Import Workloads to Business Services		✓
Change Imported Business Services		✓
View Unassigned Virtual Machines List		✓
Generate Reports	✓	✓
Configure Cloud Manager (with the exception of Workload Cost Updates)		✓
Filter Management Scope by Zone	✓	
Display Business Services by Status (Defining, Submitted, Deployed)	✓	
Integrate with External Address Book	✓	
Change the Display Theme	✓	

# Downloading and Installing the Mobile Client

# 34

The mobile client is available as a free download from the Apple App Store. Go to the App Store and search for *Novell Cloud Manager* or use one of the following direct link:

- ♦ [iTunes link \(itms://itunes.apple.com/us/app/novell-cloud-manager-mobile/id408951879?mt=8\)](https://itunes.apple.com/us/app/novell-cloud-manager-mobile/id408951879?mt=8)
- ♦ [Web browser link \(http://itunes.apple.com/us/app/novell-cloud-manager-mobile/id408951879?mt=8\)](http://itunes.apple.com/us/app/novell-cloud-manager-mobile/id408951879?mt=8)

Download and install the Cloud Manager app just as you would any other app.





# Connecting to the Cloud Manager Server

# 35

Before logging in, you need to enable the type of connection (secure or non-secure) you want to use and then configure the mobile client with the correct information to connect to the Cloud Manager Server.

- ♦ [Section 35.1, “Enabling a Non-Secure Connection,” on page 113](#)
- ♦ [Section 35.2, “Enabling a Secure Connection,” on page 114](#)
- ♦ [Section 35.3, “Configuring the Connection,” on page 114](#)

## 35.1 Enabling a Non-Secure Connection

This section applies only if you want to enable a non-secure (non-SSL) connection between the mobile client and the Cloud Manager Server. A non-secure connection is not recommended in production environments. You should configure your Cloud Manager Server for secure connections in production environments. For more information, see [“Configuring Cloud Manager Server Connections”](#) in the *Novell Cloud Manager 1.1 Installation Guide*.

To enable a non-secure connection to the Cloud Manager Server:

- 1 Make sure the Cloud Manager Server is running. If necessary, see [Chapter 28, “Starting and Stopping the Cloud Manager Server,” on page 95](#) for instructions.

- 2 On the Cloud Manager Server, open the following file in a text editor:

```
/etc/opt/novell/cloud-manager/NCMAsssembly/core_war/WEB-INF/web.xml
```

- 3 Comment out the <user-data-constraint> section:

```
<!--  
  <user-data-constraint>  
    <description>Secure NCMApi port</description>  
    <transport-guarantee>CONFIDENTIAL</transport-guarantee>  
  </user-data-constraint>  
-->
```

- 4 Run the following command:

```
/opt/novell/cloud-manager/write_assemblies
```

- 5 Wait at least 5 minutes for the process to complete.

You can monitor the process by running the following command. When the process stops producing log messages, it is complete.

```
tail -f /var/opt/novell/soaframework10/domains/NovellCloudManager/logs/  
server.log
```

- 6 Restart the Cloud Manager Server:

```
/etc/init.d/novell-soaframework.NovellCloudManager restart
```

## 35.2 Enabling a Secure Connection

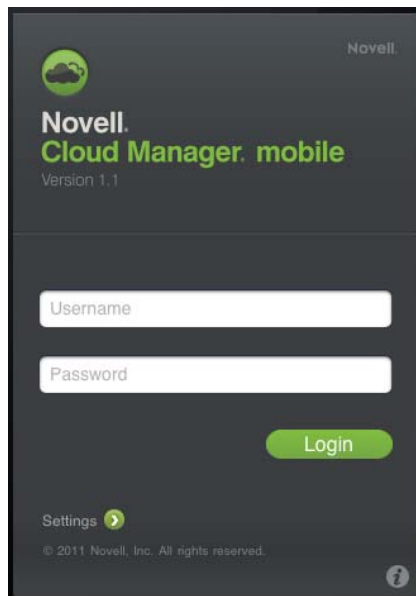
This section applies only if your Cloud Manager Server is configured for a secure (SSL) connection.

The mobile client has no mechanism to prompt users to accept a certificate when the client first accesses the Cloud Manager Server. Therefore, you need to distribute the server certificate (or the CA certificate) to any users who will use the mobile client.

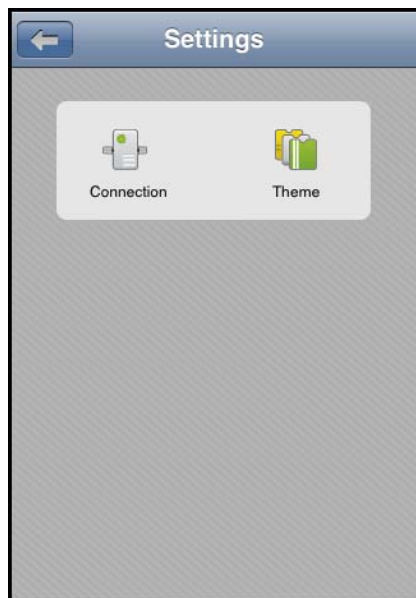
- 1 E-mail the certificate to the user.
- 2 On the mobile client, access the e-mail.
- 3 Tap the certificate and follow the prompts to install it.

## 35.3 Configuring the Connection

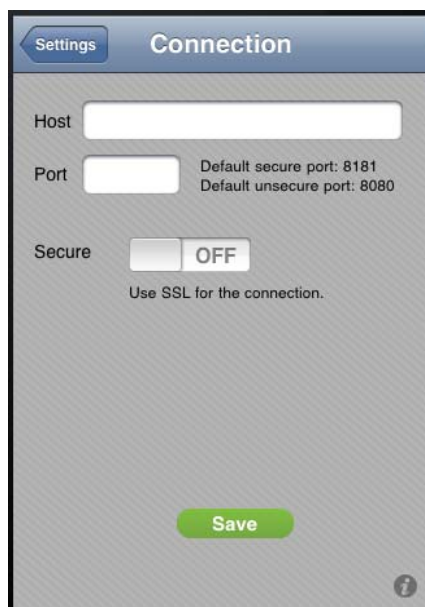
- 1 Tap the Cloud Manager app icon to display the mobile client login screen.



2 Tap *Settings* to display the Settings screen.



3 Tap *Connection* to display the Connection screen.



4 Fill in the fields:

**Host:** Enter the hostname of the Cloud Manager Server (for example, cloudmanager.novell.com)

**Port:** Specify the port used by the Cloud Manager Server.

**Secure:** If the Cloud Manager Server uses a secure connection, slide the *Off* button to the *On* position.

5 Tap *Save*.

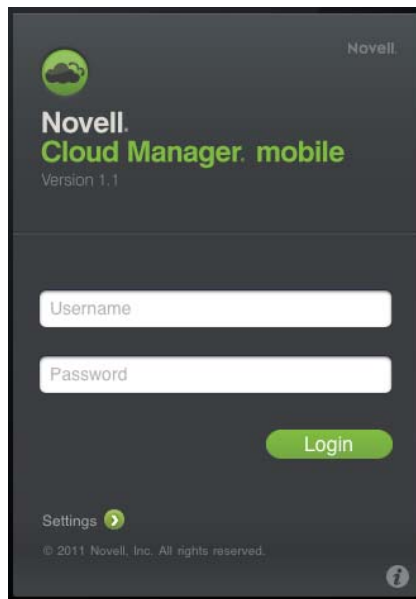


# Logging In

# 36

After you have provided the connection information to access your Cloud Manager Server (see [Chapter 35, “Connecting to the Cloud Manager Server,”](#) on page 113), you can log in.

- 1 Tap the Cloud Manager app icon to display the mobile client login screen.




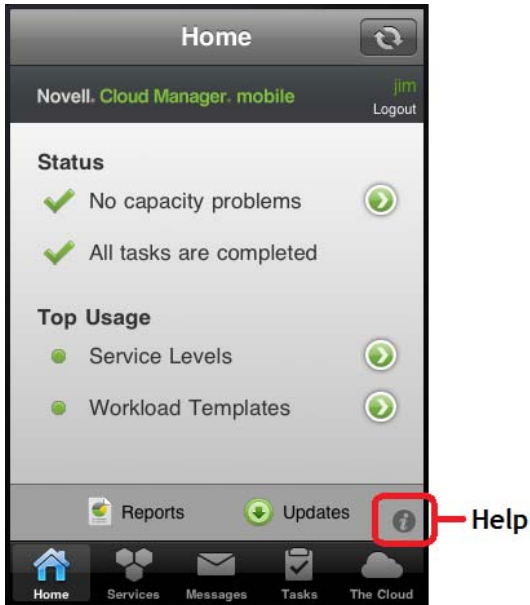
- 2 Tap the Username and Password fields to enter your login credentials.
- 3 Tap *Login*.



# Using the Mobile Client

# 37

The mobile client includes a Help system that provides instructions for performing the tasks you can complete with the client. You access the Help system through the  icon on the Home page.



You can also view the Help system through a Web browser. For best viewing, reduce the browser screen to the dimensions of an iPhone or iPod touch screen:

- ♦ [Administrator Help \(http://www.novell.com/documentation/cloudmanager1/mobile\\_client/iphone/admin\)](http://www.novell.com/documentation/cloudmanager1/mobile_client/iphone/admin)
- ♦ [User Help \(http://www.novell.com/documentation/cloudmanager1/mobile\\_client/iphone/user\)](http://www.novell.com/documentation/cloudmanager1/mobile_client/iphone/user)

